

**Pacific Island adolescent girls with a physical disability: Health
and wellbeing through physical activity.**

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List of Abbreviations

AT	Active transport (to and from school) for this study
AHRG	Adolescent Health Research Group
CAPE	Children’s Assessment of Participation and Enjoyment survey
CI	Confidence interval
CP	Cerebral palsy
“girls”	Pacific adolescent girls with a physical disability (Chapters Six, Seven & Eight)
GMFS	Gross Motor Function Classification System
HRC	Health Research Council of New Zealand
MoH	Ministry of Health
OR	Odds ratio
PA	Physical activity
SB	Sedentary behaviours
SES	Socio economic status
SPARC	Sport and Recreation New Zealand
WHO	World Health Organisation

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institution of higher learning, except where due acknowledgement is made.

Name Here 

Date 16/11/15

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Ethics approval

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The perceptions of Pacific adolescent girls who have a physical disability, on their perception of physical activity. International Pacific Health Conference, Auckland, New Zealand, 02 Nov 2014 - 05 Nov 2014. 174-175. 2014

Pacific adolescent girls with a physical disability. Pasifika Medical Association Conference: Youth Today – Our Future Tomorrow, Nuku'alofa, Tonga, 24 Sep 2013 - 27 Sep 2013. 2013

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Abstract

As is well documented, health and wellbeing is positively associated with participating in physical activity. However, the little research available suggested that Pacific adolescents generally, are participating in less physical activity than adolescents of other ethnic groups. Furthermore, there was even less evidence pertinent to the physical activity participation of Pacific girls who experience a physical disability. This presents a health and equity issue for these girls and a group at risk that needs to be prioritised to promote healthier lifestyles.

The purpose of this thesis was to address the dearth of research with the focus specifically on Pacific adolescent girls with a physical disability, and their physical activity participation and sedentary behaviours. Despite the well-known benefits of participating in physical activity, this population is at risk of not partaking due to underlying factors including their gender, ethnic group, financial constraints, and physical disability. To increase participation, and reduce sedentary behaviours, factors influencing both participation and non-participation need to be considered.

A mixed methods approach comprised of a series of studies which endeavoured to identify and explore factors that influence (facilitate or inhibit) physical activity participation or sedentary (screen time) behaviour in Pacific adolescents. Moreover, the aim was to gain insight into these factors, relevant to Pacific adolescent girls with a physical disability.

The first study, a cross-sectional study, utilised data from a 2012 regional study comparing Pacific adolescent boys and girls with and without a physical disability. The study participants included 1,201 Pacific adolescents who were randomly selected and participated in the survey. Frequency of participation in physical activity, active transport (to and from school), and sedentary (screen time) behaviours were examined and measures of association between factors that enable or inhibit participation in physical activity, sedentary (screen time) behaviours, and active transport (to and from school) were explored. Findings from quantitative study presented demographic characteristics of the sample group. The results showed that from the overall sample group for this study, the ethnic groups included 48% Samoan, 20.6% Cook Island Maori, 25.7% Tongan, 8.3% Niuean, 3.6% Tokelauan, 13.7% Fijian and 6% other Pacific peoples. Moreover, 56.6% of the Pacific adolescents were female and the average age was reported as 14 years with the age ranging from under 12 to 19 years.

Associations between the outcome measures on physical activity, active transport (to and from school), and sedentary (screen time) behaviours and associated variables, were presented. The results showed that the Pacific adolescents without a physical disability were predominately not meeting the recommended physical activity guidelines, and that 7.2% of the Pacific adolescents reported a long-term health disability. The Pacific adolescents with a disability (3.2%) who reported experiencing a difficulty as a result of their disability, also reported less sedentary (screen time) behaviours than those without a disability or difficulty. Other factors that showed associations with the outcome measures included socioeconomic influences, neighbourhood safety, peer groups, eating behaviours, enjoying competing and valuing physical activity, time spent on activities such as computer and electronic games. If the adolescents without a physical disability lived within 30 minutes of their school, the results also showed they were more likely to undertake active transport (to and from school).

The second study comprised of seven interviews with Pacific adolescent girls and their mothers in a family setting while study three included the providers of services to Pacific girls with a physical disability. The providers of services conveyed a further insight into complexities of participation for the Pacific adolescent girls and their families. The focus of the *talanoa* (face-to-face informal interview) for study two and three was to explore participation and factors influencing partaking in physical activity, and to hear the voices of the participants themselves. An in-depth understanding of the factors that inhibited or facilitated participation in physical activity for the Pacific girl who experiences a physical disability, was gained through the participants' stories.

The findings suggested that these girls wanted to participate in physical activity and clearly indicated the physical activities they preferred. However, their participation was influenced by the interplay of a range of gender, cultural, age-related (adolescence) and socio-economic factors alongside policy and structural related constraints. The main themes which were identified from the interviewees included: enjoyment, peers, health benefits, their family, and restrictions to participation, financial difficulties, access, travel complications, policy implications, and their physical disability.

The imminent health and wellbeing of Pacific adolescents with a physical disability, is dependent on addressing initiatives and recommendations as outlined in this thesis. In order to make change, it is imperative this populace be given priority, while considering the multitude of factors which impact on participation.

Chapter 1: **Introduction**

Participation in physical activity on a regular basis is important for the physical and psychological wellbeing of adolescents with and without a disability (Morris, 2008; Shkedy Rabani et al., 2014). In New Zealand, Pacific adolescents are found to be less active in comparison with other ethnic groups (Ministry of Health (MoH), 2008b). In addition, Pacific adolescents with a physical disability are at greater risk of poor health due to a variety of factors including ineffectually accessing health services (MoH, 2008b).

This thesis explores factors that facilitate or inhibit participation in physical activity in Pacific adolescent girls with a physical disability. This study is the first known research study that focuses on this particular population. Encouraging physical activity in Pacific adolescent girls with a physical disability is of utmost importance for the improvement of their health and wellbeing. In addressing the research questions a mixed methods approach was utilised. Strategies emerging from this research may provide more opportunities for participation in physical activity which may in turn improve their general health and wellbeing.

1.1 Thesis Rationale

While most Pacific adolescents have strong cultural and religious beliefs and experience strong family foundations while living in New Zealand, they struggle with a variety of issues which impact on their wellbeing and participation in physical activity (MoH, 2008b). In particular, female Pacific adolescents reported lower physical activity levels (Clark et al., 2013). Moreover, Pacific adolescent girls with physical disabilities are a vulnerable and priority population with regards to health and wellbeing. The compounding factors of adolescence, SES, gender, their disability, and culture and ethnicity impact on their participation in physical activity and sedentary (screen time) behaviours. Pacific adolescents who have a disability may also experience discrimination at various levels and poorer health possibly attributed to their culture (Stubbs & Tawake, 2009; Groce, 2004). Furthermore, women who experience a disability may endure additional bias in that they are female and disabled, when attempting to engage in competitive sports (Olenik, Matthews & Steadward, 1995; Blinde & McCalister, 1999). This opinion is shared by Taaloga and Lene (2003) who state that Pacific young women with a physical disability, “may be perceived as a burden” and that Pacific girls with a physical disability have a low rate of participation in sports (p. 1).

Opportunities for participation in physical activity for physically disabled children and adolescents generally, are inadequate (Murphy & Carbone, 2008; King et al., 2003). While there is a substantial number of adolescents with a physical disability, information relative to participation remains diminutive (Groce, 2004, Van Eck et al., 2008; Maher, William, Old & Lane 2007; Verschuren, Wiart, Hermans, & Ketelaar et al., 2012; Fong, Cha, Han & Au, 2014). Furthermore, there are no precise guidelines for physical activity frequency, duration and intensity for young people who have a physical disability (Maher et al, 2007; Kim, 2009). Theoretical models have been proposed to determine participation in physical activity for adolescents with a physical disability which include a multiple array of factors including the adolescent's characteristics and behaviour, family dynamics and influences and environmental factors (Kang, Palisano, King & Chiarello, 2013; Palisano et al., 2011).

Research on youth with a physical disability advocates the importance of physical activity for physiological and psychological health and wellbeing (Morris, 2008). Participating in physical activity on a regular basis is essential in maintaining normal muscle and joint functioning, improving flexibility and possibly reducing the functional decline related to experiencing a physical disability (Murphy & Carbone, 2008).

Obesity is a worldwide health problem often connected to inadequate physical activity in children and adolescents with and without physical disabilities. Murphy and Carbone (2008) explain how adolescents with a disability may be more inactive and therefore more predisposed to obesity and the health problems linked to obesity. Statistics show that a disparate number of Pacific children are considered overweight and obese in comparison to New Zealand European and other non-Maori children (MoH, 2008b). There are concerns on how obesity is impacting Pacific people's health (MoH, 2014).

Globally, the United Nations, and nationally, Government bodies including the New Zealand Ministry of Health and The Office for Disability Issues have identified the importance of the rights of those who experience disabilities. These rights are wide ranging but include entitlements to support, health, education, and physical activity. Despite initiatives to improve the health and wellbeing of people with a disability, the United Nations has identified that addressing the needs of people with disabilities is still a significant challenge (Stein & Lord, 2009).

Furthermore, the Biwako Millennium Framework (BMF), which aims to represent people with disabilities in the Asian and Pacific regions, has also identified the need to address the issues experienced by people with a disability. The BMF framework objectives are to identify these issues and make recommendations and action points to address the concerns and rights of people with disabilities (National Council on Disability Affairs, 2009). In New Zealand, the National Pasifika Disability Plan 2010-2013 and the National Lu'i Ola Auckland Regional Disability Project have likewise committed to address the needs of Pacific peoples living with disabilities in New Zealand (MoH, 2009, 2010). The MoH has suggested that Pacific children and youth with a disability are a priority group for promoting healthier lifestyles (MoH, 2004; MoH, 2008d; MoH, 2010). Despite these pledges, there has been little global and national enquiry into Pacific peoples with disabilities and their participation in physical activity including sedentary behaviours (MoH, 2010).

Nationally, the New Zealand Disability Pacific Development Plan reports that Pacific peoples have historically been low users of disability support services (MoH, 2010). Attempts over recent years to improve Pacific people's access to, and use of, disability support services have been minimal. This is, in part, due to the lack of information around culturally responsive and appropriate disability services for Pacific peoples as well as insufficient development or funding plans to drive continued improvement. This invariably results in Pacific people experiencing difficulty in accessing support systems resulting in inferior health outcomes in comparison to non-Pacific groups (MoH, 2010).

There is a scarcity of information available on how Pacific people experience of their disability (MoH, 2008a). Studies on participation in physical activity are imperative to address the dearth of literature and most importantly to promote physical activity programmes to meet the health and wellbeing of the Pacific adolescents with physical disabilities (Van Eck et al., 2008). Moreover, research is essential to address the research gap pertaining to Pacific adolescents and more explicitly, Pacific adolescent females with a physical disability and the factors influencing their participation in physical activity. While there are Government initiatives and reports aimed at improving the health and wellbeing of all Pacific adolescents, it is proposed that this subgroup experience greater challenges in comparison to other New Zealand youth (MoH, 2008a). This significant research gap may be a result of people's lack of awareness and the general attitudes towards people with an impairment (Sport & Recreation New Zealand, (SPARC), 2005).

This study aimed to explore these research gaps through analysing the attainable data and hearing the voices and experiences of the adolescents, their families, and the service providers.

This PhD thesis sought to address the aims of this study utilising a concurrent triangulation approach, which uses two methods to compare the findings within the research study (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Plano Clark & Creswell 2008, Creswell, 2014) with three separate studies. The first study draws on quantitative data from a regional survey to quantify physical activity participation and consider the general health and wellbeing of the Pacific adolescents in relation to physical activity participation. The quantitative data provided a background to the research as it was deemed important to have an overview of the Pacific adolescents in relation to disability, physical activity and health and wellbeing. Cross-sectional survey data were analysed to make comparisons between Pacific adolescents with a disability and those without, in relation to physical activity participation, active transport (to and from school), and sedentary (screen time) behaviours and to explore factors of general health and wellbeing and how they impact on participation. The data was derived from the University of Auckland Adolescent Health Research Group but was analysed independently. This is further discussed in the methodology chapter.

The second and third studies sought to understand the experiences of physical activity participation for Pacific female adolescents with a physical disability. The objective was to identify the factors that enable or inhibit participation in physical activity through qualitative interviews by listening to the participants' voices and stories. The second study included the female adolescent girls with a physical disability and some of their mothers, as discussed in the methodology section. The third study included the providers of services to Pacific girls with a physical disability. The problems in relation to access appeared to be diverse and hearing the mothers' or families' and providers' perspectives, enhanced the understanding. This also provided a more balanced view ensuring that the girls' voices were not in isolation or their belief only. This research sought to identify the factors influencing participation among Pacific adolescents such as their health, physical disability, culture, gender, access, sedentary (screen time) behaviours, or other factors. It is a basic human right that every adolescent should have the opportunity to participate in physical activity (United Nations Office for Sport Development and Peace, n.d.).

1.2 Significance of research

As stated above, research into Pacific adolescents, and in particular Pacific adolescent girls with a physical disability, in relation to physical activity participation and sedentary behaviours is scarce. Pacific adolescent girls with a physical disability are a minority group who experience a multiplicity of challenges and compounding issues including their physical disability, ethnicity, and SES factors when attempting to participate in physical activity. Pacific peoples, like other ethnic minorities, may experience a variety of barriers relevant to healthcare access which may be alleviated with evidence based knowledge (Verschuren et al., 2012).

Previous studies were typically aimed at the mainstream population and did not consider culture, equity perspectives, or the voices and experiences from the adolescents themselves. In order to make change, it is imperative that this population be given priority. Findings from this thesis may inform family interventions that are culturally specific and contribute to the existing global, regional, or New Zealand and Pacific research environment. This may assist in developing guidelines or may inform future programme planning to increase physical activity for the Pacific adolescent with a physical disability. All adolescents, whether living with a physical disability or not, should have the opportunity to participate in physical activity.

1.3 Definitions/terms used throughout this thesis

Pacific community in N.Z: While this thesis utilises the term Pacific as encompassing a group of peoples, it recognises that “the Pacific community in New Zealand comprises over 20 ethnically diverse groups each with their own languages and culture” (Fairbairn-Dunlop, 2014).

Physical disability: “Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations” (World Health Organisation, 2011, (WHO) p. 1). Cerebral palsy (CP) is the most common permanent condition found amongst adolescents who experience a physical disability (Engel-Yeger, Jarus, Anaby, & Law, 2009). Cerebral palsy refers to “a group of disorders that affect the development of movement and posture, causing activity limitation, and are attributed to progressive disturbances that occurred in

the developing foetal or infant brain” (Verschuren et al., 2007, p.1). As a result of the disability, this population may experience difficulties with perception, sensation, and cognitive or behavioural problems which may impede their involvement in physical activity (Verschuren et al., 2007). For this thesis, the definition used for a physical disability included that the adolescent will have experienced a congenital or acquired neuromuscular physical disability for more than six months.

Adolescence is a time in a person’s life when considerable physiological and psychological change, development, and adjustments are occurring. While the specific time for adolescence is dependent on the individual, adolescence is a transitional time somewhere between being a child at 10 years to becoming an adult at 22 years (Pudney, 2014). Pacific groups have an extended adolescent period in comparison to other population groups with youth or adolescence defined as 15-24 years (MoH, 2008b; United Nations Children’s Fund, 2011) (UNICEF). Henry (2013) notes that adolescence may be defined as occurring between the ages of 16-34 years in the Cook Islands. For this study, adolescence was defined as 12 to 25 years.

Santrock (2005) explains how adolescence links the period between childhood and adulthood, and is a time when a transition occurs between these periods. Identity formation is a significant part of development during adolescence, important for developing an individual sense of self prior to entering adulthood (Palisano, Copeland, & Galuppi et al., 2007; Tuffrey, 2013). While adolescence can be a challenging time, it may also be a time of opportunity. While adolescents with a physical disability negotiate the adolescent developmental stage with similar issues to able-bodied adolescents, they additionally may encounter developmental problems which may impede their adulthood (Tuffrey, 2013). Tuffrey (2013) proposes that at this time disabled adolescents experience restricted opportunities and consequently may have difficulty with mastering this developmental stage. This includes limited access to socialisation, clothing due to economic reasons, physical activity participation, and behaviours such as risk taking which is normal during adolescence (Tuffrey, 2013).

Physical activity is defined as any bodily movement requiring the contraction of large skeletal muscle groups that results in a significant expenditure of energy and may be good for mental as well as physical health (U.S. Department of Health and Human Services, 1996; SPARC, 2007). Sport includes a variety of activities performed with “rules and undertaken as part of leisure or competition” (WHO, 2010, p. 53). Physical

activity, “is an umbrella term, encompassing all forms of sport, physical recreation, and incidental movement related to people’s daily lives” (SPARC, 2007, p. 7). For this study physical activity participation was based on the SPARC guidelines. In New Zealand, SPARC recommends adolescents should be participating in “60 minutes or more of moderate to vigorous physical activity” every day of the week and be active in a variety of ways (SPARC, 2007, p. 2).

Adolescents should accumulate up to at least 60 minutes per day of moderate to vigorous activity daily and this can be accumulated in bouts up to 60 minutes (WHO, 2010). The intensity may vary amongst people; however moderate physical activity may include brisk walking and vigorous physical activity viewed as running (WHO, 2011). WHO recommends that wherever possible, adolescents with a disability should also meet these guidelines however, they should consult with their health professional to determine the frequency, intensity and duration (WHO, 2010). However, specific physical activity guidelines for adolescents with a physical disability remain difficult to determine (Kim, 2009). Persons should be provided with an opportunity to participate in physical activity and sport to improve their “muscular strength, their psychological wellbeing and quality of life” to enable them to perform daily activities (WHO, 2003, p. 6).

Participation, for this study, refers to “involvement in a life situation” (Anaby et al., 2013, p. 1589).

Sedentary behaviour: While there are differing definitions of sedentary behaviour, it is recognised that sedentary behaviours are not “all behaviours other than moderate-to-vigorous intensity physical activity (MVPA)” (Gibbs, Hergenroeder, Katzmarzyk, Lee, & Jakicic, 2014). Sedentary behaviours may be defined as any activity while awake measured by an energy expenditure ≤ 1.5 times the metabolic equivalent of sitting down or in a reclined position (Sedentary Behaviour Research Network, 2012). Generally, and for the purpose of this study, this refers to activities such as watching television, computer or video games also referred to as “screen time” and reading and driving while the person is in a sitting, or reclined position (Sedentary Behaviour Research Network, 2012). Australian Government Department of Health (n.d.) guidelines suggest that the “use of electronic media for entertainment (e.g. television, seated electronic games and computer use)” should be limited to no more than two hours a day” p. 1).

Disability measure: The Gross Motor Classification System (GMFCS), which is a five-point scale, is extensively used to measure children and adolescents' gross motor function with 1 = walks without any limitation and the highest V = required to be transported in a manual wheelchair (Palisano, Cameron, Rosenbaum, Walter, & Russell, 2006).

1.4 Originality of the thesis

While previous studies have focused on Pacific adolescents generally, this is the first study to explore the perceptions of physical activity of Pacific adolescent girls with a physical disability including their sedentary behaviours. This study is essential as a baseline for future research on Pacific peoples.

1.5 Choice of study approach

The thesis utilised a mixed methods approach combining the “qualitative and quantitative approaches” to collect and analyse the data (Taskakori & Teddlie, 1998, p. ix). A concurrent triangulation design was adopted to quantitatively measure and qualitatively explore the stories from the participants, cross-checking and authenticating the findings from one method to the other (Plano Clark & Creswell, 2008). The findings from the studies were compared in the discussion chapter, congruent with the concurrent triangulation design (Kroll, Neri & Miller 2005; Creswell et al., 2003; 2014; Plano Clark & Creswell, 2008). The “side-by-side’ comparison approach compared the findings of the results between studies one, two and three (Creswell, 2014).

When drawing conclusions from the qualitative and quantitative data, careful consideration was given to the presentation of the research data including any divergence between the studies (Pope, Mays & Popay, 2007; Creswell et al., 2003; Plano Clark & Creswell, 2008).

1.5.1 Study design/ approach

The study design for study one, the quantitative study, was a cross-sectional observational study which utilised a national survey utilizing the Pacific adolescent data from a larger representative sample of New Zealand secondary school students.

The approach and analysis selected for studies two and three, the qualitative studies, was qualitative descriptive. According to Sandelowski (2000), qualitative descriptive research stays close to the facts and to the actual words. Cultural considerations included

the Pacific data collection method of one-to-one “*talanoa*” (interviews) and guidelines on Pacific Health Research from the Health Research Council of New Zealand. The ‘*talanoa*’ process utilised face-to-face informal interviews allowed the participants to tell their stories, exchange ideas, or relate their experiences (Vaioleti, 2006). The *talanoa* method accommodated a Pacific cultural approach throughout the data collection considering cultural safety, and engaging discussions with the Pacific participants, permitting meaningful role in the research study (Health Research Council of New Zealand (HRC), 2005; Vaioleti, 2006).

Engaging Pacific peoples’ knowledge and expertise throughout this thesis from the initial planning and design to completion, enhanced the thesis, and also contributed to ensuring cultural competence (HRC, 2005). Ethical considerations were observed which included building relationships with the Pacific community, Pacific teachers, Pacific researchers, providers of services to Pacific peoples and Pacific government bodies. Consultation occurred prior to and throughout the research study. In addition, arrangements are in place to disseminate the findings of this research to interested government bodies throughout the community, where appropriate. Furthermore, when accessing the data for study one, the candidate consulted the Pacific researcher overseeing the Pacific data, from University of Auckland, prior to and throughout the analysis.

The initial intention was to survey Pacific adolescents in secondary schools. However, as described in the methodology chapter, after completing the pilot study for the quantitative phase (see Appendix B), and visiting a variety of schools (see Appendix C), it became clear that a similar health survey was already being administered at the same time. It was therefore decided that a separate survey was not necessary and the data for study one was accessed from the Youth2012 survey from the University of Auckland Adolescent Health Research Group. Permission to access the Pacific data was granted after the candidate agreed to follow specific conditions which included the requirement of a third supervisor who was familiar with the data set.

As is also described in the methodology section, the qualitative interviews encompassed the girls and their mothers as opposed to their families as the candidate had initially expected. Interviewing the providers of services, whom we had not anticipated interviewing initially, was an additional component to this study.

1.5.2 Research Aims

Aims

Part one (quantitative study one):

To establish participation levels of Pacific adolescents in physical activity and sedentary (screen time) behaviours, drawing on the Pacific data from the Youth2000 national youth health survey series Youth2012 survey, the research aims were to:

- a) quantify physical activity, active transport (to and from school), and sedentary (screen time) levels in Pacific adolescent girls and boys with and without a physical disability; and
- b) to compare the prevalence of meeting physical activity recommendations, any participation in active transport (to and from school), and compliance with screen-time recommendations between Pacific adolescents with and without a physical disability.

To establish factors that may inhibit or facilitate physical activity in the Pacific adolescent by:

- c) identifying factors that enable or inhibit participation in physical activity, active transport (to and from school) and sedentary (screen time) behaviours including peers, eating behaviours (i.e. eating breakfast, lunch and dinner), school and family environments and the general health of Pacific adolescent boys and girls with a physical disability and those without a physical disability.

Part two (qualitative study two):

The research aims were to gain further insight into the factors that inhibit or facilitate participation in physical activity and sedentary (screen time) behaviours in Pacific adolescent girls with a physical disability by:

- a) exploring the stories of Pacific adolescent girls with a physical disability and their families about their perceptions and experiences of participation and non-participation in physical activity; and
- b) elucidating the views of the providers of services and their perspective on the factors that enable or inhibit access to physical activity for Pacific girls with a physical disability.

1.5.3 Thesis questions

Study one – quantitative study

- a. What are the demographic characteristics of Pacific adolescent boys and girls including age, sex, and ethnicity?
- b. How active are Pacific adolescents with a physical disability compared to those without a physical disability, in terms of frequency of participation and sedentary (screen time) behaviours?
- c. What factors enable or inhibit participation in physical activity for Pacific adolescents including peers, their immediate environments, and their physiological and psychological health and wellbeing.

Hypothesis

It is hypothesized for study one:

That the sample group of adolescents who have a physical disability will participate in less physical activity and active transport (to and from school) compared to those in the group who do not have a physical disability.

The group of adolescents who have a physical disability will report more sedentary (screen time) behaviours than the group of adolescents that do not have a physical disability.

2. Study two and three – qualitative studies

Study two:

- a) What are the factors that enable or inhibit participation in physical activity and sport in Pacific adolescent girls with a physical disability, from their perspective?

Study three:

- b) From a provider of services perspective, what are the factors that enable or inhibit the Pacific adolescent girls with a physical disability, accessing physical activity and sport?

1.5.4 Choice of participants

The participants for study one were Pacific adolescents from the Youth2012 survey. The Youth2012 survey was conducted in 2012 through the Youth2000 national youth health survey series, from the University of Auckland, Adolescent Health Research Group. The 1,201 Pacific adolescents were randomly selected and participated in the survey from the 9,881 Pacific students who were invited to participate (Adolescent Health Research Group, 2012).

The participants for study two were recruited through schools, providers of services and information sessions. The providers of services, who participated in study three, were recruited through a contact at the Ministry of Health, other health providers of services and from information sourced through the internet.

1.5.5 Researching across cultures and cultural competence

The candidate acknowledges, as a *palagi*, it is problematic for a person from one culture to have a full understanding of the beliefs and practices of people from another culture. However the candidate had an appreciation that the knowledge and understanding of the Pacific peoples' beliefs, aspirations, and practices were central to the validity, ethnical correctness, and interpretation of the research findings. Furthermore, to achieve this, it was imperative that this research should consider the ethical standards values and beliefs underpinning the Pacific worldview (Fairbairn-Dunlop, Nanai & Ahio, 2014) and the guiding principles of Pacific research. This included the included the HRC (2005) Guidelines on Pacific Health Research, the Social Policy Evaluation and Research, (SPEaR), and the Good Practice Guidelines 2008: Research and evaluation involving Pacific Peoples (Ministry of Social Development, n.d.). These guidelines include, respect for the Pacific culture, demonstrating cultural competency, reciprocity of ideas between the researcher and Pacific peoples, (HRC, 2005) as central considerations in research with Pacific peoples. The aim was to ensure, wherever possible, that each phase of this study from visioning through to the implementation and evaluation of the research, was coherent with the Pacific cultural principals and philosophies.

Achieving cultural competence requires the ability to “draw on the values, traditions, and customs of other cultural groups and to work with knowledgeable persons from other cultures” in order to meet the individual's needs (MoH, 2008c, p. 3.). To achieve this the candidate attended various meetings with Pacific people, Pacific community groups and Pacific staff and students at Auckland University of Technology and attended community Fonos. This also lead to accomplishing a further understanding of the research problem, and enabled the candidate to build networks in the community.

The consultation process included discussions with 21 schools, 11 providers of services to Pacific peoples with and without a physical disability, a disability dance group, and Pacific representatives from the Ministry of Education and the Ministry of Health, National sporting bodies and Pacific researchers from University of Auckland, Otago University, and Auckland University of Technology. In addition, the candidate attended various Pacific research forums, and the Pacific research Fono in Dunedin where student researchers presented their research. While this increased the candidate's insight into culturally safe research protocols that were relevant to this research, it was challenging

researching as an outsider. These feelings were alleviated through the kind-heartedness and compassion from the Pacific people the candidate encountered on this journey.

1.5.6 Biases/presuppositions

Prior to commencing this study, the candidate was conscious of the importance of being aware of their own standpoint including understanding, philosophies, and assumptions pertaining to this research study, including the candidate's bias as a researcher. The candidate entered this study with the candidate's own recollection of the candidate's adolescent years, as a mother of three, and as a lecturer in adolescent developmental psychology. Amongst the candidate's qualifications, the candidate holds a diploma in child mental health and has undertaken papers specific to developmental psychology. It is the candidate's belief that they have an appreciation of some of the problems adolescents may encounter, were mindful of the current child/adolescent developmental theories, which explain adolescent behaviour.

While it is acknowledged that habitual participation in some physical activities may be problematic due to time constraints and financial burden, the candidate believes that participation in physical activity should be prioritised. While physical activity may place an extra financial burden on families the candidate's belief was there are other forms, such as walking, swimming, or running, that will impose only a limited time and financial burden on the average family. Furthermore, it is the candidate's belief that physical activity should be available to all adolescents and if the Pacific adolescent girls with a physical disability are not partaking regularly or their physical activity patterns are declining, this is a critical time to intervene. The specific reasons for the reduction of physical activity during adolescence, particularly for girls, are varied and complex and not fully understood and it was the candidate's assumption that it is imperative that these factors be explored. Participation in physical activity can encourage life-long skills and has the added benefit of social interaction which is important to the adolescent.

The candidate is a strong advocate for being active and as an adolescent participated in a variety of physical activities. This exposure to a variety of physical activities earlier in life has given the candidate the confidence to engage in, and enjoy, a wide range of physical activities today. The candidate presently enjoys participating in physical activity because of the known health benefits as well as the challenges and the social interaction these activities provide.

The candidate's original assumption was, and remains unaltered, that it is difficult to study Pacific female adolescent with a physical disability participating in physical activity utilizing qualitative research alone. For these reasons alone, the candidate therefore undertook further training in quantitative research enabling the use a mixed methods approach.

Furthermore, it is the candidate's belief that it is imperative for researchers to hear the participants' voice from their experience. While quantitative research provides an overall statistical analysis and gives an overall depiction, it is the participants' voices that are of the upmost importance, in particular those from the adolescent girls. While the thesis commences with the quantitative study one section, by no means is this study prioritised over the qualitative research. Throughout the study, the candidate has recorded notes which have further helped the candidate to identify any biases. The candidate's awareness of the experiences of Pacific female adolescents with a physical disability participating in physical activity has been expanded and consequently their perceptions and understandings have changed. The candidate has come to appreciate the complexity and urgency of this research gap and has a sense of responsibility to instigate changes for the adolescents themselves by giving a voice to their stories.

At times it was difficult to remain impartial as a researcher especially hearing some of the adolescents' stories. While the candidate felt privileged that the participants were comfortable with the candidate and were willing to share and trust the candidate with this knowledge, the Pacific research assistant too made this plausible. The candidate was drawn to this thesis topic not only because of previous research activities but also because of her child's experience of missing out on a hoped-for sporting career due to physical injury. The candidate had a sense of responsibility to capture the participants' experiences, and communicate these to the relevant governing bodies in the hope that change can be made for the participants themselves. At this point, the candidate has committed themselves to write at least two reports to the Ministry of Health along with academic publications.

1.5.7 Thesis Organisation

This thesis consists of seven chapters described as follows:

Chapter One (current chapter) has introduced the focus of the research and included the aim of the study, the background and rationale for the thesis, and considered Pacific research, ethical considerations, and cross-cultural implications for undertaking Pacific research. Chapter Two is the review of the international literature around adolescents and Pacific adolescents' experience of participation in physical activity. It includes benefits and barriers to physical activity and behaviours in Pacific adolescent girls with a physical disability. Chapter Three is a review of physical activity interventions and programmes for adolescents with a physical disability. The aim of this review is to describe the impact of the interventions or programmes on physiological and psychological wellbeing and physical activity participation from previous research. Increasing physical activity in this population has historically proved to be problematic; therefore the inclusion of this review highlights and provides an understanding of the factors that influence adherence. Chapter Four outlines the methodology used in this thesis discussing the mixed methods approach alongside the theoretical underpinnings. Chapters Five, Six, and Seven present the findings from the quantitative and qualitative studies. Lastly, Chapter Eight discusses the findings, conclusions, limitations of the study and recommendations for future research. The overall organisation of the chapters from this thesis is illustrated in Figure 1.1.

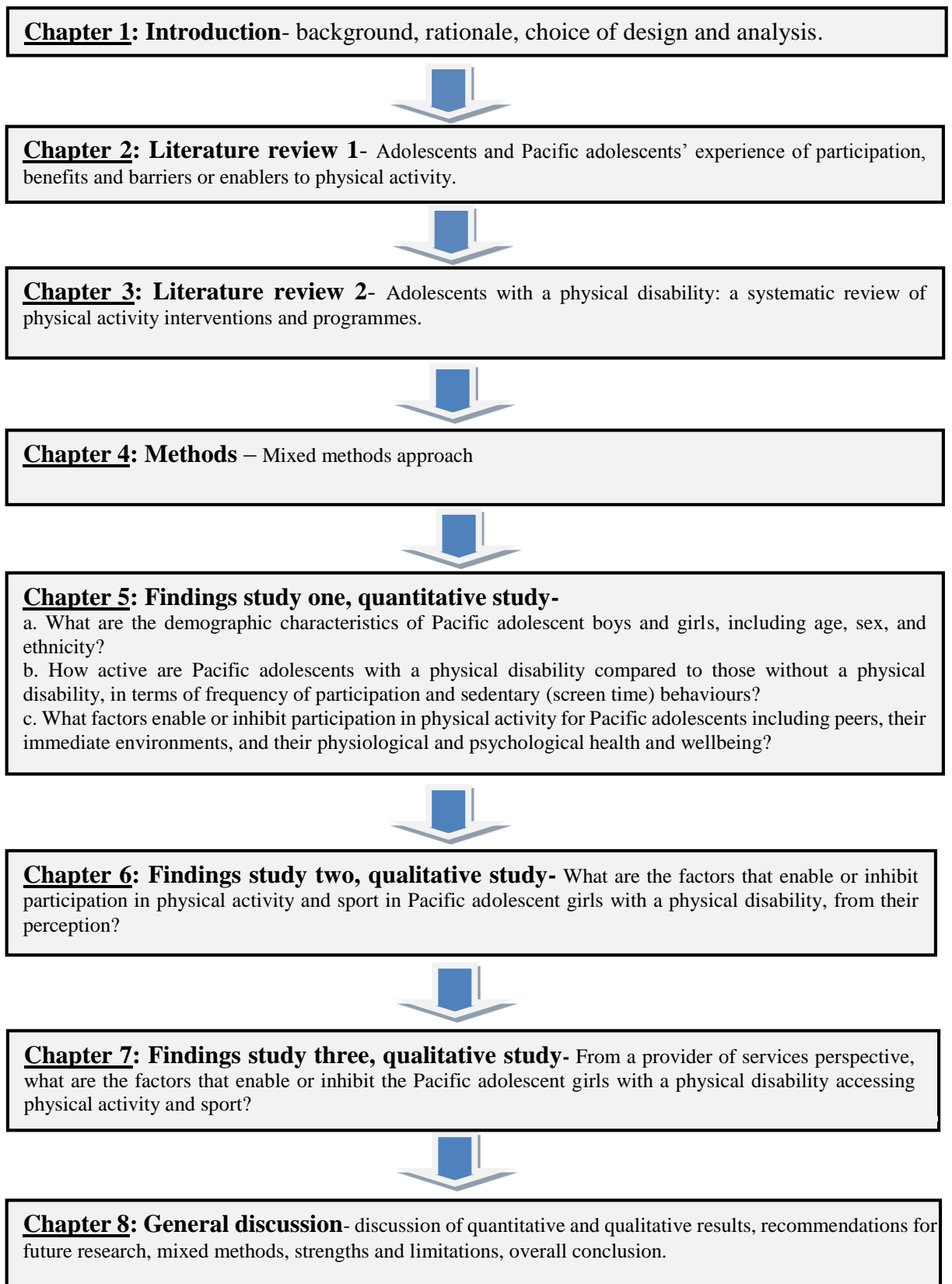


Figure 1-1: The Organisation of the Thesis by Chapters

Chapter 2: Literature Review

A review of physical activity participation, benefits, barriers, and facilitators for adolescents and Pacific females with a physical disability.

The aim of this study is to gain an in-depth understanding, by exploring and conceptualizing factors that influence, enable, or inhibit the Pacific adolescent girl participation in physical activity, who experiences a physical disability. The literature review aimed to explore and review the knowledge underpinning this research while considering the purpose, aims, and findings of this study. While priority was given to recent evidence-based studies and literature specific to physical activity among Pacific adolescent girls with a physical disability, due to the scarcity of literature in this area the search was extended. Primarily, the literature review is based on journal articles, reports and reviews as these provided the most up-to-date and relevant literature.

As the literature specific to Pacific peoples is likely to be influenced by cultural perceptions and gender in regard to both disability and physical activity, these issues were considered paramount and consequently were included in the review. In addition, the literature referring to adolescents aged between 12 and 25 was found to use the word adolescent interchangeably with children, youth, and young people, and hence there is reference to these different terms throughout the literature review.

This chapter commences with the literature review questions relevant to the aims and findings of the studies, followed by the review strategy. Congruent with the research questions, the literature review is divided into subsections on: participation, benefits, and models influencing participation and barriers to physical activity in relation to adolescents who experience a physical disability. This section concludes with literature relevant to Pacific adolescents and female Pacific adolescents with a physical disability, incorporating perspectives on Pacific views in relation to the family, disability, and physical activity.

2.1 Literature review questions

This literature review aimed to present a synthesis of recent literature to address the following questions underpinning the studies aims and findings:

- Are adolescents who experience a physical disability participating in physical activity?
- What are the benefits of participating in physical activity for adolescents who experience a physical disability?
- What are the facilitators and barriers to, participation in physical activity for adolescents with a physical disability?
- Does the recent literature relating to Pacific youth residing in New Zealand and, more specifically the female Pacific adolescent with a physical disability, show they are participating in physical activity?
- What are the Pacific people's attitudes to physical activity, disability, and gender roles?

2.2 Review strategy

Initially the search was commenced through AUT University databases and then through wider sources such as Google Scholar. More specifically, the databases were primarily searched through EBSCO Health which included Biomedical Reference Collection, CINAHL, Health Business Elite, Health Source- Consumer and Nursing, MEDLINE, Psychology and Behavioural Sciences, and SPORT Discus.

The key reports included in this review were sourced through general government bodies and public databases and included Statistics New Zealand, World Health Organisation, Statistics New Zealand and the Ministry of Pacific Island Affairs, Sport and Recreation (SPARC), Sport N.Z., U.S. Department of Health and Human Services, UNICEF, BMF, United Nations Programme Development: Pacific Centre, Auckland District Health Board and nine reports from the Ministry of Health. To ensure the information was the most recent and relevant, five government organisations were emailed requesting clarification to ensure this information was the most pertinent to the research study. While there are varying government initiatives aimed to increase access to services and physical activity participation, information on addressing stigma challenges relevant to Pacific people and people with disabilities was not available, despite requests for this material. Initially the review was limited to studies from 2004 to

2014 and then extended to studies from 1999 to 2014. The following terms were generally used, however, variations were made in the search, specific to the research question underpinning the search:

- Pacific; Pacific Island; Pacifica; Pasifika; Samoan; Tongan
- adolescen*, youth*, teen*, young adult*
- disab*, cerebral palsy, multiple sclerosis, parapleg,
- physic* W/5 activ*, sport*, exercise, program*, intervention, rehabilitation.
- participation, part*, sedentary, benefits, benefi*, barriers, facilitators, girls, females, women

The inclusion criteria included studies being in the English language and the focus of the research being primarily on adolescents who experience a physical disability and physical activity. Five studies on barriers and benefits to physical activity were included although older aged participants were in the research studies, because the majority of the sample group were adolescents. The review included any research studies which focused on physical activity in adolescents with a physical disability through qualitative or quantitative study designs and met the criteria as outlined in the research questions. Studies were excluded if the participants were not predominantly adolescents. Moreover, studies were also excluded if the objective of the research did not include, or was not associated with, physical activity, or if the adolescents had an intellectual disability.

All search results were imported into Endnote directly through the databases for the research articles, whereas the reports were incorporated manually. Separate searches identified over 900 articles relevant to each specific research question, and after removing the duplicates and considering the inclusion criteria, 30 full-text articles were included. Initially, titles of the studies were reviewed, followed by abstracts and, finally, full articles were read to assess suitability. While the research studies were deemed suitable for review as they were sourced from academic databases, the search did not adhere to any specific criteria for overall quality and reliability. The decision was made not to use critiquing tools to assess the quality and reliability of the selected studies due to the varied and inconsistent research designs and the inclusion of the reports. However, the literature was all sourced through reputable databases. Whereas the research studies provided evidence specific to disability and adolescents, the reports provided the most contemporary information and statistical data on Pacific adolescents with a physical disability.

Data extracted from this review is summarised in Tables 2.1-2.3 relative to research studies on participation in physical activity including sedentary behaviours, benefits to physical activity and barriers to physical activity participation.

2.3 Results/discussion

2.3.1 Participation in physical activity relative to experiencing a physical disability

Participation in physical activity for young people with disabilities should be given the highest priority (President's Council on Physical Fitness and Sports, 2008). Adolescents who experience a disability may be more prone to growing through to adulthood without regularly participating in physical activity or sport than able-bodied adolescents (King et al., 2003). Women with a disability may experience further discrimination, due to both their gender and being disabled, when attempting to participate in competitive sports (Olenik, et al., 1995) as illustrated by the observation that "in 2005, it was estimated that women make up only about one-third of athletes with disabilities in international competitions" (International Platform on Sport & Development, n.d., p. 1). This section considers the literature on both of these groups.

Adolescents who experience a physical disability participate in substantially less physical activity in comparison to their typically developing peers (Engel-Yeger, Jarus, Anaby, & Law, 2009; Maher et al., 2007; Nooijen, Slaman, Stam, Roebroek, & Berg-Emons, 2014; Rimmer and Rowland 2008). These lower levels of participation may be attributed to decreasing fitness levels including aerobic capacity and, furthermore, to decreasing muscular strength and endurance (Van Eck et al., 2008). As a consequence, this reduced participation may put these adolescents at risk for functional dependence and secondary health complications including heart and respiratory conditions, obesity and diabetes, which may increase as they age (Van Eck et. al., 2008; Fong, et al., 2014; Maher, Kernot, & Olds, & Lane, 2010).

Participation in physical activity by adolescents with a physical disability maybe lower because they were simply not interested in participating or that they were not given the opportunity to participate (Palisano et al., 2007). On this second point, Packer, Briffa, Downs, Ciccarelli, and Passmore, (2006), who reported "only 50% of children/adolescents with a disability performed sufficient physical activity to meet the Australian guidelines" (p. vi), found that organisations did not have the knowledge or the

know-how to include physically disabled children or adolescents into physical activity (Packer, et al., 2006).

Nevertheless, empirical evidence suggests that adolescents with a physical disability enjoy participating in physical activity which may facilitate involvement (Longo, Badia, & Orgaz, 2013; Palisano et al., 2007; Bedel, 2013; Fong et al., 2014). Furthermore, (Engel-Yeger et al., 2009) suggested that the enjoyment factor for youth with a physical disability is comparable to youth without a physical disability despite the limitations they face due to their disability.

However, when adolescents with a physical disability do participate, the physical activities in comparison to able-bodied adolescents are reported as less diverse and intense (Van Eck et al., 2008). In contrast to their able-bodied peers, they participate primarily for social and recreational reasons (Shikako-Thomas et al., 2012). Packer et al. (2006) also found in their study that the majority of physical activity in which disabled students participated was based at home and that any activities that were ‘organised’ usually took place at school. The specific home-based activities included, playing games that included using balls inside their home property and walks with pets (Packer, 2006). Van Eck et al. (2008) found activities such as horse riding, swimming and soccer were common, but partaking in sports teams and cycling were not activities adolescents with a physical disability participated in commonly.

Packer et al. (2006) found the least active group included the adolescent girls who experienced a physical disability in comparison to the able-bodied adolescents. Participation in physical activity was limited by the severity of the disability the greater the impairment, the more the restrictions (Schenker, Coster, & Parush, 2005). These findings were consistent with Verschuren et al. (2007) who found physical activity improved the fitness levels of adolescents with a physical disability and also their quality of lives generally, but priority was often given to assisting the adolescent to walk and perform daily tasks. Similarly, Maher et al. (2007) suggested that physical activity participation was related to the level of gross motor functioning and found that physical activity decreased with the adolescent’s age. This view is shared by Palisano et al., (2011) who also reported that the level of participation was directly attributed to the GMFCS level, finding that decreased participation was linked to the greater severity of the disability. However, in contrast to these studies, Van Eck et al. (2008) noted that the severity of the physical disability did not impact on physical activity participation.

The reasons why adolescent girls with a physical disability like to participate in physical activity have also been studied. Maher et al., (2007) suggested they have a preference for more social activities. Thus, in addition to the physiological benefits of physical activity, girls in particular, benefitted from the social aspects of physical activity provided to them (Engel-Yeger et al., 2009). Furthermore, Shikako-Thomas et al. (2012), reported that the girls in their study had a preference for activities which included self-improvement.

As the research reviewed above has shown, girls with a physical disability participate in a narrower variety of physical activities. However, they also endure a “triple jeopardy” if they belong to a minority culture, due to attitudes to their gender, their disability and their culture (Schreuer, Sachs, & Rosenblum, 2014).

Saebu and Sorenson (2011) explain that adolescents who acquire their disability later in life may already have experienced physical activity and, as a consequence, may partake more easily. Their results suggest that the adolescents with an acquired physical ability were participating more frequently than the adolescents with congenital disability (Saebu & Sorenson, 2011).

Moreover, protective parents may impede participation for the adolescent with a physical disability (Saebu & Sorenson, 2011). Palisano et al., (2011) also suggest that the physically disabled adolescents themselves should receive instruction on how to seek help and assistance while performing the physical activities, which may in turn improve participation. Shikako-Thomas et al., (2013) report that participation for the adolescent with a physical disability is attributed to intrinsic motivation and extrinsic factors such as family, and environment. Similarly, Saebu and Sorenson (2011) also found intrinsic motivation on the part of the adolescent with a physical disability was a precursor to participation.

Maher et al., (2010) attempted to increase physical activity participation for the adolescent with a physical disability through internet programmes. However they reported that they could not achieve the appropriate sample size to draw any conclusive results. Maher et al., (2010) suggest that efforts to increase participation may possibly involve reducing barriers such as travel for the adolescent with a physical disability. Increasing participation through an internet based activity which can be performed by the

adolescent in their home may possibly be advantageous in reducing a number of the obstacles to participation (Maher et al., 2010).

Young adults with a physical disability engaged in high sedentary behaviours including television and computer use, but these were consistent with other young adults who did not experience a disability (Longmuir & Bar-Or, 2000; Mahler et al., 2007). However, they reported that the adolescents with a physical disability participated in less structured and lower intensity activity compared to the adolescents who did not have a physical disability. Maher et al., (2007) further discussed how there was no appropriate instruments to objectively measure and report sedentary behaviours. Maher, Kernot, and Olds' (2011) self-report identified that in comparison to able-bodied adolescents, the adolescents with CP engaged in lower physical activity behaviours. They also noted that there were little differences between screen time or sleeping behaviours however the disabled adolescents spent more sedentary time such as sitting and other sedentary activities (Maher et al., 2011).

Generally the focus has traditionally emphasised the importance of meeting the minimum requirements of meeting the physical activity guidelines to ensure optimal health and wellbeing. However, more recently, it is emerging that sedentary behaviour is of equal importance. It is not enough to meet the minimum physical activity guidelines (Taylor, 2014). If individuals have high sedentary behaviours they may be susceptible to detrimental health effects such as experiencing the adverse impact on the cardiovascular and metabolic systems (Taylor, 2014). Sedentary behaviour can be classified as low energy expenditure, for example as in sitting or lying, and as independent of meeting the physical activity guidelines (Taylor, 2014). Studies are suggesting sedentary behaviours in adolescents with a physical disability are too high (Maher et al., 2010; Nooijen et al., 2014; Shkedy Rabani et al., 2014). Moreover, adolescents with a physical disability may be sedentary for up to 82% to 96% of the day and are not meeting the physical activity guidelines; which therefore places them at significant risk of developing long-term health problems (Taylor, 2014). Whereas it was the norm for studies to focus on increasing physical activity behaviours, it has recently become evident that sedentary behaviours raise their own distinct or separate health concern.

The Australian Government has endorsed the sedentary guidelines that adolescents should spend no more than 2 hours per day in sedentary behaviours such as using electronic media (Australian Government Department of Health, n.d.).

Additionally, the use of objective measures such as the accelerometer to measure physical activity or sedentary behaviours has proved challenging for researchers with several limitations reported as discussed in the following. Maher et al. (2010) described the use of the NL-1000 pedometer in this population but reported the target sample size was not achieved after a considerable effort, therefore under-powering the study. Maher et al. (2010) also reported that the placement of the pedometer on the hip, did not record measurement for the participants who utilised wheelchairs.

Moreover, Shkedy Rabani et al., (2014) employed the ActivPAL3 triaxial accelerometer-based activity monitor with placement on the participants' thigh, reporting that they were unable to measure participants in the swimming pool or if they were in a wheelchair or GMFCS level IV. Similarly, Nooijen et al. (2014) reported in their study the lack of inclusion of participants in a wheelchair or swimming while using their body-fixed accelerometer (Freescale MMA7260Q, Denver, US). Young adults with CP are less physically active and spend more time in sedentary behaviours compared to able-bodied adolescents placing them at increased risk for health difficulties as a consequence (Shkedy Rabani et al., 2014; Nooijen et al., 2014).

Table 2-1: Participation in Physical Activity

Source	Participants; mean age ± SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Engel-Yeger et al., 2009)	22 with CP 30 Typically developing adolescents (TD) 12-16 years 9 males; 21 females	Cross-sectional	To investigate the effects of physical activity participation on youth with CP.	CAPE	Typically developing youth participate in broader activities more frequently. Enjoyment levels were found to be the highest in girls with CP in comparison to all groups.
(Longo et al., 2013)	199 with CP mean age 12.11 years 113 males; 86 females	Cross-sectional	Examine the patterns and predictors of participation in leisure activities outside of school of Spanish children and adolescents with CP.	CAPE	Low variety and intensity of participation and high levels of enjoyment were reported. Participation in leisure activities outside of school was determined more by adolescent and environmental factors than by family ones.
(Maher et al., 2010)	41 adolescents with CP mean age 13y 7mo, 26 males; 15 females;	RCT Assessments at baseline, 10, 20 weeks.	Observe efficacy of an 8-week internet-based, lifestyle physical-activity intervention for adolescents with CP.	Accelerometers and self-report Multimedia Activity Recall for Children and Adolescents (MARCA) functional capacity (6-min walk test).	A positive short-term improvement was reported in participation. No statistically significant differences were found. An internet-based programmes may be an alternative activity programme as they are home-based and therefore does not require travel.
(Maher et al., 2011)	41 adolescents with CP and 82 TD adolescents matched 14 years	Cohort design	To investigate the activity patterns of adolescents with CP and compare them with those of (TD) adolescents.	MARCA on two occasions	Adolescents with CP spent less time in physical activity (91 vs. 147 min/day). In particular, its sub-components of active transport (to and from school) (28 vs. 52 min/day, and team sports (25 vs. 39 min/day). No differences were found in sleeping, screen time, or time spent on school activities.

Source	Participants; mean age ± SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Nooijen et al., 2014)	48 ambulatory persons with CP, 32 able-bodied controls 16 to 24 years 23 males; 25 females	Longitudinal; multi-centre RCT	To measure physical behaviours, which included physical activity and sedentary behaviour, of ambulatory adolescents with (CP).	Accelerometer; total duration, intensity type of physical activity were assessed and sedentary time was determined (lying and sitting).	Adolescents with CP spent nearly 9% per day on physical activity and nearly 80% on sedentary behaviours in comparison to the control group of able bodied adolescents. They also participated in less physical activity and this group is at risk for future health problems.
(Packer et al., 2006)	Three age groups (5 – 7, 10 – 12 and 14 – 16 years) 314 in total 39 males; 36 females experienced physical disabilities	Cross-sectional, self-report	To investigate the type, frequency and duration of physical and sedentary activity by children and adolescents with a disability	Cross-sectional, self-report questionnaire The Physical Activity study of Children and Adolescents with a Disability (PASCAD)	Children and adolescents with a disability participated in less physical activity than children and adolescents without a disability and are not meeting the Australian physical activity guideline increasing the risk for poorer long term health. They participated in a narrower range of activities with very low participation rate in community-based team/group activities.
(Schreuer, et al., 2014)	294 children 10-16 yrs 81 with and 213 TD Gender = equal number in groups	Cross-sectional	To compare varied dimensions of participation in leisure activities amongst school-aged adolescents	Children Leisure Activity Scale (CLASS)	Participants with disabilities, and mostly girls, were reported to participate in less variety of activities that involved fewer social activities. The severity of the disability was related to less participation. The participants preferred to participate in similar activities in both groups.
(Shikako-Thomas, et al., 2013)	175 adolescents with CP 12–20 yrs 110 male; 65 female	Cross-sectional Design	Examine the level of participation and enjoyment in leisure activities amongst adolescents with CP	CAPE	Adolescents participated in social and recreational activities more frequently; self-improvement and skill-based activities were less common. Participation decreases with age. Social activities were enjoyed the most. Girls preferred self-improvement activities. Engagement in segregated schools resulted in general lower diversity and participation. Engaging in activities with friends and of their own choosing was important.

Source	Participants; mean age ± SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Shikako-Thomas, et al., 2013)	187 adolescents with CP 12–19 yrs 110 male; 75 female	Cross-sectional	Estimate the possible influence of adolescent characteristics considering environmental issues as factors in participation	Main measure was the CAPE, Vineland Adaptive Behaviour Scale	Engagement in a variety of different leisure activities are significant for adolescents' development and wellbeing. Preferences for activities was a strong predictor for participation while self-perception and motivation showed some importance.
(Shkedy Rabani et al., 2014)	222 participants Adolescents with CP (132 males, 90 females; mean age 16y 9mo SD 2y, range 13y 4mo–22y).	Measurements over four days.	To examine activity duration and physical activity patterns.	ActivPAL3 monitors. Time spent in sedentary, standing, and walking activities, and frequency of walking steps and transitions, were analysed for each GMFCS level.	Adolescents and young adults with CP display limited motor function and gait efficiency, and are not participating in physical activity to the same extent the adolescents who are developing typically are. Participants in educational facilities exhibited less sedentary behaviour. Regular and intensive physical activity is directly associated to physical fitness, improved quality of life, and psychological functioning.
(Van Eck et al., 2008)	Parents of 72 adolescents with CP 12-16 years. 46 males; 26 females	Cross-sectional analysis as part of a 3 year longitudinal cohort study	Describe physical activity in adolescents with CP and to investigate associated factors.	Questionnaires completed by parents MET values were used to describe the physical activity levels.	Older adolescents and particularly females were not physically active according to the Dutch norm. Swimming, soccer, and horseback riding were common activities.

2.3.2 Benefits to participation

Currently, the world is experiencing a notable surge in non-communicable diseases which include “cardiovascular diseases, cancer, diabetes and chronic respiratory diseases”, attributed to unhealthy lifestyles including inactivity (WHO, 2003, p. 1). Increasing physical activity is a worthwhile, maintainable crusade to confront these problems (WHO, 2003). Meeting the physical activity guidelines can directly or indirectly provide numerous health benefits including having a positive impact on “high blood pressure, high cholesterol, reducing smoking, stress, preventing cardiovascular disease, cancers, type 2 diabetes, glucose metabolism, obesity, musculoskeletal health and preventing osteoporosis ” (WHO, 2003, p. 3). In particular, adolescents with a physical disability may also specifically benefit from “maintenance of normal muscle strength, flexibility, joint structure, and function and the reduction of the functional decline often associated with disabling conditions” (Murphy & Carbone, 2008, p. 1057). This is consistent with findings from Morris (2008) who explains that research on youth with a physical disability has found physical activity may improve physiological wellbeing.

Female adolescents with a disability may have a lower self-esteem and physical activity may encourage building peer relationships, leading to a possible increase in self-esteem associated with these friendships (Murphy & Carbone, 2008). As these adolescent girls with a physical disability may also experience have a number of conditions such as impairments of their nervous and muscular tissue, they may in fact gain more beneficial effects than the non-disabled adolescent. This may be due to the fact that physical activity may improve their way of life through increasing the muscle mass so critical to the disabled adolescents’ way of life. This view is supported by Murphy and Carbone (2008) who explain how participating in physical activity regularly may help improve muscular tissue and joints for this population. Furthermore, SPARC (2005) noted a variety of benefits for disabled children engaging in physical activity and sport, from improving psychological wellbeing to improved social interaction and a possible reduction in hospital admission.

Due to lack of opportunity, however, disabled people may not be able to participate in physical activity and sport and, as a consequence, may not be gaining the same positive health benefits as their non-disabled peers (SPARC, 2005). There is growing evidence from the literature that physical activity and sport is important for the general

psychological and physiological health of all individuals, including those who experience a physical disability (Maher et al., 2007; Sirand & Barr-Anderson, 2008; WHO, 2010). Physical activity participation above the recommended minimum guidelines provides additional health benefits. Meeting the minimum guidelines ensures cardio-respiratory and muscular fitness, bone health and cardiovascular and metabolic health biomarkers for youth (WHO, 2011). Psychological benefits for adolescents include lower depression, anxiety and improved social development, self-esteem and are more inclined to adopt health behaviours (WHO, 2010).

All adolescents including those who experience a physical disability should participate in sports, but the involvement of those with disabilities may be impeded (Patel & Greydanus, 2008). Engagement in diverse leisure activities may result in a variety of health and wellbeing benefits to the adolescent with a physical disability (Shikako-Thomas et al., 2013). This view is shared by Damiano (2006) who suggests that physical activity generally improves the mental and physical health of people with a physical disability and it may also improve their injured nervous tissue. In addition, increasing physical activity during childhood or adolescence may help these individuals develop physical activity engagement patterns which they can continue through to adulthood (Verschuren, et al., 2007). This is important because non-engagement in physical activity may lead to further health problems associated with experiencing a physical disability such as “chronic pain, fatigue and osteoporosis” (Fowler et al., 2007, p.1495).

The studies outlined in Table 2.2 further emphasised a range of benefits to participation and highlighted some possible detrimental factors, as discussed below. The evidence suggests that peer relationships have the potential to provide the societal support so valuable to the growing adolescent and for meeting their psychosocial needs (Stewart, 2012). Adolescents who perceive their athletic abilities as commendable tend to have strong feelings of self-worth and develop beneficial social relationships associated with engaging in physical activity (Shapiro & Martin, 2014). Conversely adolescents who perceive their athletic abilities as inadequate commonly experience detrimental effects on their psychological wellbeing and social relationships (Shapiro & Martin, 2014). Similarly, Scarpa, (2011) reports on the positive association of regular sports participation and higher levels of self-concept on young adults with a physical disability. Knapp, Devine, Dawson, and Piatt, (2013), investigated the quality of life, physical activity participation, and the social experience for children and teenagers who experience a physical disability while attending a camp. The participants engaged in a variety of

activities including recreational activities and the results suggested that the camp provided the participants with valuable social experiences not normally available to them in their community (Knapp et al., 2013).

Thomas and Bedini (2011) reported that the girls in their study benefited from a range of benefits while participating in physical activity which included physical, social, and emotional factors. More specifically, they reported that participation in physical activity provided more self-confidence and social connections; one girl reported that it gave her a chance to view herself as an athlete in her own way. Hutzler, Chacham-Guber and Reiter's (2012) study found a positive association on quality of life (QOL) and perceived social competence in an environment where the adolescent was participating primarily in wheelchair basketball with peers with a similar disability and capabilities. They refer to this modality as reverse integration whereby the majority of the adolescents participating have a physical disability and the able-bodied adolescents are the minority (Hutzler et al, 2012). However, the particular measure they used in their QOL life measurement survey was designed for persons with a developmental disability and they did report a significant group effect. Swimming was found to be advantageous in adolescents with a physical disability, producing improvements in muscle tone, increasing motor function, walking efficiency, general functional abilities and quality of life (Gutiérrez Sanmartín, Caus, Pertegaz, and Pérez, 2011).

Moreover, obesity is currently a worldwide health problem often connected to inadequate physical activity in children and adolescents with and without physical disabilities. Yamaki, Rimmer, Lowry, and Vogel (2011) investigated the incidence of obesity-related chronic conditions amongst adolescents with a physical disability finding results similar to findings with able-bodied adolescents. Adolescents with a physical disability are at greater risk of developing chronic health conditions as a direct result of their obesity, some of which include asthma, diabetes, mobility problems, high blood pressure and psychological problems (Yamkai et al., 2011; Murphy & Carbone, 2008). A range of chronic and secondary health conditions are attributed to obesity in physically disabled adolescents, and furthermore, this population is often bullied and defamed (Neter et al., 2011). Keeton and Kennedy (2009) explain how it is imperative to increase physical activity in adolescents who have a physical disability in order to manage obesity. Adolescents with physical disabilities generally demonstrated lower levels of activity participation and a higher BMI than their healthy counterparts (Fong et al., 2014). Fong et al., (2014) found that those who enjoyed physical activity were likely to have a healthier

BMI and that the incidence of obesity was higher in the physical disabled adolescents. Furthermore, adolescents who experience a physical disability are estimated to be 2-3 times more obese than able-bodied children, which is of concern (WHO, n.d.). Adolescents generally, demonstrated a limited knowledge of the benefits of physical activity, particularly in relation to the psychosocial benefits such as stress reduction (McPherson & Lindsey, 2012).

Table 2-2 Benefits to Physical Activity

Source	Participants; mean age \pm SD or range (year)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Abdullah et al., 2014)	25 students with CP 10-46 years 11 males; 14 females	Cross-sectional and fitness testing	Assess physical fitness performance among students with CP based on the selected fitness components.	Physical fitness tests such as sit-and-reach test, handgrip strength test, dumbbell press test, and arm ergometer.	Participants showed a noteworthy physiological improvements on the dumbbell press. Some types of CP showed an energy demand while participating even at rest, in comparison to the other participants.
(Dimitrijević et al., 2012)	27 with CP 5 -14 years 17 males; 10 females Fourteen children completed an aquatic intervention (EG), and 13 children served as controls (CG).	6-week aquatic intervention	Examine the effects of an aquatic intervention on participation to include gross motor function and aquatic skills of children with CP.	Gross Motor Function Measure (GMFM) for motor function and the Water Orientation Test Alyn 2 (WOTA 2) for aquatic skills assessment.	Participation in water skills showed significant improvements in GMF.
(Fong, et al., 2014)	39 young persons with physical disabilities (mean age \pm 18.79 \pm 1.99 years) and 70 healthy individuals (mean age \pm standard deviation: 18.64 \pm 0.74 years) 23 males; 16 female	Cross-sectional	Compare body mass index (BMI) and patterns of out-of school activity participation in young people with and without physical disabilities. Examine the relationship between BMI and the activity participation patterns amongst young people with Physical disabilities.	(CAPE) scale. Body height/ BMI	Young people with physical disabilities had lower levels of activity participation and a higher BMI than their healthy equals. If the young people enjoyed the activity this was an important factor in determining a healthy BMI.
(Hutzler et al., 2012)	90 participants with a physical disability 12-25 years 57 males; 33 females	A prospective cohort study	Observe the influence of partaking in diverse sports on quality of life (QOL) and their social competency.	(COSPA), recreational separate physical activity (RESPA), reverse-integrated basketball activity (RIBA), and no physical activity (NOPA). QOL and PSC	Outcomes did not support a significant advantage of participation in all three physical activity conditions, but did reveal significant benefits of the unique programme conditions exercised in the RIBA group.

Source	Participants; mean age \pm SD or range (year)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Knapp et al., 2013)	51 participants with physical disabilities including cerebral palsy, muscular dystrophy, spina bifida 10-18years with more than half being between 15-18 years (n = 27). Campers (n = 20 male; n = 31 females)	Cross-sectional and Qualitative	Assess opinions of social acceptance (SA) and quality of life (QOL) between youth with disabilities participating in a weeklong residential camp with similar peers.	Social Acceptance Scale/PedsQL General Wellbeing Scale /Qualitative interviews	Qualitative outcomes three months post camp reported social impact of the camp experience. This positive experience did not transfer to participation in physical activity in the local community.
(McPherson & Lindsay, 2012)	14 with a range of congenital and acquired conditions 8-13 years 6 boys; 8 girls	Pilot study	How children with disabilities perceive health and wellbeing.	Qualitative focus groups	Children had some basic understanding of healthy nutrition; it was not easily translated to their choice of food sources. Children may need assistance to engage in rewarding physical activities within the constraints of their disability.
(Scarpa, 2011)	1149 individuals with a physical disability 13 – 28 years 578 boys; 571 girls	Cross-sectional	To investigate the role of physical activity and sports participation on physical self-concept and self-esteem in adolescents and young adults with and without physical disability.	Physical Self-Description Questionnaire PSDQ	Participation in physical activity/sport showed a positive effect on self-concept and self-esteem.
(Shapiro & Martin, 2014)	46 athletes with physical Disabilities 12-21 years 35 males, 11 females	Cross-sectional	To determine if the quality of friendships, physical self-perceptions and general self-worth predicted close friendship, loneliness and social acceptance among youth athletes with physical disabilities	Quality Scale (SFQS), Loneliness Rating Scale, and Self-Perception Profile for Adolescents (SPPA).	Participation in physical activity showed a connection between perceived self-worth and athletic competence.
(Thomas & Bedini, 2011)	4 with physical disabilities. 2x 16 year old girls; 1 x 10 year old girl; 1 x 19 year old girl	Qualitative	Share the personal experiences of four girls with disabilities before and after their involvement with Bridge II Sports.	Qualitative interviews	The inclusion of children with disabilities in physical activity is critical. This benefits the community, medical, educational systems.

2.3.3 Barriers/ facilitators to physical activity

Addressing the needs of children and adolescents with physical disability requirements while partaking in physical activity is an enormous challenge for health professionals (Menear & Davis, 2007). The studies outlined in Table 2.3 further highlight a range of barriers to physical activity participation. Barriers to physical activity may include “equipment, class size, curriculum, and the varied ability” of the disabled adolescent (Menear & Davis, 2007).

Rimmer (2006) and Rimmer and Rowland (2008) found youth with a physical disability not only faced a variety of barriers such as transport and access to equipment but may also experience muscular, vision or balancing problems. Founded on his own research, Rimmer (2006) proposed a framework for health professionals to identify factors that may influence physical activity participation. The International Classification of Functioning, Disability, and Health (ICF) proposes a classification system including multiple factors in two parts. Part one relates to body function or structure and activities and participation, while part two consists of contextual factors, including personal and environmental (Rimmer, 2006). This classification scheme may enable health professionals to better understand the barriers to and facilitators of physical activity participation in this population.

Verschuren et al., (2012) also identified various personal and environmental barriers and facilitators to participation in physical activity. The results of Verschuren et al. (2012) qualitative study revealed a number of personal and environmental barriers and facilitators related to physical activity, including the physical ability of the child, child-related psychological factors, parental factors, opportunities for sport, feasibility, social, and facility/programme factors. This was consistent with the findings from Conchar, Bantjes, Swartz, and Derman, (2014) who described a range of factors that enabled or inhibited participation in physical activity. These include physiological, psychological, social factors and macro-environmental factors including prejudice and discrimination (Anaby et al., 2013; Conchar et al., 2014). Saebu and Sørensen (2011) suggest that while environmental factors are significant, personal factors linked to intrinsic motivation and perceived health factors are potentially problematic for disabled adolescents attempting to participate in physical activity. The authors also reported facilitators such as employment, and receiving a higher education (Saebu & Sørensen, 2011). Moreover, if

the physical activities were central to the participants' residences, this was particularly beneficial due to potential time and travel constraints (Saebu & Sørensen, 2011).

Similarly, Bedell et al., (2013) report the difficulties the adolescent with a disability encounters when attempting to participate in physical activity in the community as opposed to at their home or schools. These barriers included the built environment, transport, programmes and services, social supports, other peoples' attitudes and policy (Bedell et al., 2013). Lindsay and Yantzi (2014) found climate to be a significant barrier to physical participation in this population. Lindsey and Yantzi, (2014) suggest youth who are constrained to using a mobility device may face social isolation during winter attributed to the weather conditions; however, the youth had managed to develop some approaches for adjusting to these barriers, such as improving wheelchair performance (Lindsay & Yantzi, 2014).

Adolescents with a physical disability have to deal with personal factors such as preference, motivation, self-esteem and environmental factors including access that potentially influence performance (Palisano et al., 2007). Gutiérrez et al., (2011) assert the importance of changing the view of children with a disability and report it was the perception of the parents that influenced the child's enjoyment, interest or sense of importance while participating in physical activity. Parents have an important role in supporting adolescents with a physical disability (KristÈn, Patriksson, & Fridlund, 2003). Furthermore, the parents perceived sport as a health education and as a means for their adolescents to achieve in society, illustrating the connection between education and adolescent engagement (KristÈn, et al., 2003). The three fundamental themes that emerged from their research included the importance of health, social group inclusion and knowledge of sport activity (KristÈn et al., 2003).

Rimmer, Rubin, and Braddock (2000) who observed a minority population of African American women with a physical disability from 18 to 64 years. They suggested that if physical activity programmes are to be successful, specific barriers needed to be eliminated (Rimmer et al., 2000). They also noted that it is imperative research be undertaken in culturally, ethnically and economically diverse groups to enable specialised programmes for these disabled people can be put in place (Rimmer, et al., 2000). Priority should be given to minority groups including woman of differing cultures who experience a physical disability (Blinde & McCallister, 1999). Women with physical disabilities suffer the compounding influence of two socially undervalued roles (i.e., having a

disability and being a woman) in an environment such as sport (Blinde & McCallister, 1999). Adolescents with CP, like any other person at their developmental stage, want to participate in physical activity and social activities; however, they too experience more barriers and need more support to enable this (Stewart et al., 2012). While some of these barriers are at a personal level such as physical limitations, they also include environmental barriers such as transport and other people's attitudes (Stewart et al., 2012). Consideration should also be given to the specific physical activity and the adolescent's surroundings, as these are fundamental to ensuring that an individual with a disability has a positive and successful experience when participating in physical activity (Menear & Davis, 2007). Researchers need to consider the adolescents own perceptions, while assisting them to navigate through the complexities of adolescence (Stewart et al., 2012).

Models relative to physical activity participation

Kang et al., (2013) proposed a model, as shown in fig 2.1, in an attempt to conceptualize physical activity participation for the adolescent with a physical disability. Self-perception and experience of participation are important considerations along with the surrounding factors (Kang et al., 2013). This conceptual model presupposes that to ensure participation in physical activity by children or youth with a physical disability it is imperative these factors are well-thought-out (Kang et al., 2013).

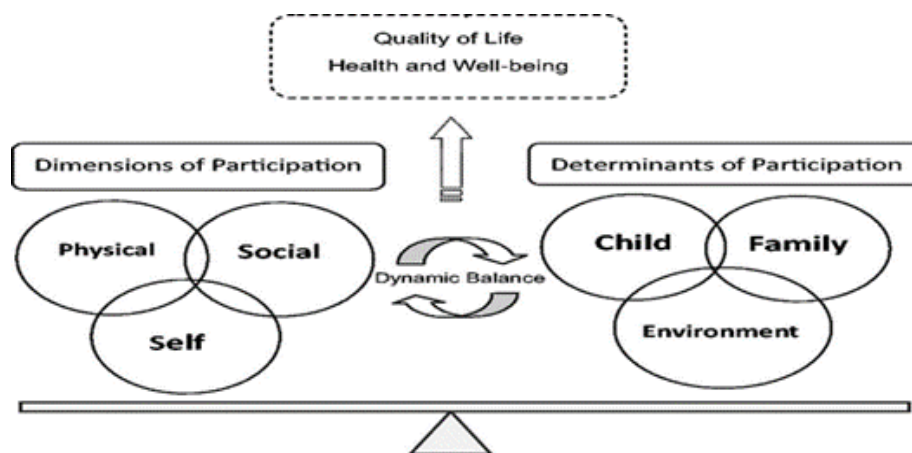


Figure 2-1: Model of physical activity participation

Adopted from "A multidimensional model of optimal participation of children with physical disabilities" by L. J. Kang, et al., (2013). *Disability and Rehabilitation*, 36(20), p. 735-1741. Copyright 2014 by Informa Healthcare.

This model proposes that the family, teachers or health professionals play an important role in engaging the child or youth into physical activity by identifying their needs, and providing support to assist them participate in recreation and physical activities (Kang et al., 2013). Reaching optimum participation encompasses a dynamic “interaction of the dimensions (physical, social and self-engagement) and determinants (attributes of the child, family and environment) of participation” (Kang et al., 2013, p. 1739).

Palisano et al., (2011) present a model, shown in fig 2.2, to further illustrate how intensity of participation in physical activity by youth with CP is influenced by multiple youth and family characteristics. The youth characteristics included the adolescent’s age, sex and preferences in participation or enjoyment, as well as their capabilities (Palisano et al., (2011). Other influences included the families’ knowledge of participation in physical activity, the youth’s behaviour, and how the family perceived the physical activity (Palisano et al., (2011). Moreover, family influences may include family preferences or the relationship with their adolescent, level of education, socioeconomic status, and the availability of services which can accommodate the family or the adolescent’s needs to ensure physical activity participation (Palisano et al., 2011).

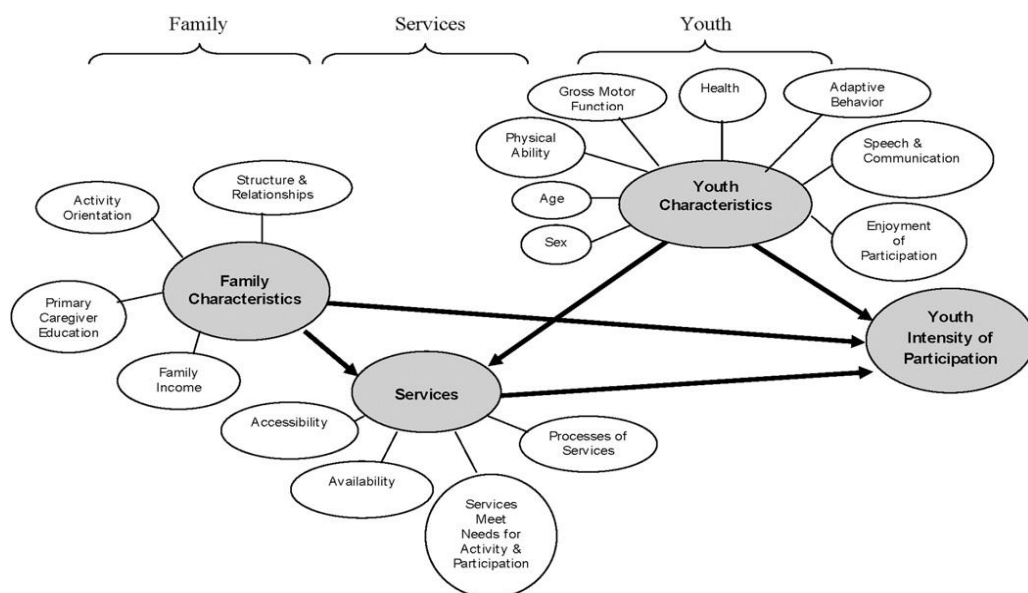


Figure 2-2: Model of intensity of physical activity participation

Adopted from “Determinants of intensity of participation in leisure and recreational activities by children with cerebral palsy” by R. J. Palisano et al., 2011, *Developmental Medicine & Child Neurology*, 92 (9) 1468-1476. Copyright 2014 by John Wiley and Sons.

This model illustrates the interaction of the barriers and or facilitators to participation in physical activity participation, and demonstrates the complexity of the differing factors and their interaction for adolescents who experience a physical disability (Palisano, et al., 2011).

Table 2-3: Barriers and facilitators to Physical Activity Participation

Source	Participants; mean age \pm SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Blinde & McCallister, 1999)	16 females 19-54 years with physical disabilities	Qualitative interviews	To explore the experiences of women with physical disabilities in the sport and physical fitness activity.	Semi-structured interviews	Gender and disability interrelate issues impact on sport and physical activity for women with physical disabilities. Women competing in sport experience a double handicap of being a woman and having a disability.
(Conchar, et al., 2014)	15 adolescents with CP 12-18 years Gender number not reported but male and female	Qualitative	To explore the experiences and perceptions of South African adolescents with CP experience of physical activity.	Semi-structured interviews	There are a range of physiological, psychological, social, and macro-environmental factors that act to promote or inhibit physical activity. These include the inability to engage in physical activity due to limitations owing to their disability. Their level of participation in physical activity was connected to how they perceived they benefited from partaking.
(Gutiérrez et al., 2011)	173 participants 93 able-bodied and 80 athletes with disabilities, was recruited from different Spanish amateur sports clubs 14 to 20 years 108 male; 65 females 93 able-bodied and	Cross-sectional	Investigate the psychometric properties of the relationship among athletes' perceptions of parents' goal orientation and their own goal orientation and intrinsic motivation. Compare athletes with and without disabilities with respect to the influence of parents on athletes' achievement orientation and motivation for sport.	Task and Ego Orientation in Sport/ The Intrinsic Motivation Inventory Questionnaire	For athletes with disabilities, task orientation and the perceptions of parents' task orientation were related to athletes' interest-enjoyment and effort-importance. As parental perceptions have such a strong influence, the parents should be targeted to eliminate barriers for their youth's participation in physical activity.
(KristËn et al., 2003)	20 parents of 9-15 year olds with physical disabilities	Qualitative	To determine the parents conceptions and experiences and perceptions of participation in a sports programme on their children and adolescents with physical disabilities	Qualitative interviews	Parents regarded sport as a form of health education and as a means for their adolescents to achieve in society.

Source	Participants; mean age \pm SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Lindsay & Yantzi, 2014)	12 participants with CP, Spinal cord injury, Myotubularmyopathy, Spina bifida, Quadriplegia, Scoliosis aged 15–22 years 5 males; 7 females	Qualitative interviews	To explore the experiences and perceptions and investigate the physical and built environment, especially during winter to determine barriers including weather-related challenges to participation.	12 in-depth interviews.	Youth encounter several problems to participating in social and recreational activities in winter, including physical barriers and social exclusion, health, safety concerns and psychosocial issues. Discussions such as coping strategies to adapt, wheelchair maintenance, awareness of environments, practice use of their mobility devices and planning, keeping busy and active were advantageous.
(Rimmer et al., 2000)	50 females 18-64yrs African American women with disabilities	Telephone interviews	To determine participation and interest in structured physical activity.	Barriers to physical exercise and disability survey	The African American women interviewed were interested in partaking but several barriers prevent this. The main barriers were cost of the programme, lack of energy, and lack of knowledge of where to exercise. Four major barriers were cost of the exercise programme (84.2%), lack of energy (65.8%), transportation (60.5%), and not knowing where to exercise (57.9%). Barriers commonly reported in non-disabled persons (e.g., lack of time, boredom, too lazy) were not observed in this sample. Only 11% of the subjects reported that they were not interested in starting an exercise programme. The majority of participants (81.5%) wanted to participate an exercise programme but were restricted by the barriers reported.

Source	Participants; mean age \pm SD or range (years)	Design	Aims	Outcome Measurement	Results/ key findings as reported by authors
(Palisano et al., 2011)	205 youth with CP 13–21 years and their parents. 107 males; 98 females	Prospective cohort study.	To test a model of determinants of intensity of participation in leisure and recreation activities by youth with CP.	Youth: CAPE Parents; Paediatric Outcomes Data Collection Instrument, Family Environment Scale, Coping Inventory, Measure of Processes of Care, a demographic & services questionnaire	The following factors affected participation in physical activity; higher enjoyment, younger age, female sex, and higher family activity orientation. GMFCS level and caregiver education have indirect effects on intensity of participation. The correlation between services and intensity of participation was not significant.
(Saebu & Sørensen, 2011)	327 young adults with a disability 18–30 years 149 males; 178 females	Cross-sectional	To examine physical activity and importance of functioning and disability, environmental and personal factors for physical activity among young adults with a disability.	Adapted version of the self-administered short form of International Physical Activity Questionnaire (IPAQ),	The participants reported differences in physical activity connected to the type and the onset of disability. Personal factors such as intrinsic motivation, and perceived health, influenced physical activity variance. Employment and higher education was positively associated with physical activity whereas transportation and equipment issues were problematic.
(Stewart et al., 2012)	10 adolescents with CP 17-20 years 5 males; 5 females	Qualitative interviews	Explore the experiences and perceptions of adolescents with CP relative to social participation.	In depth interviews	Adolescents with CP want to participate in activities for social reasons but they experience more barriers and need more supports. Limitations included their disability, transportation, and other people's attitudes.
(Verschuren et al., 2012)	33 ambulatory youth with CP and their parents. 7-18 years 2 males; 31 females	Qualitative Interviews	To explore the experiences and perceptions and investigate facilitators and barriers to participation in physical activity and sport in youth with (CP).	Focus groups	Personal and environmental facilitators and barriers to participation were reported. Seven major themes related to personal and environmental factors preventing participation.

2.3.4 Pacific Peoples residing in New Zealand

Pacific communities in New Zealand are comprised of a number of specific ethnic groups, comprising mainly of Samoans, but groups also include the Cook Islands, Tongan, Niuean, Fijian, Tokelauan, and other Pacific Island communities (Ministry of Health and Ministry of Pacific Affairs, 2004). While there are significant cohesions and common experiences amongst Pacific people there is also considerable ethnic, cultural, and linguistic multiplicity which maybe disadvantageous in comparison to viewing each ethnic group separately (Mila-Schaaf, Robinson, Schaaf, Denny, & Watson, 2008). Moreover, Pacific migrant families may face cultural challenges and social support systems are imperative to alleviate the impact of these encounters (Tautolo, 2014).

Pacific peoples comprise over 7% of the New Zealand population (Statistics, 2013). They are a tremendously diverse group comprising over 20 Polynesian, Melanesian and Micronesia cultures each with their own language (Fairbairn-Dunlop & Makisi 2003). Factors such as an increase in multiple ethnicities due to intermarriage and the fact that almost 50% are now New Zealand-born add to this diversity. Samoans are by far the largest group. While there are many commonalities of experience between and within the different groups, there are also many differences (Fairbairn-Dunlop and Makisi 2003). The 2013 Census profiles highlight a number of factors which set the context for this study namely: the youthful nature of the Pacific population (median age 33.7%); that 85% aged 15 years and over had a formal qualification, and that \$22,600 was the median income for those aged 15 years and over (Statistics New Zealand, 2013). Pacific people have lower income brackets and higher unemployment rates making them vulnerable to economic pressures (Statistics New Zealand, 2013). Furthermore, Pacific adolescents are more likely to experience overcrowding and attend low decile schools facing fewer opportunities for social, physical activity and leisure amenities (MoH, 2008b). As a result of their social and economic position, Pacific people experience significant personal, social, and economic disadvantages and barriers (MoH, 2010). This may prevent Pacific adolescents accessing everyday community life and as a consequence are more likely to experience poorer health outcomes (MoH, 2010). “Almost two-thirds (65.9% or 194,958 people) of those who identified with at least one Pacific ethnicity lived in the Auckland region” where this study was located (Statistics New Zealand, 2013, p. 1).

Obesity and health

The literature over the years consistently reports Pacific people as either overweight or obese (MoH, 2008b). More specifically, one in four Pacific children is obese and they are 17.5 times more likely to remain obese going into adulthood (MoH, 2008b). Hossain, Kavar, and Nahas (2007) suggest that not only have the rates of obesity tripled in recent years but countries such as the Pacific Islands are under the utmost threat to obesity.

Pacific peoples have a high incidence of non-communicable diseases including diabetes, heart disease, cancer and chronic respiratory disease which is problematic particularly since they are facing complex barriers to access healthcare, information and support (MoH, 2014). This is of concern as obesity is known to contribute to many incapacitating and life-threatening non-communicable diseases (WHO, 2003). It is recommended that Pacific youth be routinely screened for diabetes and cardiac disease due to the prevalence of these diseases in this population (MoH, 2008b).

The Ministry of Health (2008b) notes that Pacific youth themselves have identified that obesity is a problem and that they require more support to overcome the issues surrounding obesity. Gill et al. (2002) have suggested there is limited information on obesity and Pacific Island children, but studies had shown that between “2 to 30 per cent” (p. 7) of Pacific children may possibly be obese, and there is an urgency to develop international references to identify obesity levels.

While many factors contribute to obesity, physical activity is an important strategy in attempting to manage obesity (Khoo & Morris, 2012; MoH, 2008e). Habitual levels of physical activity were found to be different between healthy weight and obese Pacific peoples in Teevale’s, et al., 2010 ground breaking research. This study found a connection between socioeconomic conditions, food, and physical activity behaviour, as determinant factors for obesity in Pacific children and, that socio-economic factors were stronger than cultural beliefs (Teevale, et al., 2010). Furthermore, Pacific children who were more physically active experienced a healthy weight and positive eating and physical activity behaviours were associated with the parent’s levels of education, occupation and experience (Teevale, et al., 2010). Obesity may also be linked to attitudes to food; for example it is the Pacific social norm to include food and feasting at important social occasions. However, some Pacific households’ adolescents do not have access to

food items, and this may be attributed to experiencing a low socio-economic environment whereby the family struggles to meet their household expenses (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011).

Pacific Youth, health and cultural views

As noted by Tukuitonga (2013) there is little dependable literature on the health needs of Pacific youth generally or their wellbeing. Tukuitonga emphasises that prior to facilitating any programmes or services, it is imperative that research be undertaken to determine the health needs for all Pacific youth (MoH, 2008a).

As is well researched, peoples' beliefs and practices impact on the way they view good health and in turn, their participation in health-promoting behaviours and access to health services (Statistics New Zealand, 2011; MoH, 2014) (also see Appendix I). This holds true for Pacific people as well, where health considerations are embedded in a complex schema of cultural principles which are underpinned by the Pacific worldview Fairbairn-Dunlop et al., (2014).

A Pacific worldview is described as featuring a relationship and interdependence between three elements - spiritual (creator Gods) natural and material environment (resources) and people (social systems) or, "maintaining harmony and balance between these elements is fundamental to wellbeing" (Fairbairn-Dunlop, et al., 2014, p. 82). Drawing on this holistic perspective, the health and wellbeing of Pacific people is associated with addressing the physical (medical) characteristics of a condition alongside the interplay and impact of spiritual and social factors as well (Tu'itahi, 2005).

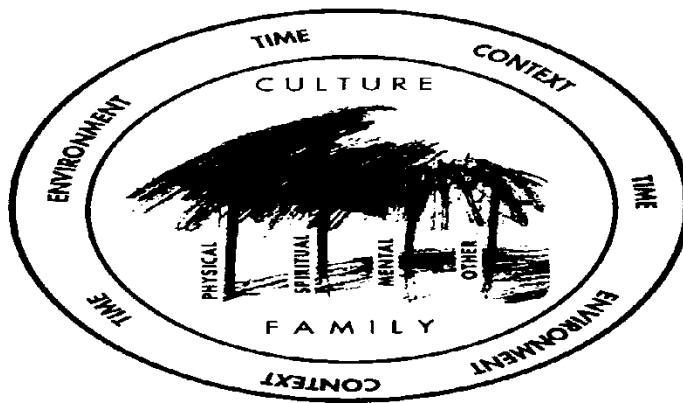


Figure 2-3: The Fonofale model (Puloto-Endemann, 2001)

The Fonofale model (fig. 2-3), created by Pulotu-Endemann captures these three elements into a holistic model. The fale (house) is central to the model and overarched by culture (the roof). The supporting poles are named as physical, spiritual, mental and other (MoH, 2008d). The metaphor of the fale (house) signifies the relationships between the foundations, the posts, and the roof. To take account of changes over time, the Fonofale stands within a time and context dimension.

Cultural views about health may impact on Pacific health along with a traditional respect for authority figures which makes it challenging for Pacific people to query health professionals or make demands for effective services (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011). This disempowers them, resulting in Pacific people not receiving the health services they are entitled to, or which are essential for their health and wellbeing (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011). More recently health professionals are questioning the application of universal norms for Pacific people such as the use of the example body mass index (BMI) which is the widely used indicator of obesity for peoples from different cultural groups. For example, Pacific peoples' height and body composition may differ from that of western populations (Khoo & Morris, 2012).

Another view is that Pacific people have differing perceptions of body size possibly in some instances viewing a larger size as more attractive (MoH, 2008d). Davis et al. (2004) found that Samoan women had a different perspective on obesity and did not view it as undesirable as other cultures. In addition, Gill et al. (2002) found in the Pacific that obesity may be seen as a sign of beauty as opposed to a health issue. Perceptions and beliefs around health differ, with Pacific people viewing their health as a family concern and have views around healthy eating that are not always conducive to optimal health (MoH, 2008d).

2.3.5 Disability

While there is limited information pertaining to Pacific people with a disability and considerable debate about the processes used to compile this data, estimates are that 19% of young Pacific people in New Zealand experience a physical disability (Statistics New Zealand, 2013). Furthermore, Pacific disabled youth are particularly at risk of inactivity after leaving school (MoH, 2008a). Data specific to Pacific girls with a physical disability and their participation in physical activity was not available. The available statistical data indicates that two in three Pacific people with a disability live in Auckland and mainly in the lowest socioeconomic area, with over two-thirds of Pacific people with a disability experiencing a physical disability. The New Zealand Disability Survey 2013, reports that “Pacific people have a young population age profile” (Statistics New Zealand, 2013, p. 3). More recently, demographic data showed that the Pacific group more likely to access MoH disability services were in the 15-19 year old age group (113 clients) while the 20-24 year old age group showed that 84 clients were utilising the services (MoH, 2015). The data also indicated that Pacific people who experience a disability are “over-presented in the high deprivation deciles” (MoH, 2015, p. 14).

Earlier research had suggested that the rate of disability among Pacific peoples is about 11 per cent, with most Pacific people with disability living in the community (MoH, 2008a). While the statistics on Pacific female adolescents with specific physical disabilities in New Zealand were not identified, Pacific people with a disability are not fully understood generally in the community, in terms of how the disability impacts on themselves, their family and their community, and as a consequence this population may be experiencing injustice, unfairness and intolerance (Stubbs & Tawake, 2009).

The prevalence rate of disability in Pacific people is comparable to the total population; however, they have specific barriers as a result of their culture, such as accessing disability support services (MoH, 2008a). Pacific people who experience a physical disability are at risk of poorer health and socio-economic deprivation as a result of their disability (MoH, 2010). Moreover, Pacific people with a disability have difficulty circumnavigating the health support system and as a consequence are less likely to receive the same entitlements to services as non-Pacific people (MOH, 2010).

There is a lack of information on the precise types of disabilities in this group; and data on the prevalence of congenital disabilities is not collected routinely (MoH, 2008a).

However in Pacific children disease or illness was the most common form of disability followed by congenital disabilities (MoH, 2008a).

Attitudes

Although there are differences, there are also some commonalities in regard to cultural attitudes towards people with a disability and, towards families that have a person with a disability (MoH, 2008a). Generally speaking however, attitudes towards Pacific people with a disability remain challenging and problematic for Pacific families. (MoH, 2008a). For example, some families may be embarrassed and this is linked to the perception that disabilities ‘are a curse, linked to sorcery, or a punishment for wrong doing’ (UNICEF, 2010, 2011; MoH, 2008a; MoH, 2010; Stubbs & Tawake, 2009). As a result, parents report there is stigma, prejudice, and discrimination attached to having a child with a disability, and that their children may be teased or called unpleasant names (UNICEF, 2010; 2011). Children or adolescents with a disability may experience discrimination, social segregation, insufficient basic needs, preconceptions, ignorance, and an absence of facilities and lack of support (UNICEF, 2011).

As reported, girls and young women who experience a physical disability are sufferers of a dual discernment, referred to as ‘intersectional discrimination’ (Bhabha, 2013) or “two-fold discrimination” (Stubbs & Tawake, 2009) attributed to their disability. Pacific women may be subjected to social, cultural, and economic disadvantage impeding their access to healthcare, particularly if they experience a physical disability (Stubbs & Tawake, 2009). Stubbs and Tawake (2009) suggest that despite some initiatives, Pacific females with a disability are “less educated, experience higher unemployment, are more likely to be abused, are poorer, are more isolated, experience worse health outcomes and generally, have a lower social status” (p. 9). This may align with the traditional gender roles in the Pacific culture which suggest the males are expected to provide food and shelter and protect their families, whereas the females’ roles generally are to care for the family. Pacific people with a disability are sometimes invisible in their communities, and their human rights are not valued (Scoop, 2015). Furthermore, they may be viewed as a disgrace to their family (Parker, 2001). There is a need to address this discrimination at the family, community, and church level, particularly as the girls already experience financial, language and other cultural barriers (MoH, 2010; MoH, 2008a).

Physical activity and sedentary behaviour

Little is known about Pacific girls with a physical disability particularly in relation to physical activity and their sedentary behaviours and this research gap in this study aims to address this. However, while the data are imprecise, generally Pacific youth and in particular Pacific girls, participate less in physical activity (MoH, 2008b). Pacific youth have comparatively high levels of incidental physical activity such as walking to school but participate less in organised physical activities (Statistics New Zealand & Ministry of Pacific Affairs, 2011). Mila-Schaaf et al., (2008) reported 61% of Pacific females and 77% of Pacific males had participated in physical activity at least three times during the past week engaging in moderate to vigorous intensity. Moreover they noted that half of the female Pacific adolescents (53%) in their study believed they were overweight and only one in five (19%) defined themselves as feeling physically fit (Mila-Schaaf et al., 2008).

Hayward (2010) found that dance was ranked as the 5th most popular activity with Pacific adolescents and one that should be promoted to disabled Pacific people. Bailey, Fuata'i, Funaki-Tahifote, Sua, Teevale, & Tu'itahi (2010) suggests that while young Pacific people perceive participating in physical activity most days of the week as a choice of lifestyle, older Pacific people may prioritise eating, sleeping, going to church and family tasks.

Furthermore, it was reported that in 1997 up to 30% of Pacific girls were inactive in comparison to 60% in 1999 and 2001 (SPARC, 2003 as cited in MoH, 2008b). In contrast the Ministry of Health and Ministry of Pacific Island Affairs (2004) report that, in Pacific Island youth, sedentary behaviour has increased “from 6% in 1997 to 33% in 2001” (p. 126) and this is more likely in girls; and furthermore, this group should be given priority in terms of attempting to increase physical activity (p. 126).

Pacific people or families' attitudes toward physical activity are influenced by a range of factors. For example, Gordon, Sauni, Tuagalu, and Hodis (2010) found that Pacific people may have less time for physical activity due to their competing cultural commitments to spirituality family and family gatherings, or feeling culturally safe. Additionally, some Pacific families may actively discourage their adolescents from engaging in physical activity fearing that the physical activity may compete in time with their studies (Gordon et al., 2010). Another factor is the preference for the Pacific

families to care for the disabled themselves (Medical Council of New Zealand, 2010). This issue aligns with how Pacific youth are not accessing services and how some of the unidentified barriers to physical activity and accessing services may include family circumstances or preferences (MoH, 2008a).

On this point, Foliaki and Halatau (2005) found that while “28,100 Pacific Peoples” in New Zealand had a significant disability, this population do not access services or agencies for disability support. This may be attributed to “information, language, communication barriers, cultural factors, or confusion around access” (Foliaki & Halatau, 2005, p. 8).

Economic related factors are another consideration in relation to physical activity participation and high sedentary behaviours. New Zealand Pacific youth live in poorer communities which often have a lack of access to recreation and sport facilities (MoH, 2008). Tukuitonga (1999) suggests that Pacific people living in New Zealand experience significant health and financial problems caused possibly by language and cultural barriers have a limited access to health care services. With respect to the actual provision of services personalised to the Pacific community, there is a noteworthy shortage of New Zealand health and disability workers who have a specific understanding of Pacific culture and their health perceptions (MoH, 2014). As noted, health care workers that are available to Pacific Island children are usually underpaid casual workers who choose not to stay in their positions long (MoH, 2008d).

For the overall health and wellbeing on the Pacific adolescent, it is imperative research be undertaken. Generally, New Zealand Pacific youth may have limited access to sport and leisure facilities, and their lack of engagement in physical activity is a national health priority.

2.3.6 Overall results

Generally, the evidence-based literature was scarce and recent studies relative to Pacific adolescent girls with a physical disability non-existent, despite the literature suggesting physical activity ameliorates health and wellbeing for this population. The frequency, duration, intensity, and variation of participation for adolescents with a physical disability is associated with a number of variables. Whereas the guidelines for able-bodied adolescents remain clear, in part due to the specific disability, participation guidelines for physical activity for the adolescent with a physical disability are not.

The studies outlined in Table 2-3 primarily included self-reports or qualitative studies from 1999 to 2014, whereas the abridged objective studies, reported limitations including the exclusion of participants in a wheelchair. The quantitative studies designs encompassed 14 cross-sectional, three RCTs, three cohort, and one pilot study. Primarily, the seven qualitative studies focused on the barriers and facilitators to physical activity in this population, and the majority were self-report and interviews. Generally, studies measuring physical activity in this population are based on self-report, and whereas it is the norm to overestimate physical activity participation (Van Eck et al., 2008). The studies reviewed were mostly from the United States and then Canada but also included the following countries of Australia, New Zealand, Netherlands, Norway, China, Malaysia, Italy, Israel, South Africa, Belgium, and Spain.

Reasons for this population's inactivity are complex; however, society undermines individuals who have a physical disability to the extent that they may be treated as having less intellectual ability (Modell, 2007). Nevertheless, what is clear is that adolescents with a physical disability are not meeting the able-bodied recommended guidelines and their sedentary behaviour is too high. Increasing optimal participation while reducing sedentary behaviours remains challenging. A comprehensive assessment of the adolescents' circumstances and unambiguous physical activity guidelines may increase participation; however, it is apparent that the majority of the studies have focused on CP utilising a variety of measures and age groups, which further compounds the difficulty of ascertaining specific guidelines to increase activity and meet consequent recommendations. Notwithstanding the reported physiological and psychological health-related benefits to physical activity, adolescents with a physical disability are currently facing momentous health threats due to their non-engagement (Rimmer & Rowland, 2008). Moreover, adolescents with a physical disability are often beheld as in need of protecting, instead of industrious, and as they may also depend on others, may be viewed as an encumbrance (Modell, 2007). As a consequence of non-participation, adolescents with a physical disability, are not benefiting from physical activity which may inhibit their physical, social, and emotional development. Saebu (2010) highlights the need for stronger evidence-based studies and further suggests that the impact of gender in relation to physical disability is an understudied area particularly in relation to physical activity.

Barriers and facilities for adolescents with a physical activity are varied and complex; however, it is imperative they are identified by the adolescents themselves. The studies reported a variety of factors influencing participation including, environmental

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influences, resources, family support, financial implications, personal preferences, intrinsic motivation, self-perception, enjoyment, GMFS functioning, gender, and the age of the adolescent.

Despite the diminutive information available on Pacific female adolescents with a physical disability, engagement in physical activity, sport or their sedentary lifestyles, it is apparent this population is disproportionately exposed to health and wellbeing perils including inactivity and sedentariness. This is an important issue that should be addressed for the wellbeing of the adolescent themselves, the community and the general health care system.

2.3.7 Conclusion

In summary, it is evident physical activity participation has physiological and psychological benefits however, there is only partial evidence available in relation to specific health outcomes for the disability groups. More recently, there is growing evidence to suggest high sedentary behaviours may possibly be associated with health jeopardies in people with disabilities generally. Moreover, physical activity measures and determining participation intensity, frequency and duration in adolescents with a physical disability remain problematic.

There is increasing, converging evidence to suggest there are multiple factors affecting participation; however, the barriers or enablers for the adolescent with a physical disability are specific to their context, culture, gender and age. More-evidence based research is essential to initially identify the most significant factors in physical activity participation while extricating the causative pathways. In turn, this may ensure regular participation in physical activity for the Pacific adolescent with a physical disability while reducing sedentary behaviours. Drawing on this literature review, including the recent available statistical data and in consideration of consultations with other Pacific peoples, it was determined that this study will be of value to address this research gap. Therefore, this PhD thesis sought to investigate the influences and elucidate the factors that enable or impede physical activity and sedentary behaviour for Pacific girls with a physical disability.

Chapter 3: Adolescents with a physical disability: a systematic review of physical activity interventions and programmes.

3.1 Introduction

Participation in physical activity is important for youth physiological and psychological health (King et al., 2009). Yet physical activity levels for children and adolescents especially those with a physical disability, are declining significantly (King et al., 2009). In comparison to able-bodied children and adolescents, the types of physical activities not only differ but the decline in amount of physical activity is even more evident in this population (Kenyon, Sleeper, & Tovin, 2010).

Over a billion individuals experience some kind of disability (Pinhey, 2002). In New Zealand, reports indicate 10% of children and 12% of people over 15 years of age, experience a physical disability (Statistics New Zealand, 2007). There is a range of definitions to describe a physical disability, however, disability may be viewed as a term for injuries, activity restrictions, and participation limits (World Health Organisation, 2010).

Previous literature had suggested that physical activity may be viewed as detrimental to the health of the child/adolescent with a physical disability (e.g. cerebral palsy) (Bobath, 1971). This is due to concerns around the person already experiencing health concerns such as muscle spasticity, however, this view is fortunately changing (Kenyon, et al., 2010). Research on children with a physical disability suggests that treadmill training is not only not harmful, but preliminary findings propose it may be beneficial (Mutlu, Krosschell, & Spira, 2009) although more research is needed. In addition, treadmill training may be advantageous to assist mobility in the young person who is bound to a wheelchair (Mutlu et al., 2009). Young people with physical disabilities may benefit from strength training which may assist them to walk and may be connected to other benefits such as increased self-esteem.(Dodd, Taylor, & Graham, 2003; McBurney, Taylor, Dodd, & Graham, 2003; Unger, Faure, & Frieg, 2006). Similar to treadmill training, aquatic training has the potential to improve gait efficiency therefore improving walking in the adolescent with a physical disability (Ballaz, Plamondon, & Lemay, 2011). Studies indicate that programmes for adolescents that promote life skills including physical activity, may have positive effects for the physically disabled adolescent (Kingsnorth, Healy, & Macarthur, 2007).

From a developmental perspective, physical activity may be an opportunity for the physically disabled adolescent to identify and consolidate physical activity patterns (Buffart et al., 2010). In turn, physical activity may alleviate some of the barriers they may encounter during adolescence (Kingsnorth et al., 2007; Buffart et al., 2010). These barriers for the physically disabled adolescent may include identity development problems, lack of autonomy and socialising (Kingsnorth et al., 2007). Adolescence is a transitional time somewhere between being a child at 10 years and becoming an adult at 22 years or older; however, the specific time period differs for each individual (Pudney, 2014).

Attempting to initiate engagement in physical activity as an adult may prove to be problematic, so it is preferable to encourage physical activity participation prior to adulthood. However, the opportunity for the physically disabled adolescent to participate in physical activity is limited (Murphy & Carbone, 2008; King et al., 2009; Sawatzky, Rushton, Denison, & McDonald, 2012). Moreover, Kim (2009) suggests that there are no accurate guidelines for physical activity levels of adolescents who experience a physical disability. The recommended levels for participation are a minimum of 60 minutes per day of moderate to vigorous physical activity for adolescents to maintain health (World Health Organization, 2010).

It is important that considerations and guidelines are established amongst health professionals to determine the amount of physical activity relative to the health impairment (Organization, 2010). However, the literature suggests that young people with disabilities are not usually considered when measuring physical activity levels (Maher et al., 2007). As these adolescents who experience a physical disability may have a variety of conditions, such as nervous and muscular tissue impairments, they may benefit more from physical activity participation than non-disabled adolescents. Murphy and Carbone (2008) explain that participating in physical activity regularly may help improve muscular tissue and joints and improves youth's physiological wellbeing. However, youth with a physical disability are in jeopardy of becoming overweight adults resulting in further health problems (Bjornson et al., 2008; Verschuren, Ketelaar, Takken, Helder, & Gorter, 2008). Adults with a physical disability were found to be less likely to participate in any recreational activities (King et al., 2009).

Adolescents with a physical disability are dependent on parents and caregivers to assist them in their daily activities. Therefore, it would be advantageous to determine

how their parents and families can contribute to their physical activity participation. Pan, Frey, Bar-Or, and Longmuir (2005) also suggest more research is necessary to understand the relationship between youth with a physical disability and their parents in terms of engaging the youth into physical activity.

Encouraging young people with a physical disability to participate in physical activity rehabilitation programmes is essential to promote and encourage independent healthy and active social lifestyles, including disease prevention connected to inactivity (Buffart et al., 2010). While the population of adolescents with a physical disability is on the increase, young adults who experience a physical disability are facing difficulty when physical activity programmes are completed and are no longer part of their lives (Organization, 2010). Moreover, the gap between rehabilitation and the opportunity to attend any community-based physical activity programmes is significant (Organization, 2010). Programmes that are available frequently do not target all fitness components such as cardio vascular fitness instead focusing on increasing muscular strength (Butler, Scianni, & Ada, 2010; Verschuren et al., 2008). Furthermore, studies to identify guidelines and long-terms effects of physical activity for this population are limited.

Therefore, the purpose of this review is twofold: 1) to systematically review studies that investigated physical activity interventions and programmes for adolescents with a physical disability and 2) to describe the impact of the interventions or programmes on physiological and psychological wellbeing, and physical activity participation.

3.2 Methods

3.2.1 Search strategy

This literature review was based on the guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) and the studies that were reported, adhered to the PRISMA statement recommendations (Liberati et al., 1999). The electronic search included Google Scholar, MEDLINE-PubMed, Scopus, SPORT Discus and CINAHL databases from 1990 until 2012. The key words included:

- Adolescent/youth/teenager/young adult;
- Physical disability/cerebral palsy/multiple; sclerosis/paraplegic;
- Physical activity/sport/exercise;
- Programme/intervention/rehabilitation.

Furthermore, the key terms that were used were: adolescen*, youth*, teen*, young adult*, physical W/5 disab*, cerebral palsy, multiple sclerosis, parapleg, physic* W/5 activ*, sport*, exercise, Program*, intervention, rehabilitation.

The search included any research studies which focused on physical activity programmes in adolescents with a physical disability through an intervention, any study design, exercise programmes, or a rehabilitation programme.

3.2.2 Selection of the studies/ inclusion and exclusion criteria

Titles of the selected studies were initially reviewed, followed by the study abstracts and lastly, full articles, to identify the final eligible studies. Both qualitative and quantitative studies were included.

The studies that were selected for final review were based on the following criteria: the participants were between 13-25 years of age, had a physical disability, and were involved in a programme to increase physical activity. Studies that incorporated physical activity through improvements of quality of life or strength training were also included. Studies were excluded if the participants had an intellectual disability, or the study sample was not comprised of primarily adolescents. For example if the studies included adolescents, but had either higher numbers of younger children or adults they were excluded. In addition, studies were excluded if they reported on interventions or programmes unrelated to physical activity.

3.3 Results

3.3.1 Identification and selection

The identification stage found 921 articles through searching Google Scholar, MEDLINE-PubMed, Scopus, SPORT Discus and CINAHL databases. Titles and abstracts were reviewed and duplicates were removed during the screening process, leaving 19 full-text articles which met the inclusion criteria and were deemed suitable for full review. The different stages of the identification, screening, eligibility, and inclusion of the search and selection strategy are presented in Figure 3.1.

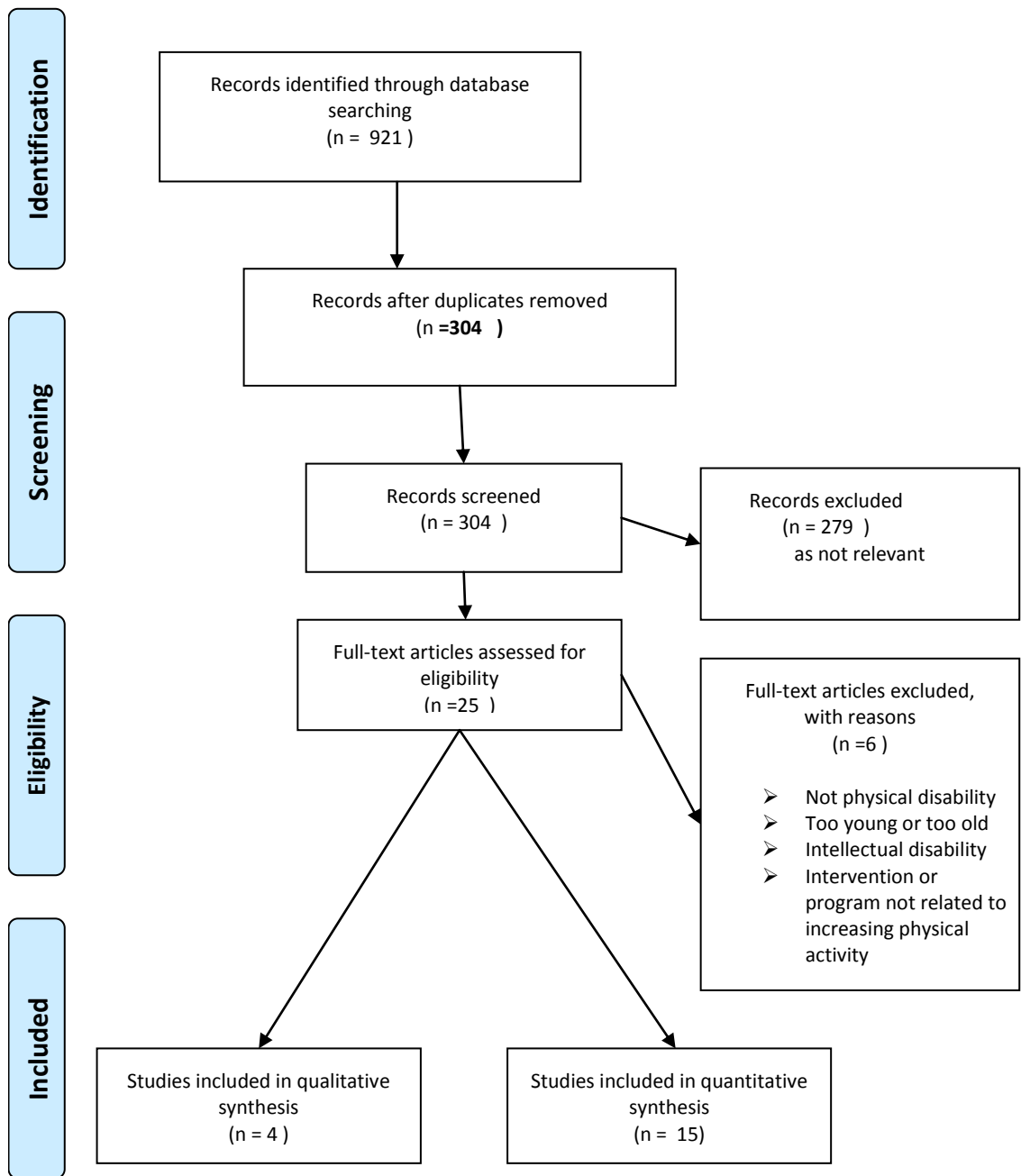


Figure 3-1: PRISMA 2009 flow diagram 1

3.3.2 Data extraction

The “Cochrane checklist of items to consider in data collection or data extraction” framework was observed during data extraction (JPT & Green, 2011). This process was undertaken, completed by one researcher, and then checked by another researcher. The process was completed and conflicts or discrepancies were resolved after discussions.

The following categories based on the Cochrane checklist are reported in Table 3-1: source (author/s of the study in alphabetical order and year), participants (number, age, gender, and disability), method (design and duration), intervention, (or programme), outcome measurement (of intervention or programme) and result and or findings of the study.

3.3.3 Reporting of the results

Due to the small sample sizes and number of studies identified, where children were involved in the study, children and adolescents were reported together. The sample age was identified by the range of the ages and mean age reported. The subjective studies primarily utilised interviews, self-report and questionnaire, while objective studies utilised a variety of measures including heart rate monitors, scales, and hand held dynamometers, treadmill, exercises, video games, walking, and wheelchair testing and gait analysis. Results of the individual studies were reported based on the PRISMA objectives framework, to including participants, intervention, comparisons, outcomes, and study design (PICOS) (Liberati et al., 1999).

Participants

The total number of participants across all studies included in this review was 259 with 1 to 63 participants in each study and an age range of 4.8 to 23 years, including 115 boys and 144 girls. Four studies did not differentiate between genders. Participants were recruited through schools, hospitals, rehabilitation centres, medical centres, local spinal clinics and through advertisements placed on websites and in clinics. The main method of recruitment was convenience sampling.

Inclusion and exclusion criteria into the studies

Inclusion criteria included predominately the ability to follow verbal instructions functioning at, gross motor function scale (1-IV), Ashworth scale (below 3 for upper limb), and motor control of at least one leg (fair to good). The physical disability conditions included congenital or acquired illness or accident, motor impairment, manual

wheelchair use, spinal cord disorder or injury and spina bifida, although most were cerebral palsy with spastic diplegic, myelomeningocele and hydrocephalus, or severe hemiplegic.

Studies of interest

Of the studies reviewed, six were from United States of America, four were from Australia, two were from Netherlands and Canada, and one each was from South Africa, Taiwan, Germany, Sweden and Mexico. The published date ranged from 1995 to 2012 and, twelve of the studies were in the last five years. Generally, a combination of subjective and objective measures was used to assess increases in physical activity, strength, and general wellbeing for the physically disabled participants. Table 1, illustrates the general characteristics of the studies and the participants. A combination of subjective and objective measures was identified, with three studies using qualitative methodology, and 16 using quantitative methodology.

Quality assessment of the studies

Each of the studies was assessed for methodological quality from an adapted Downs and Black checklist (Downs & Black, 1998). The checklist was reduced to 10 items providing a quality score for each study under review as seen in Table 3-2. The first five items reported on clarity of the hypothesis, and aim, clarity of the study objective, characteristics of the participant, intervention and the main findings, main outcomes to be measured, participant characteristics for inclusion, study description, and description of main findings. One item assessed actual probability values reported and another item related to external validity, assessing whether the sample represented the population under study. Two items assessed internal validity relating to the use of an appropriate statistical test and if the outcomes measures appeared valid and reliable and the last item measured if there was sufficient power to detect a clinically important effect. After reviewing the studies under analysis, an overall subjective rating was allocated to each study.

Table 3-1: Summary of studies reviewed; Adolescents with a physical disability: a systematic review of physical activity interventions and programmes.

Source Country	Participants; mean age ± SD or range (years)	Intervention	Outcome Measurement tool	Results as reported by authors	Feasibility/ implications for practice
Pilot studies Chang, et al., (2011) Taiwan	N=2 16-17 yrs 1x m; 1x f Motor impairments	34 days 2 x day Intervention study Kinect-based system at school	Exercises repeated in front of the Kinect module. Number of movements counted by the Kinerehab. Sessions, were recorded and taped	Effectiveness of the Kinerehab systems for motivating physical rehabilitation using a baseline/intervention experimental design. The outcome was positive according to the Kolmogorov-Smirnov test exercise performance improved	The motivation for participation in rehabilitation was significantly increased.
Dieruf et al., (2009) New Mexico	N=6 12-14 yrs 4xm; 2xf spastic (CP)	2 weeks 2x 30- minute sessions of body weight supported treadmill training	Child self-report and parent report; pre/post intervention PedsQL survey	Post scores were non-significant. Positive health-related quality of life changes were identified after an intensive intervention of body weight supported treadmill training; should include ratings from both parents and children.	Future studies need to have a larger sample size to determine outcome; include child and parent perceptions, assess physical status and consider long-term implications
Golomb et al., (2010) U.S.	N=3 13-15 yrs 2xm; 1xf Severe hemiplegic CP	12 weeks 30 min x day 5x days week Videogame rehabilitation proof of concept pilot study	Standardized occupational therapy assessments; finger range, pelagic forearm bone health and hand grip assessments.	Remote videogames appears to improve the hand function and forearm bone health in adolescents with a disability if used regularly. Improvements in brain function and increase in hand functioning.	Home based videogame rehabilitation practiced regularly, may improve hand and functional brain changes
O'Connell & Barnhart (1995) U.S.	N=6 4.8-16.4 years Spastic CP; myelomeningocele	8weeks 30 min; 3x week Muscular strength training programme	50 metre, 12 minute wheelchair propulsion tests prior to and after the 8 week programmes.	Progressive resistance exercise training may improve muscular strength and wheelchair performance in selected children with physical disabilities.	HP should consider therapy and resistance training, to increase maximum performance
Sawatzky et al., (2012) Canada	N=6 6-19 yrs 2xm; 4xf Spinal cord injuries or SB	2x days 9 hrs total wheelchair skills programme	Pre/post= modified wheelchair skills test; Activity skills for kids; Impact Questionnaire 4 months post	A two-day wheelchair skills programme can potentially improve skill level in children with spinal cord injuries or SB. Only small improvements were identified.	Further studies should be larger in sample size and not be so intensive.

Source Country	Participants; mean age \pm SD or range (years)	Intervention	Outcome Measurement tool	Results as reported by authors	Feasibility/ implications for practice
Qualitative studies McBurney et al., (2003) Australia	N=11 8-18 years 4xm;7xf CP	3x week 6 weeks Strength training programme at participants homes	In depth qualitative interviews post 3 months and log books were completed.	Strength-training is beneficial for young people; the programme identified strategies for further quantitative studies to measure the important factors relative to young adults. The results showed that strength training is beneficial in this population.	Strength training may be beneficial; the perception of the adolescents identified improvements in strength, flexibility, posture, and walking and stair navigation.
Sandlund et al., (2012) Sweden	N=15 families 8xm; 7xf 6-16 yrs neurodevelopmental disorders i.e. CP	4 weeks Motive interactive video games in home training; parents perceptions	Prior to and after 4 weeks semi-structured interviews.	Low cost motion interactive games may provide increased motion and social interaction to home training providing less effort from the parents promoting independence. Parent's perception of the training was positive and motion interactive video games may promote positive experiences.	A home based rehabilitation utilising interactive games may be beneficial for adolescents. Considerations need to be the expense of setting up the system and ensuring the adolescent is familiar with the software.
Taylor et al., (2004) Australia	N=11 4xm; 7xf and parents 11-16 yrs CP	6 weeks 3sets 3x week Home strength-based training programme	In-depth interviews after a 6 week home based strength training programme relating to issues of adherence/log book	The personal and environmental factors that influenced adherence to a simple programme can be facilitated and influenced by the physiotherapist.	While strength training programmes may be beneficial to health professionals should consider factors which influence adherence to the programme such as environmental/ personal factors.
Xenias and Golberg (2010) U.S.	N=28 28xf 14-21 yrs	12 x 2.5 hr sessions during fall and spring Programme to develop health & wellness plans through a variety of classes and workshops	Self-administered programme evaluation, recruitment, and retention statistics determined whether the goals were achieved.	Results indicated a positive and favourable response to the programme and that this programme addresses the transitional challenges these woman with physical disabilities are faced with by exposing the participants to experiences that promote their self-confidence.	Health and wellness programmes may be a feasible way to improve the quality of life in women with physical disabilities.

Source Country	Participants; mean age ± SD or range (years)	Intervention	Outcome Measurement tool	Results as reported by authors	Feasibility/ implications for practice
RCT de Groot et al., (2011) Netherlands	N=41 (19 control group) 6-18 yrs SB	Home 2x week 12 weeks RCT (treadmill training programme) at home and to usual care.	Health & wellness questionnaire. Measures at baseline, after intervention and post 3 months, included 6 minute walk test and incremental treadmill testing to assess VO2peak/speed	A home-based, advanced treadmill training programme for ambulatory children with SB has an impact on long-term ambulation, with a modest short-term effect on VO2peak. No significant differences were noted between the groups for anthropometric and muscular strength.	More robust evidence based studies need to determine the effectiveness of treadmill training for this population as currently the evidence is lacking.
Demuth et al., (2012) U.S.	N=62 (31 control group) 29xm; 33x f 7-18 yrs CP	30x 60 min 3 months Stationary cycling intervention	HRQOL using Paediatric Quality of Life Inventory SF15 and Paediatric outcomes; pre/post	Results support the optimistic relationship between physical fitness and emotional wellbeing in the general population and the child's perception is important when examining change in his or her emotional wellbeing due to intervention. Evidence not strong on other aspects of the HRQOL.	Considerations should be given to further studies with bigger sample sizes to determine stationary cycling interventions
Dodd et al., (2003) Australia	N=21 (10 control group) 10xm; 11xf 8-18 yrs CP	3x week 6 weeks RCT home-based strength training on lower limb strength and physical activity	Base characteristics recorded. Walking evaluated prior to and end of 6 weeks and 12 weeks post intervention. GMF Classification System levels I to III.	Short clinically feasible home-based training programme can led to lasting changes in strength of important muscles in the lower leg impacting on their daily functioning. Gross Motor Function improved for standing, running, jumping, and stair climbing.	Home-based strength training programmes can improve muscular strength in young people and may be used in combination of other approaches such as orthotics and surgery.
Sakzewski et al., (2012) Australia	N=62 CIMT group=32 BIM group=30 No control groups 33xm; 30xf 5-16 yrs unilateral CP	10 days; 6 hrs 2 weeks RCT constraint-induced movement therapy (CIMT) & bimanual (BIM) 1-3x week; 40-60 min	Self and parent reports CPQOL – child KIDSCSREEN 52 Assessments at baseline, 3, 26, 52 weeks (post-intervention).	Intensive goal-directed upper limb training programmes using CIMT or BIM achieved domain-specific changes in quality of life (QOL) for feelings about functioning and participation and physical health. Both have a broader impact on their QOL.	There were effects on QOL between the two training approaches. Future studies should include control groups.

Source Country	Participants; mean age ± SD or range (years)	Intervention	Outcome Measurement tool	Results as reported by authors	Feasibility/ implications for practice
Unger et al., (2006) South Africa	N=31 (10 control group) 19xm; 12xf 13-18 yrs CP	8 weeks Strength circuit programme; target upper/lower limbs trunk	Three-dimensional gait analysis; questionnaire Pre/post; follow up 4 weeks	Participating in a strength training programme run at school may improve crouch gait and also leaving improvements in body image perception.	Resistant exercises with basic equipment can lead to improvements but further evidence is needed for trunk muscular effects and functional competencies such as stride length, velocity, or cadence
Patikas et al., (2006) Germany	N=39 (20 control group) 6-16 yrs CP	3xweek; 30-45min 9 months 6-16 yrs Post-operative strength training programme	Spatiotemporal, kinematic & kinetic parameters during gait analysis were analysed prior to and one year after surgery. Follow up gait analysis	Several parameters improved after the strength training programme however there was not a significant improvement amongst the groups.	Results may have improved if the effect of the surgery on the participants was considered. Time, intensity, and frequency need to be determined prior to strength training sessions.
Interventions Ballaz et al., (2011) Canada	N=12 16-20 yrs CP	2xweek; 45 min 10 weeks Aquatic training intervention on gait efficiency in	Gait efficiency measured by gait energy expenditure index and secondary measures included gait spatiotemporal parameters/maximal isometric knee strength and gross motor function, prior to and after the intervention	Ten adolescents completed the programme; group aquatic training increases gait efficiency in adolescent with CP.	45 minutes of aquatic activities 2x week for 10 weeks, is sufficient to improve gait efficiency in adolescents with CP. The use of floating equipment and safety should be considered
Buffart et al., (2010) Netherlands	N=2; 1xm; 1xf; 17-23 yrs myelomeningocele hydrocephalus; unilateral CP	Weekly home visits 16 weeks Active Lifestyle and Sports Participation (ALSP) intervention	Self-reported P/A aerobic fitness; submaximal 6-minute walk test or wheel test; pre/post	Self-reported physical activity increased 51%/ 75%; submaximal exercise was 16%/9% and maximal exercise increased 39% in male/not female.	ALSP intervention was practicable to offer in an outpatient rehabilitation department and the effectiveness may be encouraging.

Source Country	Participants; mean age \pm SD or range (years)	Intervention	Outcome Measurement tool	Results as reported by authors	Feasibility/ implications for practice
Eagleton et al., (2004) U.S.	N=7 (13 started intervention) 12-20 years CP	6 x week 3x week Intervention on the effects of strength training on gait	Pre/post- Stop watches, stethoscopes, treadmill and measuring tapes were used. Examinations using the muscle power test, running, strength tests and the Gross Motor Function Measure	Strength training is an important part of physical training. All five variables changed i.e. walking speed, step length cadence, and distance.	While these results need to be confirmed from a larger study potentially a 6 week strength training programme may improve gait, strength and function ability
Kenyon et al., (2010) U.S.	N=1 1xm 16 years CP	2x week 10 weeks Wrestling interval training intervention	Power sprint tests; shuttle run tests; strength tests; Gross Motor Function Measure.	The case report supported the use of a fitness-related intervention programme for addressing the sport-specific goals of an adolescent with CP. Scores and tests improved after the intervention.	Health professionals need to develop programmes and goals for adolescents with a physical disability as the evidence is suggesting they may potentially be beneficial, despite the fact that this study had only one participant.

CP= cerebral palsy; SB=spina bifida; ALSP= Active Lifestyle and Sports Participation; GMF= Gross motor function; RCT= Randomized clinical trial; VO₂peak= Peak oxygen uptake; HRQOL= Health-related quality of life; PedsQL survey=Paediatric Quality of Life Inventory; QOL= Quality of Life; CIMT= constraint-induced; U.S. = United States of America

3.3.4 Study outcomes

The major categories of outcomes fitted into three main groupings of physical activity participation and performance, Quality of Life (QOL) and strength training. Outcome measures relating to physical activity performance included muscle and aerobic power, gait and VO₂ and walking assessments. Strength training studies measured strength and performance, and quality of life relating to social, motivational, psychological health and performance measures.

There were also two quite specific types of programmes that related to video and Kinect systems for engagement in physical activity and improving performance including strength. The other studies were wheelchair programmes, with outcomes that were specific to their wheelchair use. The full set of the measurements are outlined in Table 3-1.

The programmes or interventions under review

Quality of Life (QOL)

Four studies (Demuth, Knutson, & Fowler, 2012; Dieruf et al., 2009; Sakzewski et al., 2012; Xenakis & Goldberg, 2010) used Pads and PODCI, CP QOL and KIDSCREEN and a self-administered programme evaluation to self-report improvements in participants' QOL, after the programme or intervention. Pads are designed to measure quality of life in children with acute health conditions whereas the PODCI focus is for QOL of children with musculoskeletal conditions. The CP QOL and KIDSCREEN surveys are designed to measure domains of quality of life. The surveys themselves were modified to measure differing domains of QOL from the larger CP QOL 7, KIDSCREEN 10, and KIDSCREEN 27 surveys.

Demuth et al., (2012) in their stationary cycling intervention, used the Paediatric Quality of Life Inventory with sixty-two children with spastic diplegia. Despite the lack of any significant changes between the intervention and the control group, a positive relationship between emotional wellbeing and physical fitness was found. They reported, "between-group differences, favouring the cycling group, for Pads emotional functioning ($p=0.046$) and Parental PODCI treatment expectations scores ($p=0.006$)" (Demuth et al., 2012 p. 654). Moreover "within-group improvements were found in the cycling group: Pads total score (+5.8; $p=0.006$), psychosocial health summary (+6.9; $p=0.008$), and

school functioning (+8.0; $p=0.038$). PODCI satisfaction with symptoms decreased significantly only in the control group (-12.0; $p=0.046$)” (Demuth et al., 2012 p. 654). Therefore, results suggest that a cycling intervention may have positive effects on emotional wellbeing.

An intervention pilot study “was designed to examine the effects of a 2-week programme of intensive body weight-supported treadmill training (BWSTT) on clinical measures of perceived health-related quality of life and fatigue in children with cerebral palsy” (Dieruf et al., 2009, p. 45). Ratings by six children and their parents who completed the Paediatric Quality of Life Inventory and Multidisciplinary Fatigue module, indicated no significant higher mean post scores. Nevertheless, they did find improvements on the emotional scales (Dieruf et al., 2009). While the study utilised a small sample group, the results found that it is important to have both the children and the parents’ view and how improvements were noted after the BWSTT intervention (Dieruf et al., 2009).

In addition, Sakzewski et al., (2012) intervention assessed if constraint-induced movement therapy is more effective than bimanual training in improving the quality of life of children with unilateral cerebral palsy (p. 415). They do not find any change “in social or emotional wellbeing were reported by children in either group, children and parents from both groups reported a significant improvement in their or their child's feelings about functioning as well as participation and physical health” (Sakzewski et al., 2012, p. 415) . The older children completed the KIDSCREEN as the teen version was not available. They reported assessments were made at baseline and at 3, 26, and 52 weeks after the end of the intervention. However, no control group was used. The participants received 6 hours of daily intervention over a 2-week period. Moreover, some of the children were not able to verbalise their experience and, therefore, did not complete the survey.

Moreover, Xenias and Goldberg (2010), used a health and wellness programme to improve 28 participants QOL. They developed an evaluation tool consisting of 15 multiple-choice to measure programme satisfaction and the participants were required to complete individual health and wellness plans. Of the 59 total goals, 31% were fully completed, 49% partly and 20% were not completed at all. In addition, they reported that the programme was generally favoured in structure and content learning which also included how to alter aspects of their lives. They also considered recruitment, retention

and an evaluation as a measure of the success of the programme; however, they reported several limitations including constraints within the hospital setting and a small sample size. The programme co-ordinator developed the evaluation tool which consisted of 15 multiple choice items to measure programme satisfaction. They suggested that the programme had a positive impact on exposing the participants to experiences which promoted self-competence and self-determinacy (Xenakis & Goldberg, 2010).

Strength training

Five studies examined the benefit of a strength training programme for adolescents with a physical disability, and one study investigated factors influencing adherence to strength-training programmes in young people with cerebral palsy (Taylor, 2004). Out of the six studies, two were qualitative studies (McBurney et al., 2003; Taylor, Dodd, McBurney, & Graham, 2004) with 11 participants each with one study (Taylor, 2004) including a control group. Three were randomized control studies reporting control groups of between 11-20 participants (Dodd et al., 2003; Patikas et al., 2006; Unger et al., 2006) and experimental groups of 11-24 participants. The last study with 7 participants, investigated the effects of strength training with no control group (Eagleton, Iams, McDowell, Morrison, & Evans, 2004).

In the Taylor et al. (2004) study, results from their in-depth interviews suggested that young people need to be given autonomy in relation to strength-training to increase adherence or motivation. Family support too was important. In addition, this study suggested that it would be advantageous for health professionals to have more of an understanding of the issues these participants experience while considering both personal and the environmental factors. Taylor et al., (2004) found that compared to the control group, lower limb strength increased and was recorded in a log book per load “at 6 weeks (experimental mean increase = 5.6kg, S.D. 6.3) control (mean=-0.2kg, S.D. 6.3); $F(1,19) 4.58, p=0.046$ ” and at 12 weeks “10.6kg, S.D. 12.0; control (mean=0.7kg, S.D. 7.0); $F(1,19)=6.25, p=0.041$ ” (Taylor et al., 2004, p. 59).

A randomized control six-week-home-based-training-programme reported a positive effect on combined muscular strength. They found that in comparison to their control group, the experimental group participants increased their lower limb strength alongside an improvement in some of the Gross Motor Function Measure dimensions

(Dodd et al., 2003). They reported at “(F (1, 19) =4.58, $p=0.046$)” at 6 weeks and “(F (1, 18) =6.25, $p=0.041$)” 12 weeks after the training programme (Dodd et al., p. 652).

McBurney et al., (2003), identified positive outcomes in a qualitative six week home-based strength training programme. The parents reported benefits such as perceived strength, flexibility, walking, and stair climbing and general wellbeing (McBurney et al., 2003). In addition, they reported that after the three-month post-testing, the benefits of the strength programme were maintained. While no specific measures were reported in their study, the findings suggested that the results from this study would be useful for guiding future quantitative studies (McBurney et al., 2003).

In contrast Eagleton et al., (2004) found all five variables changed or improved and that when comparing the pre intervention measures with post intervention measures, a “significant increase in the group's gait velocity ($p=0.05$), step length ($p=0.05$), and cadence ($p = 0.05$) as well as in the distance walked in three minutes ($p = 0.05$) was noted” (p. 27). Moreover, Eagleton et al., (2004) also observed a significant lowering in the “observed energy expenditure index ($p= 0.05$)” (p. 27) in the group. While all five dependent measures were found to change significantly, there were only seven participants in the study.

Unger et al., (2006) found in the 8-week training programme, that the “experimental group differed significantly from the control group for measure of crouch gait (sum of the ankle, knee and hip angles at mid-stance) ($p= 0.05$) and perceptions of body image ($p= 0.01$)” (p. 469). They also reported that “walking velocity, cadence and stride length as well as perceptions of functional ability did not change significantly after training” (Unger et al., 2006, p. 469). Their findings suggested strength training may improve gait and body perception; however, there were only 19 participants in their study (Unger et al., 2006). Patikas et al., (2006) utilised a nine month training programme and attributed their lack of significant difference between the control and experimental groups possibly due to the lack of motivation of the participants. They reported several limitations including that the surgery the participants had received and the length of the intervention may have impeded the overall results.

Video and Kinect-system for strength, rehabilitation and home training

Three studies investigated the benefit of using video or Kinect-based system for strength training rehabilitation and home training. Out of the three studies, one was

qualitative and the remaining two were pilot studies one of which measured the parents' perceptions. There was no control or comparative groups in the sample of participants ranging from 2-15 years old. The qualitative study measured the parents' perceptions prior to and after 4 weeks, after their children had participated in a home training motion interactive video game (Sandlund, Dock, Häger, & Waterworth, 2012). Low-cost motion interactive games increased motivation and social relationships, and independence from parents for children with cerebral palsy (Sandlund et al., 2012). Furthermore, using motion interactive video games at home may have improved physical training for rehabilitation (Sandlund et al., 2012).

A pilot study investigating the effects of an in-home virtual reality videogame tele rehabilitation on improving hand function and forearm bone strength found notable improvements in thumb and forefinger and radial bone mineral density (Golomb et al., 2010). In addition, they reported significant changes ($p < .001$) in brain functioning reflecting improved hand function (Golomb et al., 2010). However, they did report that due to the small sample size, the results were difficult to generalise. They also encountered numerous technical problems partially due to the equipment design and the difficulties they encountered researching participants who experience a physical disability. In comparison, a Kinect-based system for physical rehabilitation found improvements in their motivation for rehabilitation improving exercise performance, however there were only two participants in this pilot study (Chang, Chen, & Huang, 2011). After the first intervention from baseline, the correct movements increased significantly ($p < 0.05$) according to the Kolmogorov-Smirnov test (Chang et al., 2011).

Wheelchair programme

O'Connell et al., (1995), found after the wheelchair training programme that the 50-m dash time improved "(137.5 to 109.72; minus 20.2%), ($p < 0.05$)" (p. 370). However, Moreover, distance improved in the 12-minute post-test by (259.56 to 334.7; plus 29%), ($p = .031$). The mean resistances also improved, with ($p = .018$ to $.031$), reported. In comparison, Sawatzky et al., (2012) found the participants improved in their wheelchair skills programme with the score ranging from 7-33%. In summary, they found the pre- to post-wheelchair skills test mean total scores "increased significantly from 66% to 75% with a mean relative improvement of 13.8% ($p = 0.03$)". However, no changes were found in participation from the questionnaire and they reported that this may have

been attributed to the small sample size or the fact that the researchers modified the wheelchair skills test.

Physical activity performance

Varying methods were used to identify an increase in physical activity performance in the studies under review. While the outcome of a case report was limited to one participant Kenyon et al., (2010) suggested the intervention supported the use of the fitness programme to address the sports goals for adolescents with cerebral palsy. They found during the muscle power strength test (MPST) improvements from 3.60 to 5.06 to post intervention range of 2.90 to 2.97 seconds and aerobic power from 405.36 W to 595.78W (Kenyon et al., 2010). A group aquatic training programme to improve gait efficiency and exercise intensity identified positive effects for the ten participants. They identified that energy expenditure (EEI) significantly improved and the participants' heart rates reduced while walking. No significant changes were reported in the secondary outcomes (Ballaz et al., 2011). They reported (paired t-test, $p=0.007$, effect size 0.2, 95%) for EEI (Ballaz et al., 2011). In comparison, another study suggested that it would be feasible to implement an active lifestyle and sports participation programme to increase physical activity, but the study used two participants only (Buffart et al., 2010). They stated that "improvements in self-reported physical activity were 51% and 75% for the male and female participants, respectively, 13 that improvements in submaximal exercise were 16% and 9%, and that maximal exercise increased 39% in the one male participant" but did not increase in the one female participant (Buffart et al. 2010, p. 86). This qualitative self-report also conveyed that the participants were satisfied with the intervention rating it from "moderate-good to excellent" (Buffart et al. 2010, p. 86).

An RCT with 34 ambulatory children with spina bifida (SB), found that "after training significant changes were seen between the groups for 6MWT ($p=.002$; $d=1.08$), speedpeak ($p=.001$; $d=1.14$), VO₂peak ($p=.034$; $d=0.78$), and gross energy consumption (ECS_{gross}) ($p=.004$; $d=1.01$)" (de Groot et al. 2011, p. 597). Calculations for effect sizes were estimated from Cohen d with effect sizes larger than 0.80, described as large. They stated long-term effects were documented for "6MWT ($p=.003$; $n=0.34$), speedpeak ($p=.003$; $n=0.35$), and ECS_{gross} ($p=.014$; $n=0.29$) but not for VO₂peak" (de Groot, 2011, p. 597). The study found a home-based, "progressive treadmill training programme for ambulatory children with SB has a large long-term effect on ambulation, with a modest short-term result on VO₂peak" (de Groot, 2011, p. 597). No substantial variances were

reported between the groups for variations in anthropometric parameters and muscle strength. This may be due to the small sample size, software problems and subjective recall of the questionnaire, as reported by the researchers (de Groot et al., 2011). However, they reported significant differences between the control and the intervention group showing an improving of 38.7 m during the 6 MWT with the control group walking 2m less (de Groot et al., 2011).

3.3.5 Study designs

The studies reviewed programme included pilot studies, randomised control trials, qualitative studies, case report, single group pre-post design (Ballaz et al., 2011) and a programme design for a health and wellness study (Xenakis & Goldberg, 2010). Generally, the groups or sample sizes were small and were not a representative sample of the group under investigation. This factor was reported in some of the studies under limitations.

Quality score for studies under review

While the risk of bias was not able to be reported, Table 3-2 provides an overview of the quality score for each of the studies under review. The evidence available indicated that all the studies clearly explained the hypothesis, aim, objective, characteristics of the participants, interventions and the main findings as reported in the columns 1-5 in Table 3.2. However, primarily due to small sample sizes, the quantitative studies primarily were rated poor too good for representative samples of the participants, appropriate statistical test, valid and reliable outcome measures, and sufficient power. The N/A was included for the qualitative studies reported, indicates that some of the measures were only relevant to the quantitative studies. Generally, the pilot studies were rated from poor to good however this was primarily attributed to their small sample sizes.

Table 3-2: Quality score for the studies under review

Author	Reporting External/Validity							Internal validity		Power	Score	Descriptor	Pilot
Quantitative studies	1	2	3	4	5	6	7	8	9	10	%		
(Ballaz et al., 2011)	1	1	1	1	1	1	0	0	0	0	60	Fair	
(Buffart et al., 2010)	1	1	1	1	1	0	0	0	0	0	50	Poor	
(Chang et al., 2011)	1	1	1	1	1	1	0	0	0	0	60	Fair	Pilot
(de Groot et al., 2011)	1	1	1	1	1	1	0	0	0	0	50	Poor	
(Demuth et al., 2012)	1	1	1	1	1	1	0	1	1	0	80	Good	
(Dieruf et al., 2009)	1	1	1	1	1	0	0	1	1	0	70	Good	Pilot
(Dodd et al., 2003)	1	1	1	1	1	1	0	1	1	0	80	Good	
(Eagleton et al., 2004)	1	1	1	1	1	1	0	0	0	0	60	Fair	
(Golomb et al., 2010)	1	1	1	1	1	1	0	0	0	0	60	Fair	Pilot
(Kenyon et al., 2010)	1	1	1	1	1	0	0	0	0	0	50	Poor	
(O'Connell & Barnhart, 1995)	1	1	1	1	1	1	0	0	0	0	60	Fair	Pilot
(Patikas et al., 2006)	1	1	1	1	1	0	0	0	0	0	50	Poor	
(Sakzewski et al., 2012)	1	1	1	1	1	1	0	1	0	0	70	Good	Pilot
(Sawatzky et al., 2012)	1	1	1	1	1	0	1	0	0	1	70	Good	
(Unger et al., 2006)	1	1	1	1	1	1	0	1	0	0	70	Good	
Qualitative studies													
(McBurney et al., 2003)	1	1	1	1	1	n/a	1	n/a	1	n/a	100	Excellent	
(Sandlund et al., 2012)	1	1	1	1	1	n/a	1	n/a	1	n/a	100	Excellent	
(Taylor et al., 2004)	1	1	1	1	1	n/a	1	n/a	1	n/a	100	Excellent	
(Xenakis & Goldberg, 2010)	1	1	1	1	1	n/a	1	0	0	n/a	80	Good	

1= Hypothesis/aim/objective clear; 2= Main outcomes measured clear; 3= Characteristics of participant clear 4= Intervention clear; 5= Main findings clear; 6. Actual probability values reported (except $p<0.001$); 7= Representative sample; 8= Statistical test appropriate; 9= Outcome measures, valid and reliable; 10= Sufficient power to detect a clinically important effect where the probability value for a difference being due to chance is less than 5%;

Objective measures
Descriptor (Objective)=0%-20% = Bad; 21%-40% =Poor; 41%- 60% = Fair; 61% -80% =Good; 81%-100% =Excellent

DISCUSSION AND CONSIDERATIONS FOR CLINICAL PRACTICE

Studies were reviewed that investigated the effect of interventions or programmes for adolescents with a physical disability on participation in physical activity. Results of this review support the notion that physical activity is beneficial for the health of the physically disabled adolescent. These benefits include emotional functioning, perception of wellbeing, muscular strength, gait velocity, step length and cadence and wheelchair performance. Earlier literature had suggested that physical activity may be detrimental to the health of the adolescent with a physical disability, possibly due to existing health impairments, and the potential to reduce the flexibility of muscle due to an increase in muscle tone (Taylor et al., 2004).

Overall, participants from the studies under review varied in disability, age, and gender. The sample sizes ranged in number however they were typically small in size, and most of the studies reported various limitations. Lack of homogeneity in terms of disability and age, and health issues attributed to the specific disability, and motivation on the part of the participants all impacted on the quality of the studies. In addition, while the outcome measures in the studies seemed plausible, the lack of control groups made it difficult to determine magnitude of change. Various outcome measures were utilised to evaluate participation in physical activity, making comparisons problematic.

The adolescent with a physical disability, experiences the same developmental change from childhood to adulthood hoping to acquire independence, the need for social interaction and employment but unlike abled-bodied adolescents, their needs are often unmet (Groce, 2004). In addition, adolescents with a physical disability experience a lifetime of preconceptions and discrimination (Rimmer & Rowland, 2008). In part due to advances in medicine, young people are living longer well into adulthood and this population should be prioritised (Buffart et al., 2010). In order to maximise the young person's life who experiences a physical disability, it is imperative that healthy lifestyles are encouraged which include physical activity. While some studies have identified interventions and programmes which may increase physical activity, more research is essential to establish specific guidelines around physical activity for the physically disabled adolescent (Mutlu et al., 2009; Verschuren et al., 2008; Golomb et al., 2010).

It is important that parents be consulted and informed throughout the research studies or programmes. These adolescents are dependent on their parents to engage in

physical activity; however, the parents themselves may impede the adolescent participating. This may be due to parents' inherent need to protect their adolescent from possible feelings of disappointment or the ridicule from peers or the sense the physical activity may not be beneficial. Consideration needs to be given to participant recruitment and engagement in the programmes or interventions to increase motivation and adherence. Any information sessions attempting to recruit participants should include their parents whenever possible.

Surveys that were utilised to assess quality of life included the Pads, PODCI, CPQOL, and KIDSCREEN. While the studies under review suggested these surveys were valid and reliable, several restrictions and the difficulties around researching adolescents with a physical disability were reported. The consensus was that the studies identified an improvement in physiological and psychological wellbeing (emotional, social, and school functioning) and as a consequence, quality of life. Generally, the improvement in emotional functioning was the most notable finding (Demuth et al., 2012; Dieruf et al., 2009) and intensive training programmes influence the adolescent's perception of wellbeing (Sakzewski et al., 2012). Dieruf et al., (2009) found the findings from the parents and the child differed and noted it is important to include the parents' perceptions. Further, more long-term robust studies may identify opportunities, life skills, and goals for this population ensuring their QOL is improved through to and including adulthood. This view is shared by Xenakis and Goldberg, (2010) who suggest more QOL programmes may potentially improve the lives of adolescents with a physical disability, possibly leading to an increase in self-competence.

Health professionals need to be mindful of quality interventions that consider factors such as the quality of life dimensions and their implications while implementing interventions amongst the other measures. In addition, adherence and participation in physical activity, may be improved with consideration of the adolescent's performance and QOL functioning.

Studies researching strength training programmes found improvements in muscular tissue and in lower limb strength. Furthermore, increases in gait velocity, step length, and cadence were reported (Eagleton et al., 2004) and perception of their body image (Unger et al., 2006). Strength training may also have additional long-term benefits for the adolescent with a physical disability, such as positive effects on the ability to walk, run, jump, or climb stairs (Dodd et al., 2003). While motivation was identified as a

problem, educating the participants and their parents on the possible benefits of the strength training may increase adherence (Taylor et al., 2004). It is difficult to ascertain results from the 6-9 week training programmes due to limitations in the studies. Nevertheless, the studies suggest longer interventions with a follow up potentially may be advantageous for the adolescent with a physical disability. Encouraging home-based programmes may lead to strength training which is cost effective and readily available to the adolescent (Dodd et al., 2003). However, Patikas et al. (2006) found that for strength programmes to have an impact they need to be extended, which in turn may have positive effects on impairments such as the inability to walk.

Specific training protocols need to be developed by health professionals based on the adolescent's age and their current health status to determine intensity and length of strength training. Resistance training with a small number of repetitions (less than 12), with increases in resistance as muscular strength improves for a minimum of 6 weeks, have been recommended for strength training in adolescents with a physical disability (Patikas et al., 2006).

Similarly, pilot studies reported positive results for programmes to increase wheelchair performance, and progressive resistant training may also improve wheelchair performance (O'Connell & Barnhart, 1995; Sawatzky et al., 2012). Considering the amount of time the wheelchair bound adolescents are in their wheelchairs, it would be extremely beneficial to develop programmes incorporating their wheelchairs. Results suggest programmes that include wheelchair resistance training, would be beneficial for this population (O'Connell & Barnhart, 1995), although intensive training is less effective and consideration needs to be given to participation at home and in the community (Sawatzky et al., 2012). Attention should also be given to improving muscular strength, wheelchair skill level, and propulsion. As a result the adolescent may endure less difficulty while attempting to navigate their wheelchair in their environment, which may lead to an increase in activity.

In comparison, the review found video or Kinect-based systems for strength training and rehabilitation studies also reported positive results, however based on the results more robust studies are needed to identify clarity around the reported results. On the other hand, there is a scope to develop opportunities to facilitate positive experiences for the physically disabled including improvements in hand functioning, bone health and positive brain functioning (Golomb et al., 2010). Further studies may determine exactly

how beneficial the use of video or kinetic-based systems are, as it is well known adolescents enjoy any games involving the use of a video game system. Chang et al., (2011) also reported that the Kinerehab system had positive effects on motivating rehabilitation. Video games may be one way to engage the adolescent into physical activity, allowing some autonomy especially when they are so dependent on their parents (Sandlund et al., 2012). Video games also may provide intrinsic motivation to participate on a regular basis, especially since there is an assortment of games readily available to the adolescent (Sandlund et al., 2012).

Designing programmes which use video games may be a way to encourage participation in physical activity for the adolescent with a physical disability giving the intrinsic motivation to want to participate. Video games may be a cost-effective way to encourage participation also allowing the adolescent with a physical disability the autonomy they need.

The results of this review suggest potentially that video games may be a promising approach for the health professional to incorporate video games into rehabilitation either supervised or/and home-based. While more evidence is needed to establish the long-term effects of video games they may have the capacity to be used by health professionals for rehabilitation specific to different parts of the adolescent's body, while possibly improving the quality of the rehabilitation and also providing enjoyment.

Interventions that aimed to increase physical performance reported positive results. For example, Kenyon et al., (2010) found their "fitness-related intervention programme" showed some improvements in aerobic capacity also reporting the intervention was not harmful (p. 234). Ballaz et al., (2011) aquatic training was found to have positive effects on gait efficiency and that floatation devices ensured safety. In addition, Ballaz et al. (2011) suggested that aquatic activities provided opportunities for expending energy without any negative impacts on joints or having to maintain balance control. Treadmill training did not appear to be unsafe (Mutlu et al., 2009) and moderate effect changes in VO_{2peak} were reported by de Groot et al. (2011); however, the effect of treadmill training on adolescents with a physical disability was not clear. It is imperative that health professionals consider the functioning level of the adolescent to determine possible duration, intensity, and length of any intervention. This may be problematic considering the lack of evidence and guidelines. It may therefore be advantageous to carefully monitor the individual, adapting the level of the programme when necessary in

order to maximise the effect of any programmes aimed at physical activity participation such as aquatic and treadmill training. Health professionals also need to be mindful of safety and support and take into account the interests of the adolescent to assist engagement in the activity. For aquatic training, a ratio of one health professional to two adolescents and the inclusion of floating devices should be considered.

It was difficult to draw conclusions from the results of the studies under review due to the overall methodological quality. As there are no specific guidelines for physical activity participation for the physically disabled adolescent in terms of amount and frequency, this is also problematic.

Complex issues such as the motivation to participate in physical activity and wider issues such as parental support need to be considered by health professionals prior to implementing interventions or programmes. It is also apparent that the physically disabled adolescent faces extra challenges such as health impairments attributed to their physical disability.

Overall, the literature is suggesting adolescents should be participating in physical activity on a regular basis. The benefits include improved physical fitness, and a positive impact on health including the secondary conditions such as obesity, immobility, strength, and on psychological concerns such as increasing autonomy.

Limitations

This review was hindered by the lack of available studies that specifically included adolescents with a physical disability. Only full-text articles were reviewed through the University database search engines. In addition, comparisons between each of the studies were difficult because of the small sample sizes and heterogeneous sample groups, general lack of control groups, and differences in study designs, measurement tools, poor reporting, and studies ranging from poor to good in quality. As a consequence, the recommendations in this review therefore were conservative.

Conclusions and recommendations for future studies

In summary, physical activity for the adolescent with a physical disability has shown to have positive effects on overall health and wellbeing. The effects include increasing aerobic capacity, gross motor function, cardiovascular fitness, function, and gait, psychological wellbeing, and muscular strength contrary to earlier findings which suggested it may be detrimental to health and overall quality of life. The findings further suggest that programmes or interventions which utilise video games may be one way of increasing physical activity participation for this population. Studies to identify guidelines which consider time, intensity, and frequency and long-term effects of physical activity for this population are either lacking rigour or reliability or are absent from the literature. Given that physical activity for the adolescent with a physical disability is on the decline, it is imperative that measures to increase physical activity should be prioritised amongst health professionals.

The results of this systematic review suggest interventions and programmes to increase physical activity may have a positive outcome for the adolescent with a physical disability. To ensure clear guidelines can be established and the needs of this population are met, the quality of study in this area must be improved. Guidelines for specific participation, duration, frequency and intensity need to be developed for the adolescent with a physical disability. It is through the implementation of these guidelines by health professionals that the specific needs of adolescents with a disability will be met.

More robust studies which include control groups for the interventions, and sample groups with participants of similar disability, age and gender should be encouraged. Furthermore, longitudinal studies may more effectively identify long-term effects of the programmes or interventions, as most of the current studies are either pilot or only limited in length. Providing opportunities for adolescents with a physical disability to participate in physical activity programmes or interventions may improve their general physiological and psychological health. Future research should aim to focus on increasing participation in this population.

Chapter 4: **METHODS CHAPTER**

4.1 Introduction

Pacific adolescents and more specifically Pacific adolescents with a physical disability are participating in less physical activity than other ethnic groups. In this chapter the mixed methods approach addresses this.

The underpinning theoretical and historical views are considered, the rationale behind the use of the mixed methods approach, the study design, qualitative research, Pacific research, ethical considerations, and the quantitative and the qualitative methods applied are discussed. Generally, the consensus is that mixed methods design is an approach to research whereby the quantitative and qualitative data, methods, and analysis are mixed or combined within the same research study (Giddings & Grant, 2006; Sandelowski, 2014; Tashakkori & Teddlie, 1998; Creswell, 2009; Creswell et al., 2003; Plano Clark & Creswell, 2008).

Mixed methods research has gained prominence and recognition over the past two decades. However, unresolved philosophical assumptions in mixed methods underpinnings and the mixing of the paradigms have stirred deliberation amongst researchers (Biddle & Schafft, 2014). The complexity of mixing designs inexorably suggests mixing paradigmatic perceptions that may invariably contradict each other (Sandelowski, 2000). In turn, as the general assumption is that the paradigm, belief, or worldview guides or influences how the research study will be undertaken, the researcher may not have a clear understanding of the paradigm underpinning the research study.

Historically, supporters of quantitative and qualitative research paradigms have voiced varying opinions on the advantages of their chosen paradigm, arguing against any integration of the two (Johnson & Onwegbuzie, 2004). This was primarily attributed to researchers viewing their own paradigm as the ideal paradigm for research (Giddings & Grant, 2006). Additionally, researchers suggested the paradigms could not and should not be mixed because it was believed that the theoretical assumptions and worldviews underpinning the different paradigms were incongruent or different. This view, which led to the paradigm debate, was accredited to researchers' qualitative philosophical perspective of multiple realities existing in comparison to the quantitative closed-ended survey questions where the participant voices are restricted (Creswell et al., 2008).

However, mixed methods research is now accepted as a process to use authentically several approaches to answer research questions (Johnson & Onwuegbuzie, 2004; Biddle & Schafft, 2014). Giddings and Grant (2006) suggest that while mixed methods research has been “captured by post-positivism, it can be an effective approach for researchers from all paradigms,” offering flexibility to examine social and health research issues (p. 11). Four main paradigms guide the researcher’s belief around what reality means (ontology), what amounts to knowledge (epistemology), how the researcher acquires the knowledge (methodology), and the values the researcher embraces (axiology) (Grant & Giddings, 2002; Giddings & Grant 2006). Grant and Giddings (2002) propose these paradigms include the positivist/post-positivist (quantitative, objective research), interpretivist/constructivist, radical/critical and post structural/postmodern paradigms (qualitative, interpretivist, or subjective approaches).

The post-positivist paradigm or worldview is part of the theoretical underpinning of this study. This view guided the choice to use mixed methods in order to answer the research questions as outlined in the introduction (Tashakkori and Teddlie, 1998; Giddings & Grant 2006). The post-positivist assumptions are a common approach to mixed methods research, and they are extended from the positivist paradigm (Grant & Giddings, 2002). Post-positivist researchers maintain the positivist position of reductionism, appreciating that cultural or social rationality occurs in the world, which may be observed, measured, and understood (Grant & Giddings, 2002). This research asserts the post-positivist assumption of reductionism whereby the knowledge and experience of the participants is reduced to a set of data, notions, or concepts, which can then be perceived, measured, and assumed or described. Post-positivists’ emphasis is on the meaning of knowledge and how the researcher seeks to describe social concerns while recognising that diversity and complexity are the reality of human experience (Henderson, 2011).

Congruent with the post-positivist paradigm, this mixed methods study perceives the outcomes of this research to be a result of a complex assortment of contributing influences that interact with each other (Giddings & Grant, 2006). The underlying factors applicable to this study include factors that are all interrelating, such as the participants’ wider environment, the participants’ families or parents, and the disability itself. It is anticipated that once these factors are examined or measured, they may be better understood. Moreover, the post-positivist beliefs reflect the concept of reality which may be recognised within differing levels of probability (Plano Clark & Creswell, 2008).

Reality is identified from the adolescents' perspective, which was collected through the survey and the use of the qualitative description method. Reality may be truthful or accurate, but it varies depending on each of the participant's perceptions.

4.1.1 The approach

4.1.2 Reasons for the mixed methods design

Andrew and Halcomb (2009) highlight the significance of the design and the importance of basing the study design on the research problem or aim in order to find the most appropriate approach to achieving aims and answering research questions. After considering this study's aims, research questions, and theoretical considerations, such as the underpinning paradigm, it was determined that a mixed methods approach was appropriate. The mixed methods design enables a combination of approaches, providing a rich description of the data (Grant & Giddings, 2002).

Green (2008) proposed a framework for the rationale underpinning a mixed methods study which included "triangulation, complementary, development, initiation, and expansion" (p. 122). Andrew and Halcomb (2009) proposes a sixth "enhancement" (p. 55). Based on the frameworks proposed by Green (2008) and Andrew and Halcomb (2009) for utilising a mixed methods design, this study included triangulation, complementary, initiation, and enhancement, as explained in the following paragraphs:

Triangulation – This employs several data sources and methods to cross-check and authenticate the findings from one method with another. Triangulation inevitably increases the density and quality of the results through the use of the two different methods utilising differing measurements. In this thesis, physical activity participation was identified from the perspectives of the adolescents, the adolescents' mothers, and the providers through qualitative interviews. A large survey was utilised to collect quantitative data relating to participation in physical activity. The two data sources validated the findings, permitting confidence and certainty in the final results. For example, both qualitative and quantitative methods confirmed that the participants were not meeting the recommended physical activity guidelines.

Complementary – Results from one method are clarified with the other method (Plano Clark & Creswell, 2008). The findings in this study were expanded when the results from one method elucidated specific findings from the other method. In turn, this enhanced and clarified the findings that overlapped, but differed in each of the two

methods. For example, the general health and wellbeing of the Pacific adolescents and their engagement in physical activity was measured in the larger quantitative study and through the qualitative interviews, more clarity was sought. More specifically, prevalence of participation was identified from the large statistical data set, and the specific rationale behind adherence to partaking was examined through the in-depth stories.

Initiation – This explores the contradictions by comparing and contrasting contradictions collected in one method with the other method, increasing the depth of the inquiry (Plano Clark & Creswell, 2008). The aim of this study was to attempt to discover new perspectives, explanations, or ambiguities while merging the two different methods. The inclusion of the qualitative interviews provided a broader prospective of the participants' understandings, and new perceptions or facets were identified. These factors, including the parental perspectives, were not found in the quantitative findings. Additionally, the qualitative interviews permitted open-ended questions, capturing the data from the participants' (girls', family members', and providers') experiences, hearing their voices or their perspectives in a natural environment. Conversely, the statistical data yielded results not found in the qualitative studies, such as comparisons of the disabled and non-disabled in terms of prevalence of participation in physical activity, sedentary (screen time) behaviours, and active transport (to and from school).

Enhancement – The purpose of mixing the methods was to enhance the findings of the two methods. For example, the quantitative findings in this study provided statistical significance of the relationships and associations between the data outcomes. Moreover, the qualitative data was captured through the participants' voices, assuring a truthful, holistic description of their stories. As a consequence, the findings revealed a rounded overview from the quantitative findings and rich in-depth data from the qualitative findings of the experience of the Pacific adolescent engaging in physical activity.

4.1.3 Design

Creswell et al., (2003) proposes six different types of research designs that researchers may consider in their mixed methods study: sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested, and concurrent transformative (Creswell et al., 2003). These designs build on the

decision criteria prior to integrating them into the specific mixed methodology designs (Creswell et al., 2003).

Based on the considerations from Creswell et al., (2003), this study employed a concurrent triangulation design. The concurrent triangulation design is a common mixed methods design utilising the quantitative and qualitative methods to permit confirmation, cross-validation, or corroboration of the findings within one study (Creswell et al., 2003; Plano Clark & Creswell, 2008). The mixing of both of the methods proves to be advantageous as it permits the strengths of one method to offset the weaknesses of the other method (Creswell et al., 2003; Plano Clark & Creswell, 2008). Whereas the quantitative statistical data can be validated through testing and establishing statistical significance, the qualitative stories can be explored at a deeper level.

The concurrent triangulation design method employed in this study used two different methods to collect the data simultaneously (as shown in Figure 4-1). However, it was assumed that the two methods were equally significant to answering the research questions (Grant & Giddings, 2002). The implementation of the two methods was time-consuming with the data collection phase occurring concurrently. Nevertheless, this design proved advantageous in that it was easier to confirm or validate the findings within the one study having both the quantitative and qualitative influences.

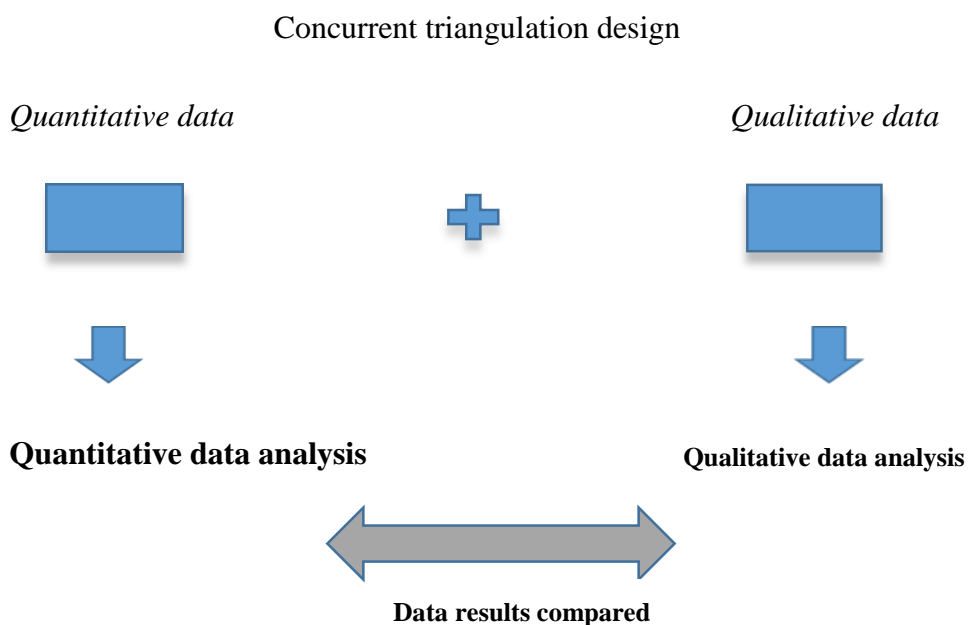


Figure 4-1: Concurrent triangulation design

The purpose of the concurrent (also known as parallel or convergent) design is to address the aims of the study by comparing the quantitative and qualitative data sets (Klassen, Creswell, Plano Clark, Smith & Meissner, 2012). The data in this study were analysed separately and compared later in the discussion chapter (Grant & Giddings, 2002; Creswell et al., 2003; Plano Clark & Creswell, 2008; 2009; 2014). While there are several ways to compare quantitative and qualitative data, this study utilised the “side-by-side” comparison approach, which is congruent with concurrent design (Creswell, 2009) or convergent design (Creswell, 2011; 2014). Of the other approaches that were considered, the “side-by-side” comparison approach was deemed appropriate due to the sample, the sample size, and the aims of this study. Quantitative data is presented first, followed by qualitative data. In the discussion chapter, a section is included detailing how the results from both data sets compared or diverged, consistent with the “side-by-side” approach (Creswell, 2009; 2011; 2014).

Creswell (2014) advises that Classen et al. (2007) illustrated this approach in their study, which is the approach this study is founded on. It has been suggested that it is good practice to quote studies that utilise a similar approach, due to the unfamiliarity around mixed methods research (Creswell, Klassen, Clark, & Smith, 2011). The key themes and concepts that were identified for comparison were based on the aims and research questions pertinent to this study. The concurrent design used in this study incorporated the triangulation method of data collection, whereby one set of the data was used to substantiate the findings of the other; this method has been largely supported in the literature (Grant & Giddings, 2002; Creswell et al., 2003; 2009; 2014; Plano Clark & Creswell, 2008). Table 4-1 outlines the methods, research questions, participants, data collection sources, and stages of data comparison for each of the research studies.

Table 4-1: Research questions, participants, data collection, and stage of data comparison

<i>Method</i>	Research question	Participants	Data Collection	Stage of data comparison to make further assumptions
<i>Quant</i>	What are the demographic characteristics of Pacific adolescent boys and girls, including age, sex, and ethnicity?	Pacific adolescent boys and girls with and without a physical disability	Youth'12 National Health and Wellbeing Survey of New Zealand Secondary School Students: Questionnaire	Discussion chapter
<i>Quant</i>	How active are Pacific adolescents with a physical disability compared to those without a physical disability, in terms of frequency of participation and sedentary (screen time) behaviours?	Pacific adolescent boys and girls with and without a physical disability	Youth'12 National Health and Wellbeing Survey of New Zealand Secondary School Students: Questionnaire	Discussion chapter
<i>Quant</i>	What factors enable or inhibit participation in physical activity for Pacific adolescents, including peers, their immediate environments, and their physiological and psychological health and wellbeing?	Pacific adolescent boys and girls with and without a physical disability	Youth'12 National Health and Wellbeing Survey of New Zealand Secondary School Students: Questionnaire	Discussion chapter
<i>Qual</i>	What are the factors that enable or inhibit participation in physical activity and sport in Pacific adolescent girls with a physical disability, from their perspective?	Pacific adolescent girls with a physical disability and five of the girls' mothers	Interviews (<i>Talanoa</i>)	Discussion chapter
<i>Qual</i>	From a provider of services perspective, what are the factors that enable or inhibit the Pacific adolescent girls with a physical disability, accessing physical activity and sport?	Providers of services to Pacific adolescents with a physical disability	Interviews (<i>Talanoa</i>)	Discussion chapter

Quant = quantitative research; Qual = qualitative research

4.1.4 Study one – Quantitative

This section describes study one, the quantitative study. Initially, the schools that were approached for data gathering were very supportive of the project. However, it was soon identified that the Adolescent Health Research Group, from Auckland University (AHRG), was simultaneously collecting data that were in some instances identical to data collected by this study. The AHRG is a group of researchers who surveyed students from New Zealand secondary schools in 2001, 2007, and 2012 (Clark et al., 2013). As a consequence, the researcher and supervisors of this study formed a collaboration with the AHRG to gain access to the group's data for our analysis. Data access involved a series of meetings from 2011 to 2014 in Auckland and Dunedin. Study one draws on quantitative data from the Youth2000 Survey Series using the Pacific Youth'12 data.

4.1.5 Participants/schools

Adolescents who were New Zealand residents, English speakers, and were able to use a laptop computer participated in the Youth'12 National Health and Wellbeing Survey of New Zealand Secondary School Students: Questionnaire (Clark et al., 2013). The 2012 Youth2000 Survey Series collected data from 91 composite and secondary schools in New Zealand (Clark et al., 2013). The total number of students that were invited to participate was 12,503 students, which represented 3% of the New Zealand roll of secondary students (Clark et al., 2013). The schools that participated were primarily larger state-funded and co-educational schools throughout New Zealand (Clark et al., 2013). Of the 12,503 students that were invited from the randomly selected consenting schools, 8,500 students participated. For this thesis, Pacific data were accessed from a sample of 1,201 adolescents (14.1%) from the ARGH (2012) sample group, which was available for analysis in study one. While the participants could identify with more than one Pacific ethnic group, the group was comprised of Samoan, Cook Island, Cook Island Māori, Tongan, Niuean, Fijian, and Tokelauan participants.

4.1.6 Study design

A cross-sectional study was conducted where self-administered health and wellbeing questionnaires aimed to gather data from a national representative sample of New Zealand secondary school students. Prior to this study, a pilot study was also completed by the AHRG (2012) where 200 students responded to the pilot survey which yielded information around the length and flow of the study and use of the computer tablets (Clark et al., 2013). The survey questions for the Youth'12 were developed from

the previous 2001 and 2007 Youth2000 surveys and any modifications were completed after consulting “stakeholders, advisory groups, and researchers” (AHRG, 2013).

4.1.7 Measures

The primary outcomes of importance were in physical activity and sedentary behaviours (screen time) in Pacific adolescents with a physical disability and the Pacific adolescents. Furthermore, the study aimed to identify the demographic characteristics of Pacific adolescent boys and girls in relation to physical activity and sedentary behaviours including age, sex, and ethnicity. The study also aimed to identify the factors (peers, their immediate environments, and their physiological and psychological health and well-being) that may inhibit or facilitate the physical activity and sedentary (screen time) measures.

Physical activity measures

The physical activity measure in this study was identified by the following question, “During the past 7 days on how many days were you physically active for a total of at least 60 minutes per day?” Meeting the guidelines for this study was identified as participating in physical activity for 60 minutes daily.

Active transport (to and from school) measure

The measure for meeting the guidelines was the question “How many times in the past week did you walk, bike, or skate to or from school in the past week”.

Sedentary measure (screen time)

The sedentary measure (screen time) measure in this study was identified by the following question, “How much time do you spend doing these activities each day (watch TV, play computer games, or electronic games like Xbox, hand-held, or play station, go on the internet)? Low sedentary behaviour was classified as less than two hours per day of screen time (Packer et al., 2006).

Other measures

Demographic information included the adolescent's age, year at school, gender, their country of birth and Pacific ethnic group. The Pacific adolescents also had the option to choose more than one group. Socio-economic deprivation was measured using the 2006 New Zealand socio-economic and for this study related to the adolescents neighbourhood or geographical area. For this study, (1-3) represented low, (4-7) high and (8-10) deprived. Overcrowding was determined if the adolescents lived in a house with more than two people living in the same bedroom. Disability included physical disability and both sensory and physical impairments. The question used to identify disability was "Do you have any long-term disability (lasting 6 months or more) (e.g. sensory impaired, hearing, visual impairment, in a wheelchair, learning difficulties)? Study one focused on the adolescents who experienced a difficulty as a result of their disability, as this was the measure more likely to target the sample group with a physical disability.

The general health and well-being influences included: family fun and school characteristics, health, psychological health, eating meals, their perception about their weight, physical activity perceptions and behaviours, and other activities including employment and neighbourhood safety. Emotional symptoms, conduct difficulties, hyperactivity, pro-social (measuring positive behaviour toward others) and peer problems were measured using the Strengths and Difficulties Questionnaire (SDQ) with Likert response options (AHRG, 2013). The SDQ is a widely used self-reported questionnaire designed for children and adolescents to measure "emotional symptoms, conduct problems, hyperactivity/inattention and peer relationship problems" (AHRG, 2013, p. 93). The SDQ is divided into 5 scales: 4 difficulties scales (emotional symptoms, conduct problems, hyperactivity/inattention and peer relationship problems) and one pro-social scale which measures positive behaviour toward others (AHRG, 2013). For all the other measures, if the numbers were too small for the categories, then the categories themselves were collapsed. Appendix D, of this thesis, shows the research questions and the responses. Further details of the survey can be found on the Youth'12 website (AHRG, 2013).

4.1.8 Youth 2000 Project

The aim of the Youth2000 project was to ask questions specific to the health and wellbeing of adolescent secondary school students in New Zealand. The survey included questions “about ethnicity and culture, physical and psychological health, food and activities, substance use, sexual health, injuries and violence, home and family, school achievement and participation, neighbourhood environment, spirituality, physical activity and access to healthcare” (Clark et al., 2013, p. 15). The students and their parents were all provided with information sheets on the survey prior to the survey administration, with the students giving their consent on the day they completed the survey (Clark et al., 2013). The survey questions were answered on computer tablets and included 608 questions, taking the students up to an hour to complete (Clark et al., 2013).

4.1.9 Ethics (AHRG)

Ethics approval for study one, which was carried out in collaboration with the AHRG, was granted through the University of Auckland Human Participants Ethics Committee (UAHPEC), and an effort was made to ensure that data collection caused minimal disruption to the participants’ school routines (Clark et al., 2013). In addition, the Youth’12 Survey, which was developed from previously administered surveys, was entirely voluntary. To protect anonymity, personal details were not kept, and the students were reminded that they did not have to answer every question (Clark et al., 2013).

4.1.10 Data analysis

Analysis of the data was conducted with SAS version 9.2 (Version, SAS, 2011). As the recruitment procedure was a clustered sample design with unequal probabilities of selection, the data were weighted and presented with weighted frequencies. This allowed for the unequal probability of being selected. The variance of effects estimates were also adjusted to allow for clustered data to be compared from the same school.

Initially, all the variables of interest were presented as descriptive statistics (means and standard deviations) for continuous data, and categorical data were described in terms of frequency of responses. This provided a profile and distribution of demographic, school, activity, and health and neighbourhood data. Secondly, inferential statistics such as logistic regression models (bivariate analysis) was used to determine the associations between key physical activity measures including active transport (to and from school),

sedentary (screen time) behaviour, sports club involvement, and moderate/vigorous activity and other variables. Candidate variables for building the multivariable model were primarily those with $p < 0.2$ or sets of variables containing less than $p < 0.2$, with the exception as is standard in this type of analysis. Some of the disability variables were included regardless of their significance. This limits the number of variables involved in the modelling building process and ensures the inclusion of the important variables (Bursac, Gauss, Williams & Hosmer, 2008). For example, it lessens the analysis and avoids inaccurate factors being included. The variables were examined in their key domains of demographics, school, eating and activity behaviours and perceptions, neighbourhood and health to determine which of the final variables would be included in the definitive model. Associations were considered to be statistically significant at $p < 0.05$.

Due to the cross-sectional study design, causality was not determined, instead proof of association or relationships between the variables were observed. Odds ratios (OR) measured the association, comparing the likelihood or odds of an event occurring to the likelihood or odds of an event not occurring between the two groups. For example, the results indicated the adolescents who “enjoyed school sports” showed (OR 1.75) or were 1.75 times as likely to be meeting the physical activity guidelines, which was the outcome. In comparison, the results indicated the adolescents who “belong to any school sports team” showed (OR 0.52), or they were approximately 50% less likely to be meeting the physical activity guidelines (the outcome) if they belonged to any school sports team. The confidence level (CI) at (95%), is an estimation of the precision of the OR indicating that there is an estimated 95% certainty that this is where the true number value lies.

In line with the conditions for data access, analysis was completed alongside the candidate’s 3rd supervisor (Biostatistician Dr Nick Garrett). Dr Garrett directed and oversaw the analysis of the demographic, univariate and multivariable data, which the candidate had previously prepared for analysis.

4.1.11 Research questions and study objectives for study one

After discussions with the AHRG, the data was accessed for this study’s independent analysis. The questions research questions from the AHRG are outlined in Appendix D.

4.1.12 Qualitative research

Qualitative research describes research in a number of different paradigms which encompass a collection of methodologies. The qualitative methodologies are involved with the complexities of humans by directly researching human experience (Carpenter, 1997). Qualitative research attempts to ask different types of questions from those normally asked within reductionist traditions, as it attempts to describe and interpret phenomena systematically (Carpenter, 1997).

Marcus and Fischer (1986) explain how qualitative research methods originated within anthropology and were utilized for “understanding, describing, interpreting, translating and presenting the inside, or native point of view” (p. 25). Furthermore, Spencer, Krefting, and Mattingly (1993) note how “qualitative traditions have grown out of a long-standing concern about how to best study and represent human life and human action as meaningful activity” (p. 304). Spencer et al. (1993) further suggest that the intention of these approaches is to describe the human experience in the participant’s own language in everyday situations. In this study, the adolescents, the adolescents’ mothers, and the service providers themselves, who each had their own voices, had an opportunity to tell their stories as they were. Smythe and Giddings (2007) suggest that qualitative research always “seeks to find the issue of concern in its everyday context, and by means of interviews and/or observations and/or accessing text, hearing the voices of those closely involved” (p. 37). The participants in this study were able to relay their stories as they experienced them. They were in a safe environment of their choice, away from major disturbances and distractions. Frequently, the interview setting was in the participant’s own home, with caregivers present or nearby. Service provider participants also determined their settings for their interviews.

Patton (1997) suggests the originating philosophical underpinning of qualitative research places emphasis on the significance of understanding how humans behave. This includes, as Patton (1997) suggests, “the social-cultural context of social interaction” (p. 20). Empathically understanding the participants and the connections between their behaviours and personal insight is sought through the qualitative research (Patton, 1997). Understanding of how the participants’ experience this phenomena is of importance to the research being investigated, and qualitative research allows for this to be further explored. For the researcher to be able to have an understanding of the participants in his

or her study, it is beneficial for the validity of the research that the researcher has some understanding of the inquiry under investigation. (Patton, 1997). The researcher of this study holds qualifications in child/adolescent developmental psychology and exercise prescription, which provided an understanding of the participating adolescents' behaviours and their engagement in physical activity.

4.1.13 Research methodology

Qualitative description was selected as the most suitable methodology for the qualitative approach. Sandelowski (2000) explains how “the qualitative descriptive study is the method of choice when straight descriptions of phenomena are desired” (p. 339). The use of a qualitative descriptive approach incorporating the *talanoa* method enabled the researcher to gain insights into the phenomena which while staying close to the stories themselves (Sandelowski, 2000). Naturalistic inquiry underpins the philosophy of qualitative description, which aims for a low inference interpretation, hearing the voices of the participants in their own language (Sullivan-Bolyai, Bova & Harper, 2005). Sandelowski (2000) also notes that qualitative descriptive studies present the data in the participants' everyday language, as opposed to other methodologies which may require the researcher to change the language or text to permit further interpretation. The specific beliefs and behaviours of what is actually occurring, is relayed through qualitative description (Sandelowski, 2010). Therefore, the intention was to gather a substantial amount of data to capture insights into the experiences of the participants through their voices while seeking descriptive soundness (Sandelowski, 2000).

Liamputtong (2010) proposes that it is imperative that cross-cultural research be sensible and responsible, ethical, and it should consider cultural integrity, thereby alleviating any harm. This included, in this study, exploring and seeking to understand the experiences of the participants in terms of their culture, experiences, and aspirations (HRC, 2014). Liamputtong (2010) also advises that cross-cultural researchers must be aware of the implications of their “outsider” position and the implications of any influences on the research. For example, they must be aware that while the “insider” researcher may have the benefit of sharing participants' social and cultural physiognomies, an “outsider” researcher can add value by bringing a different perspective. In this study, the candidate was mindful of the need to be continually aware of the values and beliefs underpinning the Pacific worldview and how this might influence the study design, application, interpretation, as well as the dissemination of findings.

4.1.14 Pacific research considerations

It was essential that the research design and approach be informed by the Pacific worldview, and more particularly that the relationships between physical wellbeing and spiritual, cultural, social, and economic wellbeing are considered (HRC, 2005) as encapsulated in the Fonofale model. In addition, to keep in mind that although there are some commonalities, each Pacific nation has its own culture, language, and perceptions of health and wellbeing and of disability (MoH, 2010). The HRC Guidelines (2014) note that Pacific researchers must be culturally competent across the research process (e.g. culturally competent across data collection and interpretation and dissemination) so that the findings will be of benefit to the participants and Pacific peoples generally (HRC, 2014).

The talanoa and the research assistant

The *talanoa* methodology was deemed to be a culturally appropriate method for this study (HRC, 2005), providing, as it does, the space for shared conversations and reflections. In defining the term *talanoa*, Vaioleti (2006) proposes that “Tala means *to inform, tell, relate, and command*, as well as *to ask or apply*”, and Noa means of “*kind, ordinary, nothing in particular, purely imaginary or void*” (Vaioleti 2006, p. 23). Other researchers emphasise that in practice, *talanoa* is not “about nothing.” Instead, the informal, free speaking environment of the *talanoa* encourages participants to share their views, their aspirations, and the realities of their daily lives. Given that the *talanoa* is the common way of communicating in the Pacific, it was also anticipated that participants would be comfortable with this method, thus ensuring a free flow of information Clery (2014). The *talanoa* also allowed for a moral respect for the cooperative and ongoing processes of hearing the participants’ stories and allowing an understanding between the participants and the researcher (Clery, 2014). An interview guide was prepared (see Appendix F). However, the use of the *talanoa* ensured considerable flexibility and responsiveness to the priority issues raised by the participants (Vaioleti, 2006).

Given that the candidate is not Pacific, it was clear that carrying out the family based *talanoa* would benefit from the assistance of a Pacific research assistant who in particular could address the questions on culture. This ensured cultural protocols were followed and also assisted with the vernacular of Pacific language. The support of a Pacific research assistant ensured the research approach that embraced Pacific cultural competency and adhered to ethical requirements. While it had been anticipated that the

family *talanoa* would be up to one hour in length, the participants were so interested in sharing their views that these lasted up to two hours in many instances.

My second supervisor identified a young Pacific graduate who had previously had interviewing experience with social science qualitative research. We initially met with the research assistant and explained the study aims and questions and after she agreed to participate we further discussed the research methods to her and how we aimed to collect the data for study 2. The research assistant presence helped to maintain cultural competency which included establishing a safe research environment for the participants. She also provided a link to narrowing the cultural gap with me as an outsider. Furthermore she had an understanding of the *talanoa* and its importance in creating a meaningful relationship with the participants.

Moreover, the research assistant was competent in the Pacific language of the participants and proficient in her translation of some of the stories from the participants. She also had an understanding of the Pacific culture and the Pacific participants' challenges in the New Zealand environment. This contributed to ensuring the participants were comfortable about sharing their stories and the stories themselves were not distorted or misrepresented. Moreover, the research assistant was able to translate, when necessary, and, very importantly, meet with the candidate after each interview to share reflections.

The use of the qualitative descriptive approach was deemed appropriate for researching the Pacific participants as it stayed close to the data, presenting the participant's experience in a language parallel to the participant's own language (Neergaard, Olesen, Anderson & Sondergarrd., 2009). In addition, it has been suggested that using qualitative description in mixed methods is advantageous for theoretical clarification when trying to stay close to participants' stories, especially in vulnerable populations (Neergaard et al., 2009). This view is also shared by Sullivan-Bolyai et al. (2005) who suggest that qualitative description is beneficial when researchers are interviewing other cultures.

4.1.15 Ethical approval

Initially, ethics approval and application forms were submitted for all studies simultaneously to the Auckland University of Technology Ethics Committee (AUTEK) for consideration and recommendation. The Auckland University of Technology Ethics

Committee granted ethical approval on 11 November 2011 (see Appendix A). The candidate adhered to the ethical commitments by carefully considering and adhering to the ethics committee's recommendation of updating the forms for the participants to reflect Pacific culture, making them more user friendly.

Furthermore, the candidate was careful to communicate the underlying principles of the study to the Pacific community, the participants, the participant's parents, and/or the participants' caregivers prior to the interviews. This communication included information sessions, meetings, telephone conversations, and emails providing the participants the opportunity to either ask any questions or have the option to withdraw from the study if they changed their mind after having previously agreed. Moreover, the candidate had previously contacted the AUT Health and Counselling service, lest the candidate should need to seek their advice or refer a participant who had become distressed as a result of the interview; however, this was not necessary. Data was stored in a password protected database and hard copies in a lockable cabinet. Only the student researcher and supervisors had access to this data.

4.1.16 Study two – Qualitative interviews

This section discusses participant recruitment, data gathering, analysis, and rigour for study two. The research questions will be referred to throughout the section. The research questions for the qualitative study were:

- What are the factors that enable or inhibit participation in physical activity and sport in Pacific adolescent girls with a physical disability, from their perspective?
- From a provider of services perspective, what are the factors that enable or inhibit the Pacific adolescent girls with a physical disability access to physical activity?

4.1.17 The participants

It was decided that family based interviews be conducted. Pacific adolescents experience close family bonds and the Pacific family is significant to their way of life (MoH, 2010). Furthermore, this inclusion of the family gave more depth to the stories. The focus was on Pacific adolescent girls with physical disability as they are a vulnerable population at risk for not participating in physical activity which may impact on their general health and well-being.

The participants and their families or caregivers were selected from schools, from contacts through service providers, and from information sessions through a contact at a Pacific disability organisation who was provided with the information sheet which outlined the entry criteria for the studies. The providers of services were also selected from contacts and information provided on the internet. The specific inclusion criteria for the girls were that they be Pacific adolescent girls aged from 13-24 years who have experienced a physical disability for more than six months and that they were able to communicate their experiences verbally.

Participants who were unable to complete a form or communicate their experiences through either having a mental, sensory, severe physical disability, or chronic illness were excluded. Three participants were excluded that had shown an interest. One was too young, one was too old, and the other identified as a Pacific adolescent, but was from a European ethnic group. The criteria used to select the service providers was that they either directly or indirectly be currently involved in providing health and physical activities services to Pacific female adolescent girls who experience a physical disability.

The interview guide

The interview guides were developed in consultation with the candidate's supervisor and from reviewing the literature. The questions provided a guide for the foundation of the interviews and they ensured continuity across the different interviews. Whereas the interview process was essentially in the form of a conversation, or *talanoa*, the research guide ensured the specific rudiments of the data were captured. The interview guide was initially piloted and adapted to ensure it was appropriate and it is attached in Appendix F. Open-ended questions permit the participants to impart the data in their own words or experiences (Sandelowski 2000; Polit et al., 2001). Therefore, information was gathered through open-ended questions and in-depth conversations, thus

allowing me to seek meaning to the adolescents' experience of physical activity with a physical disability.

4.1.18 Recruitment

Following discussions with the community and parents or caregivers, as already outlined, the participants were recruited from September 2012 to November 2013. The participants and caregivers were supplied with a formal invitation by means of an information sheet explaining the research process and inviting them to participate. If they were interested, the participants had the option to contact the candidate via phone, text, or email. During this process, the re candidate stressed that participants were under no obligation at all to participate, and they were free to withdraw at any stage. Prior to the commencement of the interviews, the candidate ensured that the participants and their caregivers were able to fill out the consent forms satisfactorily. We also confirmed that they were able to share and communicate their experiences verbally and were willing to engage in an interview/conversation of approximately 60 minutes. The Pacific research assistant was present for all the interviews. In general, the participants were more than willing to participate and, in particular, they appeared to be curious and excited to be given the opportunity to be involved. The Pacific research assistant helped to alleviate language barriers. The girls were given the following pseudonyms: Masina, Kali, Tanielu, Moana, Sefina, Teuila, and Lelei.

Sample size/participants

Twelve girls were interviewed, with or without their mothers, in seven different age groups (see Table 4-2). As the amount of data generated from this number was extensive, this number of participants was deemed an appropriate number to work with, considering the amount of data that was collected and analysed. Once it was realised that no new data or themes were presented by the participants and it was deemed that further interviews would not add anything new to the general story, model, notion, or frame or in other words data saturation was reached, the interviewing was concluded (Strauss & Corbin 1998).

Table 4-2: Participants from study two

Participant/s Pseudonym	Age	Present at <i>talanoa</i>	Ethnic group	Disability	Location
Kali	14	Mum/daughter/brother	Samoan	Spina bifida	Their home
Moana	21	Participant	Samoan	Cerebral palsy	Their home/shop
Lelei	17	Participant	Samoan/Tongan	C- shaped spine (wheelchair)	Their home
Sefina	12	Mum/daughter	Samoan	Physical disability due to a car accident.	Their home
Tanielu	21	Participant	Tongan	Cerebral palsy and speech impairment	Shopping mall
Masina	20	Participant	Tongan	Cerebral palsy (wheelchair)	Home
Teuila	24	Mum/daughter	Samoan	Cerebral palsy and speech impairment	Home

4.1.19 Data gathering (study two)

After making initial contact with the participants, a time and a place was arranged that was convenient for the participants and their families. While all family members were initially invited to participate, in most instances only the daughter and the mother were available.

The interview commenced with a general conversation using the interview guide (see Appendix F) as a prompt to facilitate the discussion. It was important the interview or conversation was permitted to flow and the guide ensured that the areas of information to be explored were covered and the participants' views or experiences that were aimed for were collected.

The interviews lasted between 60 and 90 minutes and were audio-recorded and transcribed verbatim. The candidate ensured the use of high-quality recording equipment with new tapes and used two tape recorders. Attempts were made to record the interview in a quiet atmosphere at a mutually acceptable place, date and time. Furthermore, a notebook was used to record notes or words; this was completed after the interview. The notebook included notes on body language, cues for further questions to ask, and extra notes recorded at the time. Initially, it was difficult to write full notes as it meant losing eye contact, which disrupted the flow of the interview or conversation. Therefore, the candidate wrote or brief notes where applicable. The notes were referred during the

interview to clarify any parts of their stories, to discuss the interview with the Pacific candidate after the interviews and referred to through data analysis.

While the candidate had been concerned that the participants would not openly communicate with a stranger, it soon became apparent they were more than happy to share their stories. The Pacific research assistant also assisted in alleviating any anxiety amongst the participants. While the candidate was conscious of not taking up the participants' time, the interviews did take longer than expected, and the candidate gathered an unanticipated amount of data. This was due to the participants themselves being willing to continue the interview or conversation and also to the candidate being conscious of allowing the conversation to flow.

Cues such as body language and pausing during the conversations prompted movement to the next question from the interview guide, however, the candidate was conscious of letting the participants reflect on their stories within these brief pauses and also conscious of keeping them engaged. The questions were repeated a few times in a different context to check clarification.

As the candidate listened to the participant's stories, it was important to offer encouragement and reassurance in response to their stories and to encourage them in conversation while remaining impartial. This encouragement was often in the manner of a head nod, a smile, or shared laughter. No issues surfaced that were significant enough to require referral a counsellor. However, the candidate was humbled by the participants willing to share their stories, and though conscious of remaining impartial, some of the concerns raised by the participants were challenging to hear. The candidate alleviated this concern through discussions with supervisors.

4.1.20 Providers' interviews (study three)

Initially, the candidate had not anticipated interviewing the service providers, but it soon became apparent that providers not only could provide a wealth of experience and knowledge, but could also give the study a more holistic view in order to address the research questions. As a consequence, the design of the study was modified. The candidate had previously built a rapport with the service providers, as it was particularly challenging recruiting the Pacific adolescent girls with disabilities and provider input was essential to attaining an appropriate sample number. As with the interviews with the girls, ethics approval was granted, and all service providers were invited to participate in the

interviews after receiving information on the study and all were required to sign consent forms. They were also advised that they did not have to answer any of the questions, and it was stressed they could end the interview at any point.

Twelve service provider participants were interviewed from eight different groups (see Table 4-3). As outlined in the previous section with the girls, information was gathered in interviews or conversations lasting up to 90 minutes. While the interviews were anticipated to be only 60 minutes, the providers themselves appeared to be fully engaged and more than willing to share their stories even when the candidate reminded them the time had exceeded the anticipated 60 minutes. Interview techniques were similar to the family based girls' interviews, with the exception of a different interview guide (see Appendix F) that was structured to capture data from a provider's perspective. The characteristics of the providers and the interview locations are outlined in Table 4-3. The earlier rapport the candidate had built up with the providers through ongoing consultation and through attempting to recruit the Pacific girls and their families was deemed expedient throughout the interviews. To provide anonymity, the providers were identified as providers 1-8 in the findings but not specifically linked to Table 4-3.

Table 4-3: Participants from study three

Type of service provider	Number in interview	Location of interview
Disability Sport Foundation who aims to provide physical activity for adolescents with physical disabilities.	1	Central Auckland
Sports activity provider for people with physical disabilities.	1	Central Auckland
Health and wellbeing programme for young people with disabilities.	1	North Auckland
Pacific organisation which aims actively supports young people with disabilities.	2	South Auckland
Pacific organisation who assists people to access disability support services.	1	North Auckland
Organisation that aims to help improve the health and wellbeing of Pacific people.	4	Central Auckland
Sports organisation who aims to identify potential athletics with a physical disability and provide funding and training to enable them to compete at an international level.	1	Central Auckland
School School Principal; school has a specific unit attached unit for children with disabilities.	1	South Auckland

4.1.21 Data analysis

Brown (2008) suggests that in qualitative research, it is the norm to begin preliminary analysis of the data after each interview. The process of analysing the data began at the commencement of the data collection (at the completion of each of the

interviews). After each of the interviews with the girls, the Pacific research assistant and the candidate met to debrief and discuss findings from the interview and these findings were reviewed again by the candidate within two hours of the debriefing.

The audio recordings were transcribed primarily through the use of a transcriber, who had signed a transcriber confidentiality form, but the candidate also revisited the tapes during the data analysis. The candidate had previously found this revisiting beneficial to verify any notes taken during the interviews. Furthermore, this allowed familiarity with the data, which is advantageous for data reduction and consequent interpretation.

Thematic analysis is commonly used in qualitative descriptive studies (Sandelowski, 2010). Initially, the scripts were read and re-read in order to gain an appreciation of the data under investigation. For the qualitative data, thematic analyses identified patterns by searching for common ideas with similar meaning and these were then grouped into themes identified by the researchers (Morse & Field, 1995). Data was processed via the framework approach, using inductive analysis. Five stages were used:

1. Familiarisation — After the first interview, familiarisation with the data occurred through reading the transcripts and studying notes to list key ideas and recurrent themes.
2. Identifying a thematic framework (provisional classification) — Key issues, concepts, and themes by which the data could be examined were identified. This was carried out by drawing on issues raised by the respondents themselves and their views or experiences.
3. Indexing — A thematic framework was applied to all the data in textual form by marking the transcripts with colour codes manually and through the NVivo management system.
4. Charting — The data items were rearranged according to the appropriate part of the thematic framework to which they related.
5. Interpretation — The process of interpretation was influenced by the original research objectives, as well as by the themes that emerged from the data.

4.1.22 NVivo

The data were also imported into NVivo 10, which is a qualitative data management software package. NVivo provided a supplementary process to the manual thematic data analysis and was used as follows:

1. Data were imported to and stored in NVivo.
2. Memos in the package were used to record procedures and track the data analysis processes.
3. Auto coding confirmed the themes already identified in the manual analysis.
4. The word frequency allowed the cross-checking of recurrently used words. This also allowed data familiarisation, which proved particularly useful due to the large amount of data that was generated.
5. The data were stored in parent and child nodes allowing comparison of the data and further exploration.
6. Text search queries permitted cross-checking of text phrases against the themes (see Figure 4-2), gathering query results from the themes.
7. The word tree was utilised to confirm relationships and compare with the themes already identified.

In summary, NVivo assisted in organising the data, confirming the coding of the data into themes, and examining the relationships between the themes. Furthermore, the processes were recorded in the memo option in NVivo.

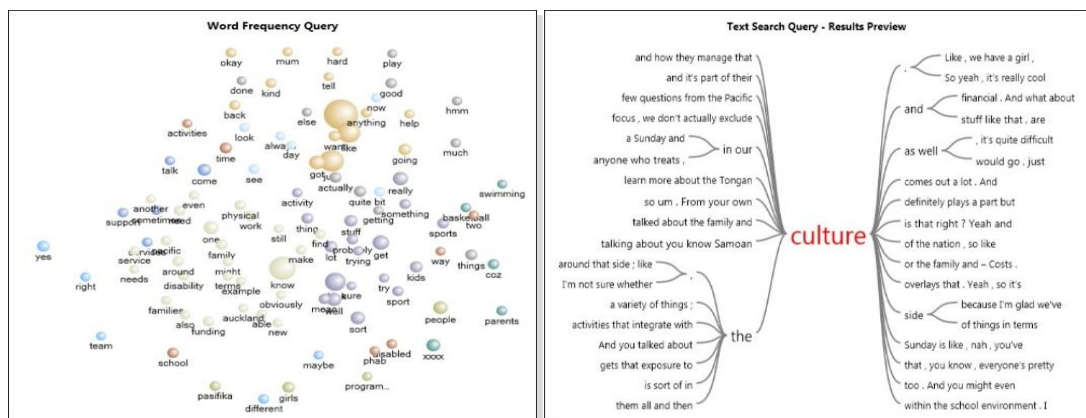


Figure 4-2: Text search queries showing text search queries/ themes
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4.1.23 Rigour

Various strategies were utilised within this qualitative section to safeguard against any bias and to enhance the credibility or trustworthiness of the findings throughout the research. The following section discusses how rigour was ensured and the strategies that were employed. Records of the research process were updated continuously; this included generating regular reports and keeping detailed records. As a consequence, the process undertaken to conduct the studies could be verified at any time, which is an imperative factor for trustworthiness (Koch, 1995).

In particular, when working with adolescents, emphasis needs to be placed on the verification of data that is collected (Caelli, 2001). During the interviews, if necessary, questions were cross-checked by verifying the participant's meaning by either repeating questions, re-asking the same question in a different way or asking the participants "is this you're understanding of...?" It is important to have an understanding of the participant's actions, beliefs, and/or values which aims to uncover the "truth" (Grbich, 1999). The candidate had a sense of building rapport with the adolescents that was in part attributed to having older children, and in part to holding qualifications in child mental health and adolescent development; this allowed the candidate to seek meaning in their stories (Denzin & Lincoln, 2000). Additionally, the candidate had years of experience in interviewing and communicating with people of a variety of different cultures and ages. Moreover, during the family interviews, a female Pacific research assistant attended. All of this contributed to ensuring the data came from the participants' point of view and uncovered important understandings, while keeping the participants engaged throughout the interview process.

Gullotta, Adams, and Markstrom (2000) also refer to the importance of the researcher having training in adolescent development whereby they can use interview techniques to engage the adolescent, building trust, respect, and rapport with them. This was important to be able to uncover insight into the meanings of their experiences. Other considerations that were important included watching out for any therapeutic resistance during the interview process. Carpenter and Hammell (2000) suggest that "trustworthy" research should be carried out fairly and should represent the participants' stories as closely as possible. Trustworthiness is established when credibility and confirm ability have been identified; for instance, this study attempted to ensure the participant's perspectives have been reported clearly and correctly.

The competence of the researcher is also important for the credibility of the study. To ensure that there was a familiarity with the issues around the research questions, a thorough literature review on issues surrounding the study objectives was completed, ensuring that the interview, data collection, and analysis processes were consistent with qualitative descriptive methodology. As already discussed, there was an extensive consultation process with experienced researchers and other individuals who were familiar with the Pacific culture prior to and during each of the studies in this research.

Adolescents may have a different experience as interpreted by adults and adult researchers need to be mindful of this (Miller & Glassner, 2004), especially when researching across different cultures. The candidate was conscious that it was imperative to use techniques and skills that enable the sharing of the “lived experiences” without contaminating the data, while considering cultural awareness and competence. This was ensured under the numerous discussions and guidance of the candidate’s supervisors and from earlier expertise gained under other experienced researchers. In addition, from preceding experiences, the candidate had acquired sufficient listening and therapeutic communication skills. The candidate was conscious of ensuring the research design and questioning matched the study aims. NVivo was also utilised for further data analysis. Reflection and participant feedback during the interviews further ensured rigour in the study.

This study was performed under the guidance of experienced researchers, such as the supervisors who assisted through the process; this is a further instance of triangulation (Carpenter & Hammell, 2000). This has helped ensure the research is not only of an acceptable standard, but has assisted in identifying any problems associated with ethical considerations, the overall research design, data collection, and interpretation of the findings. Furthermore, the attendance of the Pacific research assistant reinforced cultural safety and she was able to provide cultural meaning to the dialogue. In summary, rigour was of utmost importance throughout this study and as a consequence, this study is trustworthy, credible, valid, and authentic.

Chapter 5: A QUANTITATIVE ANALYSIS

The following chapter is the results from the cross-sectional quantitative survey as described in Chapter Three, drawing on the Pacific data from the 2012 Youth2000 Survey Series. The organisation of this chapter is shown in Fig: 5.1. This section addresses the research questions:

1. What are the demographic characteristics of Pacific adolescent boys and girls, including, sex and ethnicity?
2. How active are Pacific adolescents with a physical disability compared to those without a physical disability, in terms of participation and sedentary (screen time) behaviours?
3. What factors enable or inhibit participation in physical activity for Pacific adolescents including peers, their immediate environments, and their physiological and psychological health and wellbeing?

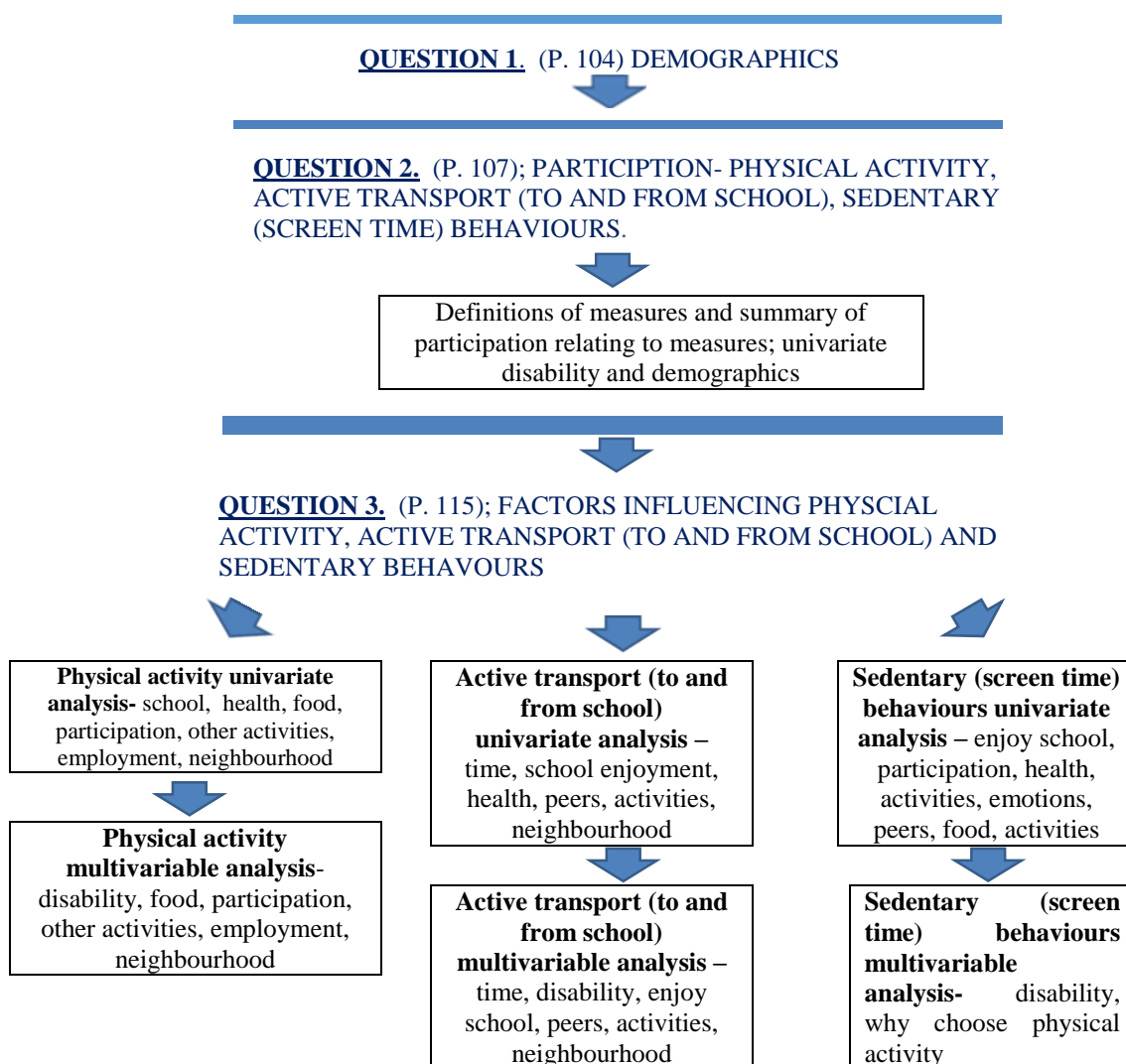


Figure 5-1: Organisation of Chapter 5 for quantitative analysis

5.1 Demographic characteristics

In answering question 1, the demographic characteristics of the sample were considered. Overall, the sample group for this study comprised of 1,201 Pacific adolescent participants of which 56.6% were female from the Youth2000 survey sample group. This sample group represents the Pacific adolescents from the 8,500 New Zealand secondary school students selected from 91 composite and secondary schools throughout New Zealand (AHRG, 2012).

From the group of adolescents who selected at least one Pacific ethnicity, the non-exclusive specific ethnic groups included Samoan 48%, Cook Island Maori 20.6%, Tongan 25.7%, Niuean, 8.3%, Tokelauan 3.6%, Fijian 13.7%, and other Pacific Peoples 6.0%. The multiple ethnicities have been further classified into single Pacific (33%) (Those who only choose a single Pacific ethnic group) multiple Pacific (7.8%) (Multiple Pacific ethnicities) and mixed (59.2%) (includes Pacific and other ethnic groups). Approximately, three-quarters (72.7%) of the adolescents reported that they were born in New Zealand with around one-fifth (23.2%) born in the Pacific Islands. In addition, 1.7% of the adolescents reported being born in Australia and 2.5% were born in other countries.

The demographics as shown in Table 5-1 include age, place of birth, ethnicity, ethnicity grouping, New Zealand deprivation indicators, overcrowding, and disability prevalence. The age range was from under 12 to 19 years with 23% of the adolescents reporting their age as 14 years. Predominately, 95.8%, the adolescents were aged from 13 to 17 years. The adolescent was given the option to self-identify from the group of their ethnic origin through the selection of multiple ethnicities groups and their place of birth, to report the ethnic groups and affiliations.

Table 5-1: Pacific adolescent boys' and girls' demographics

How old are you?	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
under 12 years	5.0	-	5.0	(0.1)	10.0	(0.2)
12	44.9	(0.2)	94.8	(2.3)	139.7	(1.9)
13	671.5	(1.4)	858.2	(21.1)	1530	(21.3)
14	710.9	(21.5)	945.5	(23.2)	1656.9	(23.0)
15	700.9	(22.8)	879.1	(21.6)	1580.2	(22.0)
16	589.9	(18.9)	673.1	(16.5)	1263.2	(17.7)
17	336.1	(10.8)	523.8	(12.9)	860.0	(11.8)
18	54.8	(1.8)	79.6	(2.0)	134.4	(1.9)
19	4.9	(0.2)	10	(0.2)	14.9	(0.2)
Over 19	0	(0.0)	5.0	(0.1)	5.0	(0.1)
Not reported	5.0	-	0	-	5.0	-
Ethnicity*						
Samoaan	1402.1	(44.9)	2083.3	(51.1)	3485.8	(48.0)
Cook Island Maori	668.6	(21.4)	808.2	(19.8)	1477.0	(20.6)
Tongan	829.7	(26.6)	1013	(24.9)	1843.0	(25.7)
Niuean	244.8	(7.8)	354.4	(8.7)	599.3	(8.3)
Tokelauan	109.5	(3.5)	154.4	(3.8)	263.9	(3.6)
Fijian	464.5	(14.9)	513.4	(12.6)	978.0	(13.7)
Other Pacific Peoples	204.1	(6.5)	223.8	(5.5)	428.0	(6.0)
Ethnicity Grouping						
Multiple Pacific	214.3	(6.9)	354.1	(8.7)	568.5	(7.8)
Mixed Pacific	1849.6	(59.2)	2414.2	(59.3)	4264.4	(59.2)
Single Pacific	1060.1	(33.9)	1305.7	(32.0)	2366.1	(33.0)
Where were you born?						
New Zealand	2187.9	(70.0)	3067.3	(75.0)	5255.9	(72.7)
Australia	44.9	(1.0)	74.2	(2.0)	119.1	(1.7)
Pacific Islands	785.5	(25.0)	862.8	(21.0)	1648.6	(23.2)
Other	105.7	(3.0)	69.6	(2.0)	175.3	(2.5)
Total	3124	(43.4)	4074	(56.6)	7198	-

* Adolescents self-identified from the group or groups of their ethnicity
Adjusted for school cluster and sampling weights

Based on the 2006 New Zealand socio-economic deprivation index (NZ Dep.) measuring score, 1 indicated the least deprived and 10 the most deprived score. As seen in Table 5-2, the deprivation index for this analysis, was grouped into low (1-3), medium (4-7) or high (8-10) deprivation. The socio economic variables from this survey used to identify deprivation and create these indicators, relate to geographical area or neighbourhood as opposed to singular people or family (Clark et al., 2013). More than half (57.2%) of the adolescents were in the lowest deprivation groups reporting 23.2% in deprivation 9 group and 35.0% in the deprivation 10 group. Moreover, a slightly higher proportion of females or 36.5% were likely to be in the deprivation 10 or highest deprived group. One in five Pacific adolescents, more specifically 19.3% of adolescent males and 20.6% of adolescent females, were living in more than two people per bedroom house.

According to Goodyear, Fabian and Hay (2011), more than two people per bedroom would be defined as an overcrowd household.

Table 5-2: New Zealand deprivation and overcrowding

NZ Dep2006	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
1	76.9	(2.5)	119.7	(3.0)	196.6	(2.7)
2	79.6	(2.6)	139.5	(3.5)	219.1	(3.0)
3	125.6	(4.1)	104.8	(2.6)	230.4	(3.3)
4	131.8	(4.3)	134.8	(3.3)	266.6	(3.8)
5	131.2	(4.3)	138	(3.4)	269.2	(3.8)
6	156.4	(5.1)	187.8	(4.7)	344.3	(4.9)
7	332.9	(10.8)	214.5	(5.3)	547.5	(8.1)
8	363.6	(11.8)	499	(12.4)	862.6	(12.1)
9	648.6	(21.0)	1018	(25.3)	1666.8	(23.2)
10	1035	(33.6)	1468	(36.5)	2503.8	(35.0)
Not reported	42	-	49.8	-		
Overcrowding						
No	2506.4	(80.2)	3226.5	(79.2)	5733.7	(79.7)
Yes	602.6	(19.3)	837.6	(20.6)	1440.4	(19.9)
Not reported	15	-	9.9	-	-	-

Adjusted for school cluster and sampling weights

Table 5-3 shows that 7.2% of the total sample of adolescents reported experiencing a long-term health disability lasting more than six months. From the 7.2%, 3.7% did not experience a difficulty while 3.2% reported they did. Disability included all sensory and physical impairments as it was not possible to differentiate between physical and other disabilities. The following question was used to determine disability: “Do you have any long-term disability (lasting 6 months or more) (e.g. sensory impaired hearing, visual impairment, in a wheelchair, learning difficulties)”?. From the total sample group, for this study, 86 or 7.2% of the adolescents reported a disability.

Table 5-3: Adolescents who report a disability

		Male		Female		Total	
		N	(%)	N	(%)	N	(%)
Disability*	No	2850	(40.2)	3730	(52.6)	6580	(92.8)
	Yes	209	(3.0)	299	(4.2)	508	(7.2)
Experience disability and difficulty	No	92	(1.21)	190	(2.49)	282	(3.7)
	Yes	117	(1.7)	109	(1.5)	226	(3.2)

* The question used to determine disability for this analysis was “Do you have any long-term disability (lasting 6 months or more) (e.g. sensory impaired hearing, visual impairment, in a wheelchair, learning difficulties)”?. Adjusted for school cluster and sampling weights

The type of difficulty was further examined and the results are in Table 5-4 for the 3.2% who reported experiencing a difficulty or difficulties due to their disability. Some adolescents selected more than one option, indicating more than one of the difficulties was problematic for them, due to their disability.

Table 5-4: Types of difficulties reported from the adolescents who experience a disability

	Difficulty with everyday activities other people your age normally do	Communicating talking, mixing with others or socialising	Difficulty with other activities people your age normally do	N	%
No*	No	No	No	282.0	-
Yes*	No	No	Yes	44.9	(19.9)
	No	Yes	No	64.7	(28.6)
	No	Yes	Yes	5.0	(2.2)
	Yes	No	No	50.9	(22.5)
	Yes	No	Yes	30.8	(13.6)
	Yes	Yes	No	10.0	(4.4)
	Yes	Yes	Yes	19.9	(8.8)

Adjusted for school cluster and sampling weights

No indicates the adolescent reported disability but did not experience any difficulty with this.

Yes indicates where the adolescent reported one or more difficulties as a result of their disability.

5.2 Participation in physical activity, active transport (to and from school) and sedentary (screen time) behaviour

In the following section question 2 is addressed. This included determining meeting the physical activity guidelines, undertaking active transport to and from school and participating in sedentary behaviours (screen time).

5.2.1 Physical activity

The physical activity measure was determined by the following question:

- During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?

The following analysis utilised 7 days or less than 7 days as the outcome measure for participation in physical activity. Meeting the guidelines in the following text refers to meeting the physical activity guidelines as defined by these measures. The physical activity guidelines, participating in 60 minutes or more of moderate to vigorous physical activity daily, were also considered (SPARC, 2007). Table 5-5 shows 11% of the adolescents reported meeting the physical activity guidelines.

Table 5-5: Adolescent meeting the physical activity guidelines (based on the study criterion)

No. Physical Activity Days	N	(%)
1 day	898.8	(13.4)
2 days	1069.7	(16.0)
3 days	1203.0	(18.0)
4 days	884.6	(13.2)
5 days	821.6	(12.3)
6 days	366.0	(5.5)
7 days	735.0	(11.0)

Adjusted for school cluster and sampling weights

5.2.2 Physical activity participation: disability and demographics

The results, as presented in Table 5-6, showed that the adolescents who reported experiencing a disability were just as likely to be meeting the physical activity guidelines as those who did not report a “disability” ($p=0.93$), and more likely if they “experienced difficulties” ($p=0.49$), and they “experienced difficulty with activities that other people your age can normally do” ($p=0.58$) however these results were not statistically significant. Moreover, if they “did not experience any difficulty with their disability”, the results showed they were less likely to report meeting the guidelines ($p=0.67$), however these results were not statistically significant.

Table 5-6: The odds ratio of meeting the physical activity guidelines by disability

		% PA	OR	95% CI	p-value
Long term disability (over 6 months)	Yes	11.0	1.00	-	0.93
	No	11.3	1.04	(0.47-2.28)	
Experience disability and difficulty	No	10.9	1.00	-	0.49
	Yes	14.8	1.44	(0.52-4.00)	
Disability difficulty - Everyday activities other people yr age usually do	No	10.9	1.00	-	0.58
	Yes	16.2	1.59	(0.32-7.93)	
Disability difficulty - communicating, talking, mixing with others or socialising	No	10.8	1.00	-	0.17
	Yes	22.3	2.36	(0.69-8.07)	
Disability difficulty - Any other activity that people your age can usually do)	No	11.0	1.00	-	1.00
	Yes	11.0	1.00	(0.24-4.24)	
Disability difficulty - No difficulty with any of these)	No	11.0	1.00	-	0.67
	Yes	8.9	0.79	(0.27-2.31)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

In Table 5-7 the odds of meeting the physical activity guidelines by demographics are shown. The results showed the 8.4% females and 14.4 % of the males reported meeting the physical activity guidelines and compared to males, females had almost half the odds of meeting the guidelines after the survey weights were applied (OR 0.54, 95%

CI 0.39-0.76). There were slight differences in the prevalence of physical activity by school form (year) with form 3-6 (year 9-12), more likely to meet the guidelines and participating in physical activity in comparison to form 7 (year 13), however this was not statistically significant. Cook Island Maori were the only ethnic group result which showed as statistical significant with 14.3% more likely to report meeting the physical activity guidelines (OR 1.48, 95% CI 1.00-2.20). Moreover, place of birth was not statistically significant. The results showed the adolescents who were in the more deprived groups were less likely to be meeting the physical activity guidelines. For example 14.7% of adolescents in the least deprived group (1-3), 13.5% (OR 0.91 95% CI 0.56-1.47), in group (4-7), in comparison to 9.3% (OR 0.60, 95% CI 0.39-0.92), in the most deprived group, (8-10).

Table 5-7: The OR of meeting the physical activity guidelines by demographics

		% PA	OR	95% CI	p-value†
Sex	Male	14.4	1.00	-	0.0004*
	Female	8.4	0.54	(0.39-0.76)	
School form (year)	3 (9)	10.7	1.00	-	0.78
	4 (10)	12.2	1.16	(0.64-2.10)	
	5 (11)	11.7	1.11	(0.67-1.84)	
	6 (12)	10.5	0.98	(0.52-1.86)	
	7 (13)	9.0	0.83	(0.45-1.51)	
Ethnic (Samoan)	No	11.7	1.00	-	0.38
	Yes	10.9	0.85	(0.60-1.21)	
Ethnic (Cook Island/Maori)	No	10.1	1.00	-	0.05*
	Yes	14.3	1.48	(1.00-2.20)	
Ethnic (Tongan)	No	11.7	1.00	-	0.15
	Yes	8.9	0.73	(0.48-1.12)	
Ethnic (Niuean)	No	11.0	1.00	-	0.96
	Yes	11.1	1.02	(0.56-1.85)	
Ethnic (Tokelauan)	No	10.8	1.00	-	0.32
	Yes	15.4	1.50	(0.68-3.30)	
Ethnic (Fijian)	No	10.4	1.00	-	0.16
	Yes	14.7	1.49	(0.86-2.58)	
Ethnic (Other Pacific Peoples)	No	10.9	1.00	-	0.67
	Yes	12.5	1.17	(0.57-2.42)	
PA guideline by ethnic group	MP	8.1	1.00	-	0.46
	OP	11.1	1.41	(0.83-2.34)	
	SP	11.5	1.48	(0.82-2.65)	
Born	NZ	11.0	1.00	-	0.99
	PI	11.1	1.02	(0.69-1.52)	
	Other	11.6	1.08	(0.39-2.98)	
PA guideline by N.Z. dep. (most deprived)	1-3	14.7	1.00	-	0.02*
	4-7	13.5	0.91	(0.56-1.47)	
	8-10	9.3	0.60	(0.39-0.92)	
Overcrowding (>2 people per bedroom)	No	11.0	1.00	-	0.87
	Yes	10.8	0.97	(0.69-1.37)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

5.2.3 Active transport (to and from school)

Table 5-8 shows the frequency of active transport (walk, bike, and skate) to and from school in the past week. The focus, or measure for meeting the guidelines for active transport for this study, was on the adolescents who utilised active transport (to and from school). The following analysis utilises is the students using any active transport (to and from school) versus nothing.

Table 5-8: Frequency of active transport (to and from school)

	N	(%)
None	1883.5	(27.6)
One to two times	1465.0	(21.4)
Three to five times	1144.4	(16.8)
Six to eight times	613.3	(9.0)
Nine to ten times	1727.0	(25.3)

†Times in the past week did you walk, bike, or skate to or from school
Adjusted for school cluster and sampling weights

5.2.4 Active transport (to and from school) and disability

As shown in Table 5-9, the adolescents who reported a disability and a difficulty with their disability, and undertaking active transport (to and from school), however these results were not statistically significant.

Table 5-9: Undertaking any active transport (to and from school) by disability

		% A/T	OR	95%CI	p-value
Long term disability (over 6 months)	Yes	72.86	1.00	-	0.347
	No	66.92	0.75	(0.42-1.36)	
Experience disability and difficulty	No	7.27	1.00	-	0.16
	Yes	61.9	0.61	(0.31-1.21)	
Disability difficulty - Everyday activities people your age usually do)	No	72.41	1.00	-	0.918
	Yes	71.36	0.94	(0.34-2.59)	
Disability difficulty - Communicating, talking, mixing or socialising	No	72.47	1.00	-	0.549
	Yes	66.73	0.76	(0.31-1.86)	
Disability difficulty - Other activities that people your age can usually do	No	72.56	1.00	-	0.27
	Yes	59.72	0.56	(0.20-1.58)	
Disability difficulty - No difficulty with any of these)	No	72.53	1.00	-	0.695
	Yes	68.95	0.84	(0.35-1.00)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, A/T = active transport (to and from school)

Table 5-10 illustrates gender, birth locations, and overcrowding in relation to undertaking active transport (to and from school). However the results were not statistically significant.

Table 5-10: Active transport (to and from school) by demographics and overcrowding

		% AT	OR	95%CI	p-value
Sex	Male	74.55	1.00	-	0.24
	Female	70.88	0.83	(0.61-1.13)	
Born	NZ	72.34	1.00	-	0.72
	PI	71.74	0.97	(0.77-1.23)	
	Other	76.47	1.24	(0.71-2.16)	
Overcrowding (>2 people per bedroom)	No	71.70	1.00	-	0.16
	Yes	75.45	1.21	(0.93-1.59)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant result, AT = active transport (to and from school)

The following Table 5-11, shows the odds of the adolescents undertaking active transport (to and from school) by ethnic groups. Compared to adolescents identifying with the major Pacific ethnicity, those identifying with other Pacific ethnicities had a 37% lower odds of using active transport to and from school. From the general ethnic groups the “other” category results showed that 73.1% of the adolescents reported no, to undertaking active transport (to and from school) adolescents, and 62.1% reporting yes, with the odds showing (OR 0.60, 95% CI 0.42-0.86). Active transport (to and from school) by ethnic group was reported as in the multiple Pacific (MP) as 78.6%, other Pacific (OP) as 69.8% and single Pacific groups (SP) as 75.7%, with the odds ratio showing (OR 0.63-0.85, 95% CI 0.45-1.14).

Table 5-11: Active transport (to and from school) by ethnic groups

		% AT	OR	95% CI	p-value
Ethnic (Samoan)	No	73.2	1.00	-	0.62
	Yes	71.7	0.93	(0.68-1.26)	
Ethnic (Cook Island/ Maori)	No	71.8	1.00	-	0.36
	Yes	75.0	1.18	(0.83-1.69)	
Ethnic (Tongan)	No	71.8	1.00	-	0.29
	Yes	74.4	1.14	(0.90-1.47)	
Ethnic (Niuean)	No	72.1	1.00	-	0.24
	Yes	76.6	1.27	(0.86-1.88)	
Ethnic (Tokelauan)	No	72.4	1.00	-	0.69
	Yes	74.5	1.12	(0.65-1.91)	
Ethnic (Fijian)	No	73.1	1.00	-	0.20
	Yes	68.3	0.79	(0.56-1.13)	
Ethnic (Other Pacific Peoples)	No	73.1	1.00	-	0.005*
	Yes	62.1	0.60	(0.42-0.86)	
A/T guideline by ethnic group	MP	78.6	1.00	-	0.03*
	OP	69.8	0.63	(0.45-0.88)	
	SP	75.7	0.85	(0.63-1.14)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant result, AT = active transport (to and from school)

5.2.5 Sedentary (screen time) behaviours

The sedentary (screen time) measure, as shown in Table 5-12, was determined by the following question:

How much time do you spend doing these activities each day?

- Watch TV
- Play computer games, or electronic games like Xbox, hand-held, or play station
- Go on the internet.

This was primarily a measure of “screen time” which is collective term to describe these sedentary behaviours (Sedentary Behaviour Research Network, 2012). The outcome measure for sedentary behaviour (screen time) in the following analysis was less than 2 hours of screen time per day versus over 2 hours of screen time per day. Low sedentary behaviour was classified as less than two hours of screen time per day (Packer et al., 2006). A combination of the measures (midpoints) from Table 5-12, was used to create a measure of sedentariness. As shown in figure 5.2, 22.8% of adolescents met the overall screen-time; that is, they spent less than 2 hours per day engaged in screen-time.

Table 5-12: Screen time

Watch TV each day	Midpoints	N	(%)
None	0	402.0	(6.2)
Less than 1 hour	0.5	1560.6	(24.0)
1-2 hours	1.5	2023.0	(31.1)
3 to 4 hours	3.5	1347.0	(20.7)
5 hours or more	5.5	1176.9	(18.1)
Play computer games/ electronic games/ Xbox/hand- held/ PlayStation	Midpoints	N	(%)
None	0	2156.3	(33.0)
Less than 1 hour	0.5	1403.7	(21.6)
1-2 hours	1.5	1211.3	(18.6)
3 to 4 hours	3.5	781.8	(12.0)
5 hours or more	5.5	956.8	(14.7)
Activity time - Go on the Internet	Midpoints	N	(%)
None	0	921.0	(14.1)
Less than 1 hour	0.5	1441.8	(22.2)
1-2 hours	1.5	1623.3	(25.0)
3 to 4 hours	3.5	1059.8	(16.0)
5 hours or more	5.5	1464.0	(22.0)

Adjusted for school cluster and sampling weights

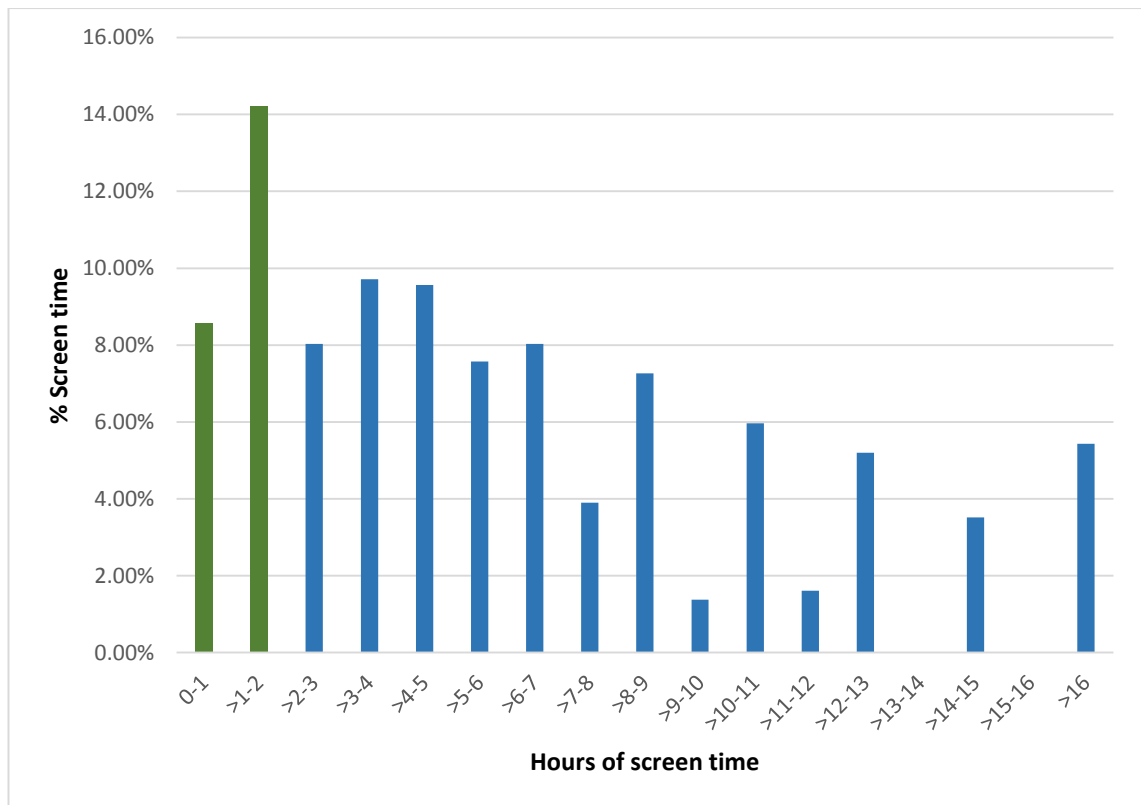


Figure 5-2: Twenty-three percent meet the sedentary (screen time) activity guideline (under 2 hours)

5.2.6 Sedentary (screen time) behaviour and disability

As shown in Table 5-13, while not statistically significant, the group who were less likely to be meeting the guidelines or have high sedentary behaviours (screen time), where the adolescents who reported a difficulty with their disability in “everyday activities people your age usually do” (OR 0.85, 95% CI 0.24-2.98). The adolescents who experienced “difficulty with this disability” reported 40.1% yes, 22.3% no, with the odds meeting the guidelines likely to be (OR 2.34, 95% CI 1.17-4.69). Adolescents who experienced a “disability which causes problems with or stopping them communicating, talking, mixing with others, or socialising” reported 56.3% yes, and no 22.3%, with the results showing they were more likely to be meeting the guidelines or have low sedentary behaviours (screen time) (OR 4.48, 95% CI 1.62-12.43).

Table 5-13: Meeting sedentary (screen time) behaviour guidelines by disability

		% Low SB	OR	95% CI	p-value
Hlth: Long term disability (over 6 months)	Yes	22.53	1.00	-	
	No	25.28	1.16	(0.72-1.88)	0.54
Experience disability and difficulty	No	22.3	1.00	-	
	Yes	40.1	2.34	(1.17-4.69)	0.016*
Disability difficulty - Everyday activities people your age usually do)	No	22.7	1.00	-	
	Yes	25.7	0.85	(0.24-2.98)	0.80
Disability difficulty - Communicating, talking, mixing or socialising	No	22.3	1.00	-	
	Yes	56.3	4.48	(1.62-12.43)	0.004*
Disability difficulty - Other activities that people your age can usually do	No	22.7	1.00	-	
	Yes	24.5	0.91	(0.23-2.75)	0.86
Disability difficulty - No difficulty with any of these)	No	23.0	1.00	-	
	Yes	15.9	1.59	(0.61-4.10)	0.34

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, SB = sedentary behaviours

The following from Table 5-14 shows the univariate analysis of meeting the sedentary (screen time) guidelines. More females, or 25.2%, were more likely to report meeting the sedentary (screen time) behaviour guidelines relative to males at 19.2% (OR 1.43, 95% CI 1.07-1.90). The results showed that the adolescents who were born in the “other” category, were (32.4%), Pacific (23.8%) and New Zealand, (21.9%), with the odds meeting the guidelines likely to be (OR 1.11-1.71, 95% CI 0.78-2.99). Typically, adolescents were more likely to report overcrowding yes, (27.3%) or no, (21.6%), with the results showing they were more likely to report meeting the sedentary (screen time) behaviour guidelines (OR 1.36, 95% CI 1.06-1.75).

Table 5-14: Meeting sedentary (screen time) behaviour guidelines by demographics/overcrowding

		% % Low SB	OR	95% CI	p-value
Intro2(what sex are you)	Male	19.2	1.00	-	
	Female	25.2	1.43	(1.07-1.90)	0.016*
Born	NZ	21.9	1.00	-	
	PI	23.8	1.11	(0.78-1.59)	
	Other	32.4	1.71	(0.98-2.99)	0.04*
Overcrowding (>2 people per bedroom)	No	21.6	1.00	-	
	Yes	27.3	1.36	(1.06-1.75)	0.017*
Sedentary (screen time) by ethnic group	MP	22.2	1.00	-	
	OP	22.5	1.02	(0.78-1.32)	
	SP	23.3	1.06	(0.71-1.59)	0.95

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, Sedentary = sedentary behaviours

5.3 Factors that enable and inhibit participation in physical activity, active transport (to and from school), and sedentary (screen time) behaviours - (univariate and multivariable results)

In answering question 3, of this of this quantitative study, the factors that enabled or inhibited participation in physical activity, active transport (to and from school) and sedentary (screen time) behaviours for Pacific adolescents, were determined. These included their immediate environments and factors relating to their physiological and psychological health and wellbeing. The table not included in this analysis as they were not statistically significant are presented in Appendix H.

5.3.1 Physical activity (univariate results)

The results showed, as seen in Table 5-15, that 12.5% of adolescents reported “enjoying school sports”, with the odds of meeting the physical activity guidelines (OR 1.75, 95% CI 1.13-2.62). In contrast, 14.2%, report they do “belong to a sports teams” in comparison to 8.0% who do not, were less likely to be meeting the guidelines (OR 0.52, 95% CI 0.37-0.73). The adolescents who reported they “complete activities to help others at school” were less likely to report meeting the physical activity guidelines (OR 0.72, 95% CI 0.53-1.00). Experiencing “bullying” was reported by the adolescents once a week to most days, however this was not statistically significant. Nevertheless, 11.7% reported they less likely to meet the guidelines and “do not know why they were bullied”, with 6.3% responding they “do know why they were bullied” (OR 0.51, 95% CI 0.28-0.93).

Table 5-15: Family fun and school characteristics

		% PA	OR	95% CI	p-value
You and your family have fun/time together?	None/some	10.9	1.00	-	0.93
	A lot/often	11.0	1.02	(0.66-1.56)	
How do you feel about school?	Like it a lot	11.8	1.00	-	0.51
	A bit /its ok	10.4	0.87	(0.67-1.12)	
	Don't Like	10.1	0.84	(0.34-2.04)	
Enjoy school - Hanging out with friends	No	12.9	1.00	-	0.50
	Yes	10.8	0.82	(0.46-1.46)	
Enjoy school - Doing school work	No	10.5	1.00	-	0.46
	Yes	11.6	1.11	(0.84-1.48)	
Enjoy school – Sports	No	7.6	1.00	-	0.01*
	Yes	12.5	1.75	(1.13-2.62)	
Do you belong to any school sports team	Yes	14.2	1.00	-	0.0002*
	No	8.0	0.52	(0.37-0.73)	
Belong to any clubs/teams at school other than sports	Yes	13.0	1.00	-	0.06
	No	9.5	0.70	(0.49-1.01)	
Do you do activities to help others at school	Yes	12.6	1.00	-	0.04*
	No	9.4	0.72	(0.53-1.00)	
Bullied in school	No	10.7	1.00	-	0.08
	Once/week to most days	19.2	1.98	(0.94-4.18)	
I don't know why I was bullied	No	11.7	1.00	-	0.03*
	Yes	6.3	0.51	(0.28-0.93)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

As shown in Table 5-16, the results showed that the 28.7% of adolescents who reported “visited an alternative healthcare worker” were more likely to report meeting physical activity guidelines (OR 3.30, 95% CI 1.11-9.9). Adolescents, conveyed in the “last 12 months that if they had an injury which resulted in needing to visit a doctor, nurse or physiotherapist”, were also more likely to report meeting the physical activity guidelines (OR 1.42-2.68, 95% CI 0.92-5.63).

Table 5-16: Health

		% PA	OR	95% CI	p-value
Used for healthcare in the last 12 months: Alternative health	No	10.9	1.00	-	0.03*
	Yes	28.7	3.30	(1.11-9.9)	
In the last 12 months how many times have you had an injury that resulted in you needing to see a doctor, nurse, or physio?)	Not at all	8.2	1.00	-	0.05*
	Once	11.3	1.42	(0.92-2.19)	
	2-3 times	13.3	1.72	(1.06-2.77)	
	4 or more	19.3	2.68	(1.27-5.63)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

On the pro-social score the adolescents responded to “positive social behaviours towards others” with 12.0% reporting not “true”, 7.9% “somewhat true” and 12.4% “certainly true”, with the odds meeting the guidelines likely to be (OR 0.62-1.04, 95% CI 0.19-3.40) as presented in Table 5-17.

Table 5-17: psychological health

		% PA	OR	95% CI	p-value
Pro-social- Positive social behaviour	Not true	12.0	1.00	-	0.001*
	Somewhat true	7.9	0.62	(0.19-2.09)	
	Certainly true	12.4	1.04	(0.32-3.40)	
Emotional symptoms /problems	Not at all	12.6	1.00	-	0.42
	Once	10.2	0.79	(0.55-1.14)	
	Two or three times	9.5	0.74	(0.50-1.09)	
	Four or more times	9.8	0.76	(0.47-1.23)	
Conduct problems	Not at all	7.9	1.00	-	0.05
	Once	11.9	1.58	(1.01-2.50)	
	Two or three times	11.4	1.51	(1.04-2.19)	
	Four or more times	13.7	1.87	(1.08-3.23)	
Hyperactivity	Not at all	9.0	1.00	-	0.19
	Once	10.4	1.17	(0.84-1.64)	
	Two or three times	12.2	1.41	(0.96-2.07)	
	Four or more times	11.3	1.30	(0.72-2.34)	
Peer problems; Past 6 months	Have 1 good friend or more	12.0	1.00	-	0.39
	Fight a lot; Make people do as I want	9.9	0.81	(0.58-1.12)	
	I am often unhappy, depressed or tearful	8.9	0.72	(0.38-1.38)	
	Other people my age generally like me	9.9	0.81	(0.52-1.26)	

* indicates statistically significant results, PA = physical activity

† Adjusted for school cluster and sampling weights

As shown in Table 5-18, 16.2% of adolescents reported “always eating breakfast” in comparison to 9.9% “hardly ever eating breakfast” and 7.6% “sometimes” with the odds meeting the guidelines less likely (OR 0.43-0.57, 95% CI 0.31-0.87). In contrast, the adolescents reported they “hardly ever eat lunch” (16.8%) compared to 12.6% “always” and 8.0% “sometimes” with the odds of meeting the guidelines (OR 0.60-1.40, 95% CI 0.43-2.15). Similarly, 35.4% of adolescents reported they “hardly ever eat dinner” compared to 11.3% reporting “always eat dinner” and 7.0% reporting they “sometimes do”, with the odds of meeting the guidelines showing (OR 0.60-4.30, 95% CI 0.35-9.24).

Furthermore, they reported they were “happy”, “okay”, “unhappy” when referring to their weight, with the odds of meeting the physical activity guidelines showing as less likely (OR 0.54-0.72, 95% CI 0.34-1.04). The adolescents who were

more likely to report being “underweight” were 14.4% in comparison to 8.9% “normal”, or 8.0% “overweight”, with the odds meeting the guidelines likely to be (OR 0.52-58, 95% CI 0.29-0.93).

Table 5-18: Meeting physical activity guidelines –food and weight

		% PA	OR	95% CI	p-value
How often do you eat - breakfast	Always	16.2	1.00	-	<.0001*
	Sometimes	7.6	0.43	(0.31-0.58)	
	Hardly ever	9.9	0.57	(0.38-0.87)	
How often do you eat - lunch	Always	12.6	1.00	-	0.002*
	Sometimes	8.0	0.60	(0.43-0.84)	
	Hardly ever	16.8	1.40	(0.90-2.15)	
How often do you eat - dinner	Always	11.3	1.00	-	0.001*
	Sometimes	7.0	0.60	(0.35-0.99)	
	Hardly ever	35.4	4.30	(2.00-9.24)	
At this time how happy are you about your weight	Happy	15.1	1.00	-	0.04*
	Okay	11.3	0.72	(0.50-1.04)	
	Unhappy	8.7	0.54	(0.34-0.86)	
Your weight are you	Underweight	14.4	1.00	-	0.03*
	Normal	8.9	0.58	(0.36-0.93)	
	Overweight	8.0	0.52	(0.29-0.91)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

The adolescents (15%) who reported “physical activity, sport, or exercise was an important part of their lives” were more likely to be meeting the physical activity guidelines (OR 3.41, 95% CI 2.39-4.87) as shown in Table 5-19. The results showed the adolescents were advised to choose as many options as they needed to report on why they choose to do physical activity, sport or exercise. Mainly, the adolescents reported yes, (14.3%) “I am good at it” or no (7.71%) (OR 2.0, 95% CI (1.42-2.82), yes, (14.4%) “I like competing” and no (7.4%) (OR 2.11, 95% CI (1.53-2.90), yes (16%) “I like winning” and no 8.8%, with the odds of meeting the guidelines (OR, 1.84, 95% CI 1.23-2.76). Over the past seven days 7.7% of the adolescents reported yes, they were likely to “attend a PE class”, and 12.2% reported they were not, and were more likely to report meeting the guidelines (OR 1.67, 95% CI 1.16-2.40). In contrast, the adolescents who “take part in sports teams or clubs outside of school time before/after school or in the weekend”, reported yes to over five times a week (33.6%), 3-4 times per week (14.7%), 1-2 times per week (7.8%), less than once a week (10.0%), and no (7.9%) with the odds meeting the guidelines likely to be (OR 0.99-5.92, 95% CI 0.57-9.91).

Table 5-19: Physical activity perceptions

		% PA	OR	95% CI	p-value
PA, sport, exercise important to you	Not really	4.9	1.00	-	
	Definitely	15.0	3.41	(2.39-4.87)	<.0001*
Choose PA - Its fun	No	11.7	1.00	-	
	Yes	11.0	0.92	(0.51-1.68)	0.79
Choose PA- It passes the time	No	10.2	1.00	-	
	Yes	12.7	1.27	(0.92-1.76)	0.14
Choose PA- I get to hang out with friends	No	12.0	1.00	-	
	Yes	10.3	0.84	(0.59-1.20)	0.35
Choose PA - I'm good at it	No	7.71	1.00	-	
	Yes	14.3	2.00	(1.42-2.82)	<.0001*
Choose PA - I like competing	No	7.4	1.00	-	
	Yes	14.4	2.11	(1.53-2.90)	<.0001*
Choose PA - I like winning	No	8.8	1.00	-	
	Yes	16.0	1.84	(1.23-2.76)	0.003*
Choose PA - my parents or school make me	No	10.3	1.00	-	
	Yes	15.3	1.57	(0.98-2.51)	0.06
Choose PA - To keep fit	No	9.1	1.00	-	
	Yes	11.8	1.33	(0.95-1.87)	0.10
Choose PA – Other	No	10.6	1.00	-	
	Yes	14.9	1.47	(0.97-2.24)	0.07
Last 7 days did you go to a PE class)	Yes	7.7	1.00	-	
	No	12.2	1.67	1.16-2.40	0.006*
Do you take part in sports teams or clubs outside of school time (before/after school or in the weekend)	No	7.9	1.00	-	
	< 1x week	10.0	1.30	(0.75-2.24)	
	1-2x per week	7.8	0.99	(0.57-1.71)	
	3-4x per week	14.7	2.02	(1.12-3.64)	
	>5x per week	33.6	5.92	(3.54-9.91)	<.0001*

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, PA = physical activity

The results as presented in Table 5-20, showed the adolescents reported they were more likely to spend up to three hours on the following activities “homework”, (OR 1.40, 95% CI 1.05-1.86), on “music, arts, dance, drama” (OR 1.60, 95% CI 1.28-2.00), “hanging out with their friends” (OR 1.70, 95% CI (1.24-2.33), “texting”, (OR 1.64, 95% CI 1.18-2.29), on the “computer/electronic games”, (OR 1.79, 95% CI (1.20-2.67) and on the internet (OR 1.70, 95% CI 1.14-2.54) with the odds ratio showing they are more likely to be meeting the physical activity guidelines.

The adolescents who reported sending and receiving between “21-30” text messages a day were 16.1%, in comparison to “1-5” texts, (15.5%), “6-10 texts” (10.5%), “11-20 texts” (7.02%), “31-40 text” (4.9%), and “over 40” text messages per day (13.2%) with the odds of meeting the guidelines likely to be (OR 0.57-2.11, $p=0.005$). The two groups that were significant in comparison to the other groups were the groups sending and receiving between 21-30 text and over 40 text messages from their friends daily.

Table 5-20: Other activities

		% PA	OR	95% CI	p-value
Time spent doing each day:	Up to 2 hrs	9.3	1.00	-	
Homework	3 hrs plus	12.6	1.40	(1.05-1.86)	0.02*
Reading for fun	Up to 2 hrs	10.8	1.00	-	
	3 hrs plus	10.7	0.99	(0.69-1.41)	0.95
Music/arts/dance/drama	Up to 2 hrs	8.7	1.00	-	
	3 hrs plus	13.3	1.60	(1.28-2.00)	<.0001*
Chores to help family	Up to 2 hrs	9.2	1.00	-	
	3 hrs plus	11.7	1.31	(0.95-1.82)	0.10
Hang out with friends	Up to 2 hrs	8.8	1.00	-	
	3 hrs plus	14.1	1.70	(1.24-2.33)	0.001*
Texting	Up to 2 hrs	8.8	1.00	-	
	3 hrs plus	13.7	1.64	(1.18-2.29)	0.003*
Watch TV	Up to 2 hrs	10.9	1.00	-	
	3 hrs plus	10.5	0.96	(0.62-1.47)	0.84
Comp./electronic games	Up to 2 hrs	9.1	1.00	-	
	3 hrs plus	15.2	1.79	(1.20-2.67)	0.004*
On the Internet	Up to 2 hrs	8.7	1.00	-	
	3 hrs plus	14.0	1.70	(1.14-2.54)	0.01*
Do you use a cell phone	Yes	11.9	1.00	-	
	No	8.3	0.67	(0.43-1.03)	0.07
About how many text messages would you send and receive from friends each day	None	8.3	1.00	-	
	1-5	15.5	2.03	(0.89-4.63)	
	6-10	10.5	1.30	(0.67-2.52)	
	11-20	7.02	0.83	(0.35-1.98)	
	21-30	16.1	2.11	(1.01-4.44)	
	31-40	4.9	0.57	(0.16-2.06)	
	Over 40	13.2	1.68	(1.09-2.59)	0.005*

†Adjusted for school cluster and sampling weights;

*statistically significant results, PA=physical activity

As presented in Table 5-21, the adolescents who “over the past 12 months (during the school term) were in paid employment” were more likely to report meeting physical activity guidelines (OR 2.53 95% CI 1.90-3.37). Similarly, the results showed those adolescents who “kept a regular job” were more likely to report meeting the guidelines (OR 1.98, 95% CI 1.27-3.07). In contrast, the adolescents reported “over the last 12 months they did not work in the last year” were less likely to meet the physical activity guidelines (OR 0.39, 95% CI 0.30-0.53).

Additionally, the results showed “how good at making and keeping friends” the adolescents were 16.2%, “not so good”, 6.5% “okay” and 12.6% “very good”, with the odds showing they were less likely to be meeting the guidelines (OR 0.75 95% CI 0.12-2.22) when they were asked “how good are you at making and keeping friends”. The adolescents who reported “belonging to a group, club or team which was not run by their school”, reported 12.1% to yes, and 6.4% no, with the odds showing they were more

likely to meet the physical activity guidelines (OR 2.01, 95% CI 1.25-3.24). In comparison, 15.1% of the adolescents reported “did not belong to a sports team or group (run by their school)”, with 7.6%, conveying yes they did, with the odds meeting the guidelines likely to be (OR 0.47, 95% CI 0.33-0.65). The results showed that 13.8% of the adolescents were more likely to report they “felt safe in the neighbourhood all of the time”, and 6.1% did not feel safe, with the results showing the odds of meeting the physical activity guidelines as (OR 2.48, 95% CI 1.53-4.02).

Table 5-21: Out of schools activity - employment, neighbourhood

		% PA	OR	95% CI	p-value
Past 12 months during school term in paid employment	No	7.8	1.00	-	
	Yes	17.7	2.53	(1.90-3.37)	0.0004*
Kept a regular job; past 12 months	No	9.6	1.00	-	
	Yes	17.3	1.98	(1.27-3.07)	0.0024*
Past 12 months in the school holidays were in employment	No	10.0	1.00	-	
	Yes	15.9	0.59	(0.39-0.88)	0.01
Over the last 12 months; I didn't work in the last year	No	7.8	1.00	-	
	Yes	17.7	0.39	(0.30-0.53)	<.0001*
How good are you at making and keeping friends)	Not so good	16.2	1.00	-	
	Okay	6.5	0.36	(0.12-1.08)	
	Very good	12.6	0.75	(0.25-2.22)	0.0069*
Belong group/club/team not run by your school?	No	6.4	1.00	-	
	Yes	12.1	2.01	(1.25-3.24)	0.0041*
- Sport team or group	No	15.1	1.00	-	
	Yes	7.6	0.47	(0.33-0.65)	<.0001*
- Volunteer grp	No	10.6	1.00	-	
	Yes	13.1	1.28	(0.45-3.29)	0.61
- Church grp	No	9.6	1.00	-	
	Yes	11.7	1.25	0.82-1.89)	0.30
Do you feel safe in your neighbourhood?	Sometimes/ never	6.1	1.00	-	
	All of the time	13.8	2.48	(1.53-4.02)	0.0002*
Neighbourhood: Have recreational facilities	No	12.3	1.00	-	
	Yes	10.7	0.86	(0.57-1.28)	0.45
Neighbourhood: Movies/video games available	No	10.3	1.00	-	
	Yes	12.9	1.29	(0.91-1.83)	0.16
There is nothing to do where I live	No	10.8	1.00	-	
	Yes	6.2	0.55	(0.22-1.37)	0.20
Things in area you live - walk to from home- A youth centre	No	10.0	1.00	-	
	Yes	13.4	1.39	(0.89-2.17)	0.15

†Adjusted for school cluster and sampling weights;

*statistically significant results, PA=physical activity

Multivariable analysis model for physical activity

Further multivariable analysis from the univariate statistically significant data, is reported in Table 5-22. The final multivariable model was the best subset to explain and address the confounders and correlations between the variables. The adolescents who reported a disability and who experienced a difficulty with this disability were more likely to be meeting the physical activity guidelines however this was not statistically significant. This result was included in the model regardless of its significance, as this finding was fundamental to the aims of this study.

Approximately half of the adolescents were less likely to report meeting the physical activity guidelines if they were sometimes (OR, 0.45, 95% CI 0.29-0.72) or hardly ever eating breakfast (OR 0.57, 95% CI 0.39-0.84). In contrast, adolescents who hardly ever eat dinner were 11 times more likely to meet the physical activity guidelines (OR 11.92, 95% CI 3.38-42.07), in comparison to sometimes eating dinner, where they were less likely to report meeting the guidelines. The adolescents who reported that physical activity, sport or exercise was an important part of their life were more than three times as likely to meet the physical activity guidelines (OR 3.21 95% CI 1.99-5.17). Equally, the adolescents who reported choosing physical activity because of competing, had a higher odds of meeting the physical activity guidelines (OR 1.62 95% CI 1.09-2.40).

The adolescents were more likely to meet the physical activity guidelines if they reported spending time on music, arts, dance or drama (OR 1.51 95% CI 1.13-2.04). Similarly, if the adolescents reported spending time on computer and electronic games, the odds of meeting the physical activity guidelines was more likely (OR 1.76, 95% CI 1.15-2.69). Moreover, results showed the adolescents reported they were less likely to be meeting the physical activity guidelines if in the last 12 months, they did not work (OR 0.47, 95% CI 0.35-0.63). The adolescents who reported that they were more likely to feel safe in their neighbourhood all of the time were more likely to meet the physical activity guidelines (OR 2.09, 95% CI 1.18-3.70).

Table 5-22: Multivariable table- meeting physical activity guidelines

			Univariate model			Multivariable model		
			OR	95% CI	p-value	OR	95% CI	p-value
Experience disability and difficulty	No	10.9	1.00	-	0.49	1.00	-	
	Yes	14.8	1.44	(0.52-4.00)		1.74	(0.74-4.10)	0.206
Food1_1 (how often do you eat - Breakfast)	Always	16.2	1.00	-		1.00	-	
	Sometimes	7.6	0.43	(0.31-0.58)	<.0001	0.45	(0.29-0.72)	0.0001*
	Hardly ever	9.9	0.57	(0.38-0.87)		0.57	(0.39-0.84)	
Food1_3 (how often do you eat - Dinner)	Always	11.3	1.00	-		1.00	-	
	Sometimes	7.0	0.6	(0.35-0.99)	0.001	0.84	(0.46-1.54)	0.0005*
	Hardly ever	35.4	4.3	(2.00-9.24)		11.92	(3.38-42.07)	
Is physical activity, sport, or exercise an important part of your life?	Not really	4.9	1.00	-		1.00	-	
	Definitely	15.0	3.41	(2.39-4.87)	<.0001	3.21	(1.99-5.17)	<.0001*
Actv2_5(Choose PA - I like competing)	No	7.4	1.00	-		1.00	-	
	Yes	14.4	2.11	(1.53-2.90)	<.0001	1.62	(1.09-2.40)	0.02*
Time spent doing these activities each day?: Music/arts/dance/drama	0-2 hours	8.7	1.00	-		1.00	-	
	3+ hours	13.3	1.60	(1.28-2.00)	<.0001	1.51	(1.13-2.04)	0.006*
Time spent doing these activities each day?:Computer/electronic games	0-2 hours	9.1	1.00	-		1.00	-	
	3+ hours	15.2	1.79	(1.20-2.67)	0.0043	1.76	(1.15-2.69)	0.008*
Over the last 12 months; I didn't work in the last year	No	7.8	1.00	-		1.00	-	
	Yes	17.7	0.39	(0.30-0.53)	<.0001	0.47	(0.35-0.63)	<.0001*
Do you feel safe in your neighbourhood?	Sometimes/never	6.1	1.00	-		1.00	-	
	All of the time	13.8	2.48	(1.53-4.02)	0.0002	2.09	(1.18-3.70)	0.012*

†Adjusted for school cluster and sampling weights

* indicates statistically significant result, PA = physical activity

5.3.2 Active transport (to and from school) (univariate results)

The results showed, as in Table 5-23, that if the adolescents reported undertaking active transport (to and from school) in less than 30 minutes they were more likely to undertake active transport (to and from school) (OR 1.14-1.27, 95% CI 0.72-1.91). In contrast, the results show, that if the adolescents undertook active transport (to and from school) for over 30 minutes they reported that they were less likely to be undertaking active transport (to and from school) (OR 0.20-0.54, 95% CI 0.11-0.88). The following results are from the adolescents who were more likely to report undertaking active transport (to and from school), and were statistically significant, unless specified.

Table 5-23: Active transport (to and from school) (AT) by time

		% AT	OR	95% CI	p-value
How long does it usually take (to walk, bike or skate to/ from school)	Less than 10 minutes	80.7	1.00	-	
	11-20 minutes	84.1	1.27	(0.84-1.91)	
	21-30 minutes	82.6	1.14	(0.72-1.72)	
	31-40 minutes	69.4	0.54	(0.33-0.88)	
	41 minutes or more	45.4	0.20	(0.11-0.35)	<.0001*

†Adjusted for school cluster and sampling weights

* indicates statistically significant result, AT = active transport (to and from school)

Adolescents, as seen in Table 5-24, were more likely to be undertaking active transport (to and from school) if they reported “enjoying school work” with the odds meeting the guidelines likely to be (OR 1.32, 95% CI 1.04-1.64). Similarly the adolescents were more likely to be undertaking active transport (to and from school) if they reported “enjoying other arts and/or music at school” (OR 1.30, 95% CI 1.04-1.65).

Table 5-24: Active transport (to and from school) by school enjoyment

		% A/T	OR	95% CI	p-value
Enjoy school work	No	69.7	1.0	-	
	Yes	75.1	1.32	(1.04-1.64)	0.02*
Enjoy school - Other arts and/or music)	No	70.2	1.0	-	
	Yes	75.5	1.30	(1.04-1.65)	0.003*

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, AT = active transport (to and from school)

As shown in Table 5-25, more adolescents when asked if they have “visited a chemist in the last 12 months with the odds showing they were less likely to be undertaking active transport (to and from school) (OR 0.69, 95% CI 0.54-0.89). Active transport (to and from school) for the adolescents who conveyed on the peer score were more likely to report “I am often unhappy, depressed or tearful” or “other people my age generally like me” were more likely to be undertaking active transport (to and from

school) with the odds of meeting the guidelines showing (OR 0.90-1.67, 95% CI 0.69-2.37). The adolescents who reported spending over three hours on “music, arts, dance, and drama” were 76.7% and were more likely to be undertaking active transport (to and from school) (OR 1.48, 95% CI 1.22-1.80). Similarly, the adolescents who reported spending time on the following activities were more likely to be undertaking active transport (to and from school): “chores to help their family” (OR 1.37, 95% CI 1.08-1.73), and “hanging out with their friends” (OR 1.57, 95% CI 1.20-2.06). Typically, adolescents reported that they were very good at “making and keeping friends” with the odds of them reporting undertaking active transport (to and from school) showing (OR, 0.80-1.24, 95% CI (0.39-2.39).

Furthermore, active transport (to and from school) for adolescents who reported that they “did not belong to a church” which was not run by their school, were less likely to report undertaking active transport (to and from school) (OR 0.73, 95% CI 0.58-0.93). If the adolescents felt safe in their neighbourhood sometimes to never, the results showed they were more likely to be undertaking active transport (to and from school) (OR 1.45, 95% CI 1.17-1.80). Adolescents who conveyed there were “things in the area they live such as the youth centre”, where they can walk were more likely to report undertaking active transport (to and from school) (OR 1.81, 95% CI 1.20-2.72).

Table 5-25: Active transport (to and from school) by health/peers/activities/neighbourhood

		% A/T	OR	95% CI	p-value
Used healthcare in the last 12 months: Chemist	No	73.8	1.00	-	
	Yes	66.0	0.69	(0.54-0.89)	0.004*
Over the last six months (peer score)	I have one good friend or more	70.8	1.00	-	
	I fight a lot, make other people do as I want	68.6	0.90	(0.69-1.19)	
	I am often unhappy, depressed or tearful	74.2	1.19	(0.83-1.70)	
	Other people my age generally like me	80.2	1.67	(1.20-2.37)	0.004*
Physical activity, sport, exercise important part of yr life?	Not really	71.0	1.00	-	
	Definitely	73.5	1.13	(0.91-1.41)	0.263
Time spent each day? Music/arts/dance/drama	Up to 2 hrs	69.0	1.00	-	
	3 hrs plus	76.7	1.48	(1.22-1.80)	<.0001*
Chores to help family	Up to 2 hrs	68.6	1.00	-	
	3 hrs plus	74.9	1.37	(1.08-1.73)	0.008*
Hang out with friends	Up to 2 hrs	69.3	1.00	-	
	3 hrs plus	78.0	1.57	(1.2-2.06)	0.001*
How good are you at making and keeping friends	Not so good	70.9	1.00	-	
	Okay	66.2	0.80	(0.39-1.66)	
	Very good	75.2	1.24	(0.65-2.39)	0.002*
Belong to a church group which is not run by your school	No	75.4	1.00	-	
	Yes	69.1	0.73	(0.58-0.93)	0.009*
Do you feel safe in your neighbourhood	Sometimes to never	68.0	1.00	-	
	All of the time	75.6	1.45	(1.17-1.80)	0.0006*
Things in area you can walk to from home- youth centre	No	70.5	1.00	-	
	Yes	81.2	1.81	(1.20-2.72)	0.004*

†Adjusted for school cluster and sampling weights

* indicates statistically significant result, AT = active transport (to and from school)

Multivariable analysis model for active transport (to and from school)

As the results show in Table 5-26, if the adolescents reported they undertook active travel to school and if they spent less than 20 minutes walking, biking, or skating to school, they were more likely to be undertaking active transport (to and from school) (OR 1.18, 95% CI 0.71-1.95). Further analysis showed the adolescents who undertook active transport (to and from school) for 21-30 minutes (OR 0.96, 95% CI 0.62-1.48), or 31-40 minutes (OR 0.48, 95% CI 0.29-0.78) and 41 minutes or more (OR 0.16, 95% CI 0.09-0.31) were less likely to report undertaking active transport (to and from school). The adolescents who reported a disability and also “experienced a difficulty with this disability” were less likely to be undertaking active transport (to and from school) (OR 0.85, 95% CI, 0.35-2.05) however, this was not statistically significant.

The adolescents who reported that they “enjoyed school due to arts and or music” results showed they were more likely to meet the active transport (to and from school) guidelines (OR 1.40, CI 95% 1.08-1.81). In contrast, adolescents were less likely to report they did not meet the active transport (to and from school) guidelines if they “fight a lot, I make other people do as I want”, “I am often unhappy, depressed or tearful” in comparison to more likely to meet the active transport (to and from school) guidelines, if they reported “other people my age generally like me” (OR 0.77-1.51, 95% CI 0.56-2.3).

If the adolescents “hang out” with their friends they were more likely to report undertaking active transport (to and from school) (OR 1.69, 95% CI 1.24-2.29). Moreover, the adolescents were more likely to undertake active transport (to and from school) if they reported that they “feel safe in their neighbourhood” all of the time (OR 1.47, 95% CI 1.13-1.90).

Table 5-26: Multivariable table- active transport (to and from school)

		%	Univariate model			Multivariable model		
			OR	95%CI	p-value	OR	95%CI	p-value
How long does it usually take (to walk, bike or skate to/ from school)	Less than 10 minutes	80.7	1.00	-		1.00	-	
	11-20 minutes	84.1	1.27	(0.84-1.91)		1.18	(0.71-1.95)	
	21-30 minutes	82.6	1.14	(0.72-1.72)		0.96	(0.62-1.48)	
	31-40 minutes	69.4	0.54	(0.33-0.88)		0.48	(0.29-0.78)	
	41 minutes or more	45.4	0.20	(0.11-0.35)	<.0001*	0.16	(0.09-0.31)	<.0001*
Experience disability and difficulty	No	72.7	1.00	-		1.00	-	
	Yes	61.9	0.61	(0.31-1.21)	0.16	0.85	(0.35-2.05)	0.72
Enjoy school -Other arts and/or music)	No	70.2	1.00	-		1.00	-	
	Yes	75.5	1.30	(1.04-1.65)	0.003*	1.40	(1.08-1.81)	0.01*
Peer problems	I have one good friend or more	70.8	1.00	-		1.00	-	
	I fight a lot, make others do as I want	68.6	0.90	(0.69-1.19)		0.77	(0.56-1.05)	
	I am often unhappy, depressed or tearful	74.2	1.19	(0.83-1.70)		0.99	(0.65-1.51)	
	Other people my age generally like me	80.2	1.67	(1.20-2.37)	0.004	1.51	(1.00-2.3)	0.02*
Time spent doing these activities each day?: Hang out with friends	Up to 2 hours	69.3	1.00	-		1.00	-	
	3 hours plus	78.0	1.57	(1.20-2.06)	0.001	1.69	(1.24-2.29)	0.0007*
Do you feel safe in your neighbourhood?	Sometimes to never	68.0	1.00	-		1.00	-	
	All of the time	75.6	1.45	(1.17-1.80)	0.0006	1.47	(1.13-1.90)	0.004*

† Adjusted for school cluster and sampling weights

* indicates statistically significant results

5.3.3 Sedentary (screen time) behaviour (univariate results)

As shown in Table 5-27, the adolescents who reported that they enjoyed school due to “hanging out with their friends” were less likely to meet the guidelines (OR 0.62, 95% CI 0.43-0.89). In contrast, adolescents reported yes to enjoying school due to “completing their school work” with the odds showing they were more likely to report meeting the sedentary (screen time) guidelines (OR 1.65, 95% CI 1.26-2.16). Primarily, 25.3% of the adolescents reported “doing activities to help others at school” with 20.7% reporting they did not, with the odds of meeting the sedentary (screen time) guidelines (OR 0.77 95%, CI 0.62-0.97).

Table 5-27: Meeting sedentary (screen time) behaviour guidelines by school enjoyment, participation

		% Low SB	OR	95% CI	p-value
Enjoy school - Hanging out with friends	No	31.6	1.00	-	
	Yes	22.1	0.62	(0.43-0.89)	0.001*
Enjoy school -Doing school work	No	18.4	1.00	-	
	Yes	27.0	1.65	(1.26-2.16)	0.0003*
Enjoy school –sports	No	21.1	1.00	-	
	Yes	23.4	1.14	0.81-1.60	0.45
Belong to any school sports team	Yes	23.25	1.00	-	
	No	22.23	0.94	0.75-1.17	0.61
Belong to any clubs or teams at school other than sports	Yes	25.05	1.00	-	
	No	20.86	0.79	0.57-1.08	0.14
Do activities to help others at school	Yes	25.3	1.00	-	
	No	20.7	0.77	(0.62-0.97)	0.024*

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, SB = sedentary behaviours

As presented in Table 5-28, the adolescents reported that they experienced “health problems such as everyday activities that other people their age can normally do” were more likely to meet the sedentary (screen time) behaviour guidelines (OR 1.78, 95% CI 1.02-3.12). In contrast, the adolescents who reported that they experienced health problems but did not experience any “difficulty with everyday activities” results showed they were less likely to meet the sedentary (screen time) guidelines (OR 0.45, 95% CI 0.26-0.76). If the adolescents experienced an “injury which resulted in them visiting a doctor, nurse and a physiotherapist”, they were more likely to meet the guidelines if over the past 12 months they visited once or over four times and less likely to meet the guidelines if they reported 2 to 3 times (0.90-1.59, 95% CI 0.63-2.50).

Table 5-28: Meeting sedentary (screen time) behaviour guidelines by health/disability/activities

		% Low SB	OR	95%CI	p-value
Long term health prob./conditions	Yes	22.4	1.00	-	0.516
	No	24.3	1.11	(0.80-1.53)	
Health prob. diff. - Everyday activities other people your age usually do)	No	20.7	1.00	-	0.044*
	Yes	31.7	1.78	(1.02-3.12)	
Health problems difficulty - No difficulty with any of these)	No	32.5	1.00	-	0.003*
	Yes	17.7	0.45	(0.26-0.76)	
In the last 12 months how many times have you had an injury that resulted in you needing to see a doctor, nurse, or physio?)	Not at all	20.5	1.00	-	0.006*
	Once	27.3	1.45	(1.07-1.96)	
	2 or 3 times	18.8	0.90	(0.63-1.28)	
	4 or more times	29.1	1.59	(1.01-2.50)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, SB = sedentary behaviours

Table 5-29 presents the sedentary (screen time) behaviours by emotional symptoms, conduct problems, hyperactivity and peer problems showing the adolescents were less likely to report meeting the sedentary (screen time) behaviours if they conveyed any of these emotional, or behavioural behaviours. The majority of adolescents (45.2%) hardly every ate dinner in comparison to sometimes, 25.8% and always 21.9%, with the odds of meeting the guidelines.

Table 5-29: Meeting sedentary (screen time) behaviour guidelines by emotional symptoms/peer/food

		% Low SB	OR	95% CI	p-value
Emotional symptoms /problems	Not at all	26.8	1.00	-	0.024*
	Once	20.2	0.69	(0.55-0.88)	
	Two or three times	21.4	0.75	(0.54-1.03)	
	Four or more times	22.6	0.80	(0.51-1.24)	
Conduct problems	Not at all	29.7	1.00	-	<.0001*
	Once	20.4	0.61	(0.45-0.83)	
	Two or three times	18.7	0.55	(0.36-0.83)	
	Four or more times	15.2	0.43	(0.26-0.69)	
Hyperactivity	Not at all	26.8	1.00	-	0.002*
	Once	21.6	0.75	(0.45-1.25)	
	Two or three times	20.4	0.70	(0.49-0.99)	
	Four or more times	17.2	0.57	(0.40-0.80)	
Peer problems; past 6 months	Have 1 good friend or more	28.0	1.00	-	0.018*
	Fight; make people do as I want	22.5	0.75	(0.5-1.12)	
	Often unhappy/depressed/ tearful	19.2	0.61	(0.42-0.89)	
How often do you eat - Dinner	People my age generally like me	18.8	0.60	(0.40-0.88)	0.005*
	Always	21.9	1.00	-	
	Sometime	25.8	1.24	(0.94-1.63)	
	Hardly ever	45.2	2.95	(1.18-7.36)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, SB = sedentary behaviours

As presented in Table 5-30, if the adolescents reported that they “choose physical activity to pass the time” with the odds of meeting the sedentary (screen time) behaviour guidelines (OR 0.58, 95% CI 0.45-0.76). The results showed adolescents reported choosing physical activity participation “to hang out with their friends” were less likely to meet the sedentary (screen time) behaviour guidelines (OR 0.74, 95% CI 0.56-0.97). The adolescents were more likely to report participating in physical activity if they “like to win” were less likely to report meeting the sedentary (screen time) behaviour guidelines. In contrast, if they reported that they choose physical activity to “keep fit” they were more likely to be meeting the sedentary (screen time) guidelines (OR 1.38, 95% CI 1.04-1.82).

The adolescents were more likely to spend over three hours per day in the following activities, were less likely to be meeting the sedentary (screen time) guidelines, and reported on “arts” (OR 0.72, 95% CI 0.57-0.91), “chores” (OR 0.65, 95% CI, 0.47-0.91), “with friends” (OR 0.32, 95% CI 0.24-0.43), and “texting” (OR 0.39, 95% CI 0.31-0.49). Adolescents reported “using the internet to chat or talk to others” (OR 0.62, 95% CI 0.42-0.91) or “find out about music, sport, hobbies or interests” (OR 0.66, 95% CI 0.52-0.84) were less likely to meet the guidelines. Moreover, the adolescents reported that they were more likely “to play games by themselves” (OR 0.66, 95% CI 0.48-0.91) or “play games with others on the internet” (OR 0.32, 95% CI, 0.20-0.51) were less likely to meet the sedentary (screen time) guidelines.

The adolescents who reported that they do not “own a cell phone” were more likely to report meeting the sedentary (screen time) behaviour guidelines (OR 1.39, 95% CI 1.09-1.77). The adolescents meeting the sedentary (screen time) behaviour guidelines reported sending 1 to over 40 “text messages per day” with the odds of meeting the guidelines showing (OR 0.58-0.99, 95%, CI (0.28-1.71). The adolescents who “belonged to a group/club or team not run by their school such as a volunteer group” were more likely to be meeting the sedentary (screen time) behaviour guidelines (OR 1.89, 95% CI 1.17-3.05). In contrast the adolescents who reported attending a “church group not run by their school”, were less likely to report meeting the sedentary (screen time) guidelines (OR 0.74, 95% CI 0.57-0.97).

Table 5-30: Meeting sedentary (screen time) behaviour guidelines by physical activity/activities

		% Low SB	OR	95% CI	p-value
Is physical activity, sport, or exercise an important part of your life?	Not really	21.1	1.00	-	0.31
	Definitely	23.6	0.87	(0.65-1.15)	
Choose PA - Its fun	No	27.7	1.00	-	0.18
	Yes	22.1	1.35	(0.87-2.10)	
Choose PA - It passes the time	No	25.4	1.00	-	<.0001*
	Yes	16.6	0.58	(0.45-0.76)	
Choose PA - I get to hang out with friends	No	26.1	1.00	-	0.03*
	Yes	20.6	0.74	(0.56-0.97)	
Choose PA - I like winning	No	24.3	1.00	-	0.026*
	Yes	19.4	0.75	(0.58-0.97)	
Choose PA - To keep fit	No	18.8	1.00	-	0.023*
	Yes	24.2	1.38	(1.04-1.82)	
Over the last 7 days did you go to a PE class)	Yes	21.9	1.00	-	0.73
	No	23.0	0.94	(0.67-1.33)	
Time these activities each day? Arts	3 hrs plus	25.3	1.00	-	0.005*
	Up to 2 hrs	19.5	0.72	(0.57-0.91)	
Chores	3 hrs plus	27.4	1.00	-	0.011*
	Up to 2 hrs	19.8	0.65	(0.47-0.91)	
With friends	3 hrs plus	29.0	1.00	-	<.0001*
	Up to 2 hrs	11.5	0.32	(0.24-0.43)	
Texting	3 hrs plus	28.6	1.00	-	<.0001*
	Up to 2 hrs	13.6	0.39	(0.31-0.49)	
On internet - Chat or talk to others	No	22.4	1.00	-	0.015*
	Yes	15.1	0.62	(0.42-0.91)	
On internet - Find out about music, sport or hobbies or interests	No	20.2	1.00	-	0.0006*
	Yes	14.4	0.66	(0.52-0.84)	
On internet - Play games by myself	No	18.6	1.00	-	0.011*
	Yes	13.1	0.66	(0.48-0.91)	
On internet - Play games with others on the internet	No	20.4	1.00	-	<.0001*
	Yes	7.51	0.32	(0.20-0.51)	
Phone	Yes	21.0	1.00	-	0.008*
Do you use a cell phone	No	27.0	1.39	(1.09-1.77)	
About how many text messages would you send and receive from friends each day	None	27.0	1.00	-	0.02*
	1 to 5	26.2	0.96	(0.62-1.49)	
	6 to 10	26.8	0.99	(0.70-1.40)	
	11 to 20	17.8	0.58	(0.30-1.12)	
	21 to 30	17.8	0.59	(0.28-1.25)	
	31 to 40	26.4	0.97	(0.55-1.71)	
Over 40	19.3	0.65	(0.50-0.84)		
Group/club or team not run by your school?:Volunteer grp	No	21.9	1.00	-	0.009*
	Yes	34.6	1.89	(1.17-3.05)	
Belong to a group/club or team not run by your school?:Church grp	No	25.2	1.00	-	0.027*
	Yes	20.1	0.74	(0.57-0.97)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results, SB = sedentary behaviours

Multivariable analysis model for sedentary (screen time) behaviour

As shown in Table 5-31, the adolescents who reported that they have a “disability and experience difficulty” were approximately twice as likely to be meeting the sedentary (screen time) guidelines as demonstrated by the odds ratio, (OR 2.10, 95% CI 1.04-4.2). In contrast, the adolescents who choose physical activity as it “helps pass the time” were less likely to report meeting the sedentary (screen time) guidelines (OR 0.62, 95% CI 0.47-0.81). Similarly, the adolescents who choose physical activity as they get to “hang out with their friends” were less likely to report being meeting the sedentary (screen time) guidelines (OR 0.33, 95% CI 0.24-0.45).

Table 5-31: Multivariable table - Meeting sedentary (screen time) behaviour guidelines

		Univariate model				Multivariable model		
		%	OR	95% CI	<i>p</i> -value	OR	95% CI	<i>p</i> -value
Experience disability and difficulty	No	22.3	1.00	-		1.00	-	
	Yes	40.1	2.34	(1.17-4.69)	0.016*	2.10	(1.04-4.2)	0.04*
Choose to do PA as it passes the time	No	25.4	1.00	-		1.00	-	
	Yes	16.6	0.58	(0.45-0.76)	<.0001*	0.62	(0.47-0.81)	0.0005*
Choose PA as I get to hang out with friends	No	26.1	1.00	-		1.00	-	
	Yes	20.6	0.74	(0.56-0.97)	0.03*	0.33	(0.24-0.45)	<.0001*

† Adjusted for school cluster and sampling weights

* indicates statistically significant results

Chapter 6: **QUALITATIVE RESULTS - STUDY TWO**

Introduction

This chapter presents the findings from study two, which aimed to answer the following research question: What are the factors that enable or inhibit participation in physical activity and sport in Pacific adolescent girls with a physical disability, from their perception? Study two explored the voices of Pacific adolescent girls with physical disabilities, sometimes including their mothers' voices. Hearing their voices enhanced this research by adding richness to the data. As discussed in Chapter 4, whereas all family members were invited to participate, only the mothers joined the *talanoa*. Congruent with the qualitative descriptive research approach, data answering the research question is presented under themes that stayed close to the participants' stories. These themes include: participation in physical activity, social and friends, parents, transporting the adolescents to activities, benefits of participating in physical activity, disability, cultural attitudes, and perceptions due to the adolescent's disability, policy, restrictions, and sedentary (screen time) behaviour. Appendix G shows a summary of the findings from this chapter (study two) and from Chapter 7 (study three), with examples from the text to demonstrate the description of the findings (classifications) within the themes. To ensure the participants remain anonymous, they are referred to by pseudonyms, and names of any organisations are referred to by "XXX".

Findings

6.1.1 Participation in physical activity

Participation in physical activity was found to be beneficial to the health and wellbeing of the Pacific adolescent girls with a physical disability from the perceptions of the girls. The findings suggested that the girls had participated in a variety of physical activities during and prior to their adolescent years, but these were primarily individual physical activities, divergent to physical activities involving any team sport or community participation. At the time of the interviews, two girls were meeting the recommended guidelines for physical activity, whereas the other five were indeed participating, but were not doing so habitually. The physical activities mentioned by the participants included soccer, swimming, dancing, baseball, wheelchair basketball, yoga, Wii Sports (a motion-sensing video game), botchers (a game similar to pétanque), tenpin bowling, gym, shot-put, and walking.

Enablers

The participants sought after and were interested in participating in physical activity. This was consistent with the findings of a study by Rimmer et al., (2000) who investigated a group of 50 women with disabilities and found that the majority of participants were motivated to participate in physical activity; however, differing factors impeded their participation.

However, as with able-bodied adolescents, “fun” was the primary motivation for participation, as seen in Moana’s words: *“I need something that’s really fun and exciting and, something different because that’s how I get motivated in my sports” (Moana).* Likewise, Kali also mentioned that she liked to dance because it was *“fun.”*

The amount of physical activity the girls participated in was diverse. One participant’s mother mentioned that at her daughters’ school, there were various activities for her to participate in, despite her physical disability. They commented:

There are lots and lots of sports... bocce, soccer; bowling... you do some kind of sports everyday don’t you (Kali’s mother).
I am playing standing up basketball (Kali).

This participant in particular engaged in a variety of physical activities. When asked about which precise activities she participated in, she responded:

Let just start for example the soccer, how’s that better than basketball? Because you are running around, is it fun? You like to run around don’t you? Not on the chair may be... you do class everyday? Some sports everyday at school don’t you? (Kali’s mother)... yeah (Kali).

Kali’s mother explained that *“it is basketball that keeps her fitness, but she also plays table tennis and softball.”* Kali’s mother goes on to explain *“we bought a Wii actually last Christmas so that she can play Wii sports which is very good when the weather is not good, she loves it.”* Kali mentions that *“bowling is her favourite.”* Her mother corrects her when she states *“Oh she’s talking about the Wii.”*

Kali’s mother also described that Kali enjoys playing tennis and remarks: *“You love tennis don’t you and when we play tennis you are really good at it. She’s got a tennis seat that we take up there, and she’s got really good at it.”* Kali responded to both these comments with a *“yeah.”* In addition to these sports, Kali’s mother also referred to how

Kali has also tried horse riding. Kali remarked “*I get a different horse every time but I got up to the trot*”.

This participant was involved in physical activity on a regular basis with her school and her mother both providing her with the opportunity to experience a variety of physical activities. Most of the participants mentioned that they participated in dancing and in particular, Island dancing. This was illustrated in the following quotes:

She has also tried dancing (Kali’s mother).

Oh yeah I do islander dancing. I just do islander dancing...I like island dancing... I don’t like other dancing. There’s no island dance practice it’s mainly like a tradition in families (Lelei).

I performed in a dance group in the last holidays and she responds with a Yeah... when asked if she would like to dance more (Teuila).

I tried dancing but I’m not the type of person to dance around people (Moana).

The following participant’s mother clarified how her daughter’s physiotherapist advocated she try swimming to strengthen her left side and as a consequence, Sefina is now swimming on a regular basis. She commented:

No, netball was more like trial and error because of the left sided...it didn’t work out so her physiotherapist said, chuck her into the pool coz she wasn’t using her left much. She has to use both sides. If not she’ll drown. So we started taking her to swimming lessons and then the swimming instructor said to us, I think she picked up she’s got that competitive drive because she always wanted to catch the able-bodied girls or wanted to be in front of them...they said to us, oh, why don’t you think about competitive swimming? And that’s when I kind of, coz I didn’t know much about XXX and that’s when I had, did a bit of research. I sent emails around and then XXXX Swimming had sent me an email saying they’d forwarded our contact details to a guy called XXX from XXX, New Zealand. And then XXX contacted us, yeah, and it kind of just went off from there. So she swims 12 months, no, the whole year; January to December...Oh, swimming, the only day she has off is Sundays and Christmas Day really is the only day that the club has off (Sefina’s mother).

Sefina’s story highlighted what can be achieved with the support of her parents and others and by sheer determination to keep up with able-bodied swimmers. Sefina’s mother goes on to mention that Sefina additionally participates in dancing but she has a preference for swimming. While her parents had the option of allowing her to train on her own, they had a sense that including her with the able-bodied adolescents would

extend Sefina as a result of her attempting to compete with the able-bodied swimmers.

Sefina's mother mentioned:

She just does the stuff at school...her love is, she has a passion for swimming coz she does it really well. She's part of the XXX Development Swimming Squad and she's been to nationals. So her goal is to go to the Paralympics one day...She's the only athlete with a disability at that club that we know of. But she's in a squad... We had the option of one-to-one or put her in a squad. And we felt that putting her in a squad would work better for her because that will push her to try and either stay with those kids or try to pass those kids, yeah (Sefina's mother).

At the time of the *talanoa*, Sefina was swimming six days a week and competitively. Sefina's physiotherapist had recommended Sefina try swimming 'to strengthen her left side'. As a result her mother had sought out a pool for this purpose which lead to Sefina joining the swim club and then working out daily with a coach. Sefina's aim now is to be selected for the Paralympics. She explained:

I train six days a week and I train two hours a day at night from 6-8, except Sunday... I used to play netball but I probably won't catch the ball or stuff like that with my left hand... I told my physio, and he told me to tell my parents that I should try swimming and that's when I started doing swimming (Sefina).

Sefina's mother also confirmed that Sefina had a very full agenda throughout the week, which included sessions at the gymnasium, swimming, physiotherapy, and occupational therapy when she commented:

She also does a bit of gym sessions, one-to-one gym sessions. And that's on Fridays for an hour. And also the Saturday, six till seven and then seven till nine at the pool. And then there's physiotherapy and occupational therapy, which is once a week. Yeah, so she's got a pretty full schedule but she likes it though (Sefina's mother).

However, as this mother elucidated, participation is problematic for adolescents with a physical disability. She had a sense that there are physical activities available for the girls with a physical disability to participate in; however, motivation and awareness are a problem. She remarked:

I think there is enough physical activity available... It's just motivating the kids; letting them know that just coz your disability, shouldn't limit you, to go out there and give something a go. There's swimming. Like, we kind of met XXXX; we were surprised as to how much, like, all the different sports that are available. But it's just, I think, a lot of people

weren't aware because XXXX old physiotherapist had invited us to talk to a group of girls that have cerebral palsy and this was a couple of years ago over on the Shore. And the parents were so surprised at the lists of different sports that were available to kids with a disability, like wheelchair basketball, wheelchair rugby, wheelchair tennis; the list goes on. And yeah, it's just really, trying to find a place that does offer those kinds of things (Sefina's mother).

Sefina's parents were conscious of allowing Sefina the opportunity to participate in sports of her choosing, even if they do not always approve. Sefina's mother clarified:

She gave cross-country a go. Like, she always kind of nagged us, oh, can I do cross-country and we've always said no, no, no, and then last year I said to my husband, you know, what, let her give it a go and she how she feels. So after she finished she came up to me and she goes, this is the last time I'm taking cross-country again (laughing) and I said to my husband, see? You've just got to let her give it a go. And then you know, after she's experienced it.

Despite her parent's trepidation, Sefina was permitted to try out a physical activity she had wanted to participate in. Conversely, this permitted Sefina to experience cross-country and as a consequence, she was satisfied she did not want to participate in cross-country again. Sefina's family believed they had been correct in letting their daughter make her own decisions. Additionally, Moana explained how she had an interest in participating in other new physical activities when she remarked:

There's other sports when I was watching the Paralympics they do like weightlifting and stuff, it's just something interesting and new, I don't mind trying something new (Moana)

Tanielu had tried a few physical activities and she explained in her story: "*Yeah, I like going to the tenpin bowling.*" However, when asked how often she participates, she also remarked "*Not very often. I do it with my friends as well but not very often, I used to play (botchers?) ...It's like pétanque*".

Masina described in her story that she previously played wheelchair basketball at the Spinal Unit. "*About two years ago I joined the wheelchair basketball. A volunteer would come from XXX, would come, and pick us up every Tuesday to go do wheelchair basketball at the Spinal Unit in XXX*" and Teuila also mentioned how she had participated in "*basketball.*"

All of the participants had, at some stage, attempted to participate in a range of physical activities. Two of the participants were participating in physical activities regularly or meeting the physical activity guidelines (SPARC, 2007). When the girls were participating in physical activity habitually, it was apparent they were finding the participation to be beneficial.

Inhibitors

There are multiple layers or precincts attributed to physical disability that limited participation for the girls. One consisted of disability care requirements preventing participation. This is evident in the following story:

She can't play this week as we have to work out at the spinal unit and also mentions she played a couple of times another week and also they do trainings once a week for 2 to 3 hours (Kali's mother).

Kali was prevented from participating in physical activity due to having to attend scheduled appointments at the spinal clinic as a result of her disability. However, Kali did manage to enjoy playing wheelchair basketball and participated frequently.

Another inhibitor was lack of availability of physical activities geared towards people with physical disabilities. Participants remarked how physical activities were not available to them, which was exemplified in the following story:

I played soccer...at my high school...twice a week...Yeah, so that would be good if they had activities like soccer and things, yeah, if I could find a place to play them (Teuila).

Weather was an inhibitor to participation. When asked how often she participated in physical activity, Moana clarified that her level of participation was dependent on the weather. She had a preference for walking, but was restricted if the weather was inauspicious.

It depends on the weather...because me and my cousin we can just walk like for an hour, just walking around, and when we're walking around we find new short cuts so we're just like oh here's a short cut we can walk and it's like it's um, it's um yeah we walk for an hour or two.

Employment commitments also inhibited participation in physical activity. Another participant explained how she had joined a gymnasium, however, her employment commitments needed to take precedence, and therefore, she had difficulty in

attending the gymnasium. She went on to explicate how she would like to participate in shot-put, but this was not going to be possible until she could find a coach.

I've actually joined the gym...But the thing is I haven't been there for a couple of months because I've been so busy with work. And I've been trying to get into, back into para Olympics...because I'm trying to make it to the para Olympics in 2016 so...I'm looking for a coach and um a club so that I can get competing nationally so... I'm actually ah I do shot put and discus. In XXXX it was three times a week. (Moana).

Another major inhibitor was that the girls' disabilities made physical activity more difficult. For example, most of the participants mentioned that they were participating or had participated in swimming at some point. It was apparent that due to their physical disability however, they experienced difficulties swimming independently. This can be assumed from the following comments:

We always had to swim in summer, yeah... two yeah year 6 students would always have to swim with me (Lelei).

Once a week go to XXX and then go swimming, and with the help of XXX, to keep active and keep motivated and go to the gym once a week.

It was fun because you get to learn about different people, different experiences of being disabled. Some were abled, some were not abled, some were visible, you know, could see; some were blind...So, every week I go swimming at my local swimming (Masina).

Yeah. I like swimming and the water. But I'm just not an independent swimmer (Tanielu).

I would like to try rowing but to be honest I need to learn how to swim! I guess because you know I'm not a strong swimmer yeah...Um I've looked into it and it looks quite fun (Moana).

I can't swim, I not scared of the water, but I have not attempted to swim with any swimming aids (Teuila).

Another participant described her experience of physical activity and the difficulties she endured while playing basketball. This participant was in a wheelchair and experienced difficulty when playing basketball as the throwing and bouncing balls intimidated her. Furthermore, she felt she was not physically fit enough to play. She elucidated:

I tried basketball but I was scared of the ball, so I stopped going...I hate throwing balls! Especially when it bounces nowhere near and I find it tiring as I'm so out of shape (Lelei).

Lelei did participate regularly, however, having a team with mixed gender and ages too proved problematic. She described:

Every Friday yeah, with other people. But the stink thing was it was all just men. It was men and there were only 2 girls on it yeah and so that's why I didn't play because I was scared of the men. They were so like, they're so scary... if they played equally it would have been, like I would have fit in... Yeah that's why they needed some girls to make it even (Lelei).

While it would be preferably to play in a team of equal gender and ability, this option was not available to Lelei and it affected her participation. It was her preference to play with other girls as playing with men was not pragmatic. This same issue was also raised by the service providers and is discussed in the following chapter.

6.1.2 Social and friends

Enablers

Friends were identified as having a significantly positive role, encouraging the girls in participation in physical activity. It is well known that the female adolescent places emphasis on social interaction. From a developmental perspective, the adolescent is becoming autonomous and friends have an influential role, creating peer pressure that can include influencing physical activities (Berk, 2010). This was evident in the following:

I hang out with my friends... Yeah we all go our separate ways and then I come back when I am hungry (Lelei).
I'm more comfortable with my friends I find that comfortable just laughing around yeah (Mona).
What I've noticed with the girls is they like to do things together (Moana's mother).

As the adolescents developed independence from their parents or caregivers, other relationships became important and friendships were one way to provide opportunity for engagement in physical activity. Most of the participants referred to engaging in physical activity with their peers intensifying the fun or enjoyment factor, and it was found teachers also may have influenced or encouraged social interaction.

She's had fun, you know with the other kids... Kali loved it, these kids just loved it... Yeah it was super fun. Yeah, made some friends in basketball, lots and lots, let start with... That is another problem being so far away; you could not sort of get together outside the sports could you? But, it is good having Ben (pseudonym) coming along... the teachers would engage them both (Kali's mother).

Kali's mother described the way her daughter had developed friendships through basketball and how Kali had fun while participating in physical activity with her peers. However, to enable her to play basketball, it was necessary for her to travel some distance and therefore, the social interaction with her peers was limited to the game itself. This was problematic for Kali and her family. However, she did spend time with her friends while travelling to the games and while at the basketball games, the teachers themselves encouraged social interaction. In addition to fun, peers provided an opportunity for the girls to engage in physical activity and possibly influenced participation.

Moana's story disclosed the difficulty of wanting to participate in physical activity with a physical disability while at college, and how becoming comfortable in a peer group positively influenced her participation. In turn, this boosted her confidence and self-esteem, allowing her to make new friends and socialise, which is imperative for the growing adolescent.

If I didn't do sports I don't know what because I remember the first two years in college were the worst, I didn't like sports and I tried to be sick all the time. Then as soon as I joined sports and met and became comfortable around peers, I was not shy anymore and sports people know people with a disability...It helps people make new friends and socialising (Moana).

Moana also referred to how sport "*builds confidence and helps people to get connected to other people and networks.*" She went on to mention that at the moment, however, she had a sense that if she had a friend or other peers on the netball team, she may have been more inclined to participate. She felt this was attributed to friends giving her the confidence to want to play as part of the team, when she remarked:

The only activity is when I go for a walk. Yeah, I don't mind walking. ...I've, I used to play netball too so. Yeah I would it's just I need to find, I'd be more confident if I knew there was someone else I knew who played netball in the same team (Moana).

At the time of our *talanoa*, walking was the only physical activity Moana was partaking in. Participants also referred to how friendships were extended as a result of physical activity participation, as was evident in Masina's story. Moreover, Masina also explained how she had made a lot of friends at basketball and said "*I've got heaps of friends all-round the place.*"

Moana also clarified how she was reliant on her able-bodied friends for transport when she mentioned “*when I’m out I’m with my friends they take me because they are mobile*”. Tanielu explained how her friends can take her out in the “*car...when they haven’t got any work to do.*” Moreover, finding other Pacific girls who also experience a physical disability to participate in physical activity with was problematic. Sefina’s mother mentioned “*it’s a pity that we haven’t come across any other teenage Pacific Island kids.*” Additionally, Teuila explained, “*most of my physically disabled Pacific friends have epilepsy, so they can’t.*”

Generally, the participants emphasised the importance of their peers for social interaction and how their peers provided an element of fun to participating in physical activity. They primarily intermingled with able-bodied adolescents, so when given the opportunity to participate with physically disabled Pacific adolescents, they had a sense of comfort and a feeling of being understood. In addition, the able-bodied adolescents were able to provide transport. On the other hand, while they clearly enjoyed participating in physical activity with their friends if given the opportunity, most of the physical activity the girls participated in did not involve social teams. This was possibly due to the inability of the participants to find other physically disabled adolescents to participate with.

6.1.3 Parents

Enablers

There is high regard and respect for the family amongst the Pacific peoples’ culture (MoH, 2010). While developmentally seeking autonomy, the adolescent with a physical disability is primarily dependant on parents and family for support, including encouragement and transport to enable them to participate in physical activity.

Although most of the mothers who were interviewed, supported their daughters’ participation in physical activity, one mother both supported and participated in activities with her daughter. Kali's mother mentioned: “*When we are holidays we try and bike together.*” If the parents themselves had or were participating in physical activity, there appeared to be an evident connection to encouraging their daughters to participate. This was evident in the following statement:

We are couple of sporty family that play sports. Yeah, playing netball, rugby, soccer, softball, everything. So it’s just kind of what you do, I

suppose it is our norm, the family norm. So naturally we pass it to Kali (Kali's mother).

Moana referred to how she had a sense that her love of sport was attributed to the fact that her family was involved in and passionate about sports. At the same time, this caused frustration on her part as it was difficult for her to find a sport, such as netball, that she was able to participate in.

So, it's hard to find sport because my family is sporty. I've come to love each sport. So it's hard but I make it, like I kind of miss netball at the same time, that sports team but athletics is all by yourselves (Moana).

Kali's mother expressed how it was her perception that all her family was involved in physical activity, which was the norm in their family unit, so it was obvious that would include Kali too. This was to the extent that she was happy to prioritise her daughter's participation in physical activity when she felt she was restricted. She also mentioned:

I have gone through all of that, I am stuck at home and everyone else is out working and having a life. But you go through the process and I hope I can encourage the kids I have met to participate too (Kali's mother).

In contrast, another mother reflected on other parents with physically disabled children. She had a sense that it was imperative that parents were supportive of their adolescents' participation in physical activity and furthermore, that they identify the precise sport for their daughters, to ensure participation. She also suggested that through this support, her daughter, who was determined to participate, was able to succeed, and was motivated to do so. This was illustrated in the following:

I think it's just finding the right sport for the kids; something that they like but also it's important for the parents to support them. I think if that support's not there it does not help...she was determined to do certain things and we were there to kind of push her. And I think that's where that drive comes from; wanting to achieve, yeah (Sefina's mother).

Inhibitors

In contrast, Masina reflected on her experience of her parent's perception of herself and the physical activities her siblings participated in when she mentioned:

My brothers and sisters, they played basketball, rugby, netball and any kind of sports they wanted. But the funny thing is, when I was little and

they played basketball, my parents wouldn't take me coz they just thought I was an object. Instead of a daughter they just thought my chair was too big, the doors wouldn't be wide enough and it wouldn't accommodate whatever I needed. So I pretty much wanted to go to the games but my family couldn't cope with, you know, with being disabled. I also need my chair. My chair is my legs. But they didn't get that concept so pretty much I just stayed home and did whatever I kept myself busy with (Masina).

While Masina wanted to participate in physical activity as her siblings had, she was reliant on her parents to gain access to the physical activities. She felt their attitude to her physical disability prevented this. This may have been due to the size of her wheelchair making access difficult. However, Masina reflected it was likely due to her disability and the way her parents perceived her as an individual.

Participation in physical activity placed demands on time. The Pacific adolescent girls had other family obligations. This was evidently problematic when the adolescents had the sense that the family was prioritizing their particular outlook in relation to how they felt their daughters should be adhering to their responsibilities. Masina described how she would like to try dancing, but explained the parental demands on her time which was preventing this. She was expected to perform other chores which take up a considerable amount of her time, and she felt her day was well occupied with family responsibilities.

My family says, you've got to be in charge of this, and this, and this and then you've got to go with me to these places. I'm going, yeah, I'm only one person and there's only 24 hours in a day and you want me to do all of this. Yeah, so you just have to balance them to keep them happy so they don't drive you nuts all day. So all good, if I had the time I would try dancing (Masina).

Parents of physically disabled adolescents are known to be protective of their adolescents. The girls in this study clarified how it was their preference to be able to participate in physical activity independently, but their parents were too protective. These participants had a sense that their parents were restricting them from participating in physical activity. The parents were too anxious to let them attempt the activities, possibly due to wanting to safeguard their daughters with a physical disability as they may be vulnerable in the community.

But it's just putting their barriers of their fear in front of their child and son and that's probably it. It took my parents four years and half to say, yes, I can do this (Masina).

I think parents find it difficult to let it, to let some of the kids go um to do things themselves. So they feel coward and then too scared to tell my parents you know I actually want to give this a go and stuff (Moana). I'd love to go and do more things but it's just my mum. It's always my mum. She'll be like, no you can't do this you know you can't do that. She's real protective...she thinks I can't do anything (Lelei).

While discussing physical activity, Lelei reflected on her frustration at being under 18 years of age and having her mother speak for her needs. She did appreciate that her mother was trying to be protective, but she felt it was to the extent that she was not permitted to be involved in activities of her choice. Lelei explained:

When I'm 18 my mum doesn't have a say with it yeah. Because sometime under 18 people don't talk to me, they talk to my mum. So my mum thinks I'm not suitable for this and that when like, yeah they just use me to talk to my mum. So I can't wait til I'm 18...Yeah.

Kali's mother was also conscious of her daughter becoming a hindrance in team sport due to her disability. Kali's mother described that when Kali participated in physical activity with other non-disabled children, when she was younger, it was not a concern. However, now that she was older she felt she had a need to protect her as she did not want other non-disabled people signifying Kali was holding the team back while participating in a team sport. She mentioned:

She can do mainstream until she is got about probably 6 or 7, and boys kinda change, and the kids change and I don't want her to be saying that she's holding everybody back...I am kinda protective (Kali's mother).

Kali's mother also reflected on her daughter's participation in physical activity and expressed concern that if she was unavailable, she had a sense Kali might not be participate in physical activity. She explained:

I have a fear that she will miss out because she could easily slip into who the next caregiver and just end up eating popcorn and watching TV all day... she could just slip into that. I don't know anything in her that would say, oh I am feeling a bit sluggish, I need to do exercise as she needs to be prompted (Kali's mother).

6.1.4 Transporting the adolescents to activities

Enablers

The participants were reliant on their parents for transport to physical activities. They couldn't drive themselves, and other means of transportation were problematic too,

as discussed in the section on restrictions. Some families appeared to manage the transportation by sharing the driving amongst family members. However, some of the activities, such as swimming, required attendance up to six times a week, which could be challenging with large families to manage. Sefina and Kali's mothers mentioned:

I drive her there...My husband and I; we take turns...we stay with her
(Sefina's mother).

I drive her there, she's really enthusiastic so I have to take her there
(Kali's mother).

Sefina's parents were able to work together to drive Sefina so she could participate in her physical activities. Sefina was reliant on her parents to get her to her swimming and her parents understood this, and were able to accommodate the time it required to travel to the swimming including having to be present with her while she participated. Sefina's family was required to travel some distance as her pool was not local. Additionally, Kali's mother had a sense her daughter was passionate about participating in her physical activity and she herself, was willing to drive her.

Inhibitors

Conversely, lack of transportation was an issue for some girls. Lelei felt frustrated as she was reliant on her mother for transport and she did not get driven around as much as she would have liked. She appreciated her mother was busy, but felt her mother did not drive her around to the extent her mother had articulated. Lelei explained that she had a sense that her mother felt she transported her around too much and remarked:

Yeah. And my mum has no excuses of oh we drive you around too much when they don't!...Yeah but it sucks because like they say they always drive me around and everything but look I'm still at home when they're out and about yeah (Lelei).

6.1.5 Benefits of physical activity influencing participation

Enablers (their perception of the benefits of physical activity)

The participants reported that participating in physical activity had benefited their physiological and psychological wellbeing. They did not specifically describe the benefits of participation in biomedical terms; however, in their own words, they clearly had an understanding of how participating in physical activity had an advantageous effect on their general health and wellbeing. In addition to mentioning the fun factor, as already

discussed, they felt participating in physical activity may have alleviated stress connected to their experiencing a physical disability. This was evident in the following comments:

Oh because it kind of relieves my anger sometimes, my frustration, yeah
(Lelei)
So it's good for relaxation and gets the stress out of my system (Masina)
So I tend to go to the gym and I need to let out steam and that really and
then when I finish it's like oh that's better it's out (Moana).

It was evident the participants understood the psychological benefits of participation in physical activity to include things such as relief from stress, anger, and frustration as well as relaxation. In addition to stress release and relaxation, Moana explained how physical activity also helped her self-esteem.

Its help build confidence... It's helped, I think it helps mentally as well
like um especially when I have one of those days where I'm just like
yeah I'm frustrated and want to get out (Moana).

As a consequence of engaging in physical activity, Moana felt enhanced. Her understanding of the psychological benefits of physical activity was that it helped her self-esteem and built confidence, especially when she was feeling frustrated and had a need to remove herself from the situation.

The participants' stories also revealed an understanding of how physical activity could positively relieve their physical disability. In particular, they reported better cardiovascular fitness, more energy, and more stamina. This was evident in Kali's story when her mum was referring to her playing basketball:

Basketball out there is good for her fitness...because it is only down the
road, we walk home. Sometime she doesn't need to have a stop on the
way. But I can see yeah, it builds up a lot of stamina and more energy.
So difficult with the disability...Yeah as far as fitness and keeping her
some weight down and stuff, I have to do those things because she can't.
It is really good for her stamina and her balance (Kali's mother).

Kali's mother understood that her daughter benefited from physical activity, despite difficulties attributed to her physical disability. She mentioned the benefits included cardiovascular fitness, more energy, stamina, balance, and also weight control.

The girls may have had special wheelchairs available to them to participate in wheelchair basketball, but Kali played in her normal chair recently and Kali's mother

proudly commented “*she managed to get 5 goals from her normal size chair.*” Kali went on to describe how playing wheelchair basketball made her feel “good.” Kali’s mother also added “*you feel stronger every time you play...it was quite hard when you first started, eh... and you don’t get so tired in training anymore.*” This story illustrates how Kali’s cardiovascular fitness had improved alongside her muscular strength. From the perspective of Kali and her mother, this was attributed to playing wheelchair basketball.

Improvement in cardiovascular fitness was also noted by Lelei when she mentioned “*I want to do tennis. Tennis, yeah...Yeah, it helped me get fit.*” This finding was also supported by Sefina’s mother, who believed her daughter’s disability could have been debilitating if she had not participated in swimming. Sefina’s mother said:

I think the swimming has done a lot for her in terms of her left-sided weakness. We feel that if it wasn’t for swimming I think it would have been much worse (Sefina’s mother) yeah my legs feel stronger (Sefina).

Sefina also clarified how swimming had benefited her musculoskeletal system, improving muscle tone and as a consequence, improving muscular strength in her leg muscles. Other participants also mentioned how physical activity left them with a sense of feeling stronger. More specifically, Masina, who was in a wheelchair, referred to how her physical activity affected her muscular system when she described:

It helps me. It relaxes my muscles because generally everything is so upright, you know, in my muscles. But it just gives me a release from sitting in my chair just allows me to have fun and do something besides my upper body. I’m also trying to move my bottom half, yeah, coz I’m mostly sitting all the time (Masina).

Masina was predominately in a wheelchair and utilised her upper body to navigate. Physical activity gave her the opportunity to use her lower body, relieving her from her wheelchair while swimming. Masina explained that physical activity alleviated muscular tension while allowing her to have fun.

6.1.6 Disability

While a question was not specifically addressed at specific disabilities the participants experienced, primarily for ethical or sensitivity reasons, the participants themselves referred to how their disability generally impeded their ability to participate in physical activity.

Enablers

Masina had a support person and managed to swim on a regular basis. Swimming kept her active and prevented her muscular system from further muscular atrophy, she elucidated in the following:

Because when I left school, they said I had to be active in everything that I do so my muscles in my legs don't shrink or that's what they said. So, every Friday with no fail, I go swimming at my local swimming, yeah I'm okay swimming. I can put my swimming togs on underneath and then just go swimming. Well just, I scale, you know, holding onto the rails of the swimming pool, then go down the steps and just swim. Or with a, what do you call it, those float boards and then I float. And my support person goes, hah, you're definitely determined. So I've been going swimming for at least a year and a half (Masina).

Despite this participant's physical disability, she participated in swimming and had a sense that she was able to dress herself and independently managed to get herself into the pool and also swim with the aid of floats.

Motivation, relative to the participant's disability, stated by Sefina's mother:

Yeah, I think there is. It's just motivating the kids; letting them know that just coz your disability, shouldn't limit you, to go out there and give something a go...there's swimming... we were surprised as to how much, like, all the different sports that are available...And it would be nice to see other Pacific parents support their children and let the kids have a go, yeah. Just coz they're wheelchair bound doesn't mean they can't give wheelchair basketball a go...Its just motivating the kids (Sefina's mother).

Sefina's mother explained how there was a variety of physical activities available to adolescents with a physical disability and that disability should not prevent the girls from participating. While motivating the girls to participate in physical activity was a concern, this participant expressed how she felt other parents should encourage their child to participate. She also suggested that being in a wheelchair should not prevent them from participating in sports such as wheelchair basketball.

Inhibitors

Engaging in physical activity with a physical disability can be strenuous on the adolescent. Furthermore, there can be discomfort connected to the physical activity they were partaking in as a result of their physical disability. The participants clarified:

You get tired after the 2 or 3 hours...That's around your armpit tired...got sore back last week, but that's the first time in 3 years (Kali). She finds it really good because she's had surgery straightening of her knee. Because of her knees going that way, they put plates in, now they kinda stuck into a position wherein the cap hurts her legs when she is pedalling. So her legs get sore... I think she would like to do standing up sports but she can't anymore... she would just keep doing it even if she's sore or she's knackered or whatever, she would just keep doing it...Really surprising (Kali's mother).

Despite the participants enjoying physical activity, the physical disability itself was obviously a hindrance when they were partaking, which was illustrated in the following:

You get tired eh? But she played basketball at school and it becomes a problem with the standing... She would just come home and live with the pain for the rest of the day, and will rub it... But she's had fun, you know with the other kids (Kali's mother).

Participating in physical activity when in a wheelchair was also challenging, as was evident in Tanielu's story. Tanielu was in a wheelchair and had a sense that if she participated in physical activity that was too rigorous, she could fall out of her wheelchair and possibly injure herself.

I've had a look at some of them like wheelchair basketball but because of the way that my bones are, I'm going to break them... Yeah. So I can't do too much action otherwise if I fall the wrong way or do something, I could break something...I mean, if I accidentally fall on my bottom it's fine but if I'm doing a sport and it's very active and I'm going all over the place (Tanielu).

Tanielu went on to convey how she felt her condition had deteriorated when she mentioned:

I have a walker but when I was a lot younger I used to walk to the mall with it. It's like, before I was older, and since my muscles have stopped working, I can't properly do that now...Yeah. I can walk around the house in my walker but just no longer outside the house (Tanielu).

Furthermore, she was dependent on people to access physical activity, and had a sense that she needed help to engage in physical activity and felt that caregivers should be available for people such as her. She explained:

Just when somebody wants to do something, that's disabled, they should be supplying caregivers; they should have a caregiver with them to help them (Tanielu).

While the participants did have an appreciation that physical activity was beneficial to their health and wellbeing, they mentioned their specific disabilities hindered participation. In Lelei's story, she explained how she had not participated in swimming for a long time, possibly because of the spinal operation she had for her disability, but swimming was beneficial for her respiratory system or breathing. Moana explained she would like to be able to run, but as running requires muscular strength in her leg muscles, her disability prevented this. Moana also mentioned that she did enjoy going to the beach, however swimming was problematic for her.

No, ever since I got my spinal operation I haven't been swimming in ages. Yeah just hard to breathe at times but it does help my breathing to improve Yeah (Lelei).

So I might, I might do running...yeah because people can, they say we can't picture you doing running, I was like yeah that's if I can. There's more to running so, most of my activity we had to drive from our legs and my legs are quite weak so (Moana).

Moana went on to relay the difficulty of experiencing a disability, and having to change herself into swimming attire. She mentioned how time consuming this was for her to the extent that as a consequence, she did not participate.

Yeah I go to the beach but um I don't like to go to the beach because I can't be bothered getting changed afterwards so sometimes I don't bother swimming because it seems a long, long time so (Moana).

Moana suggested, however, that she accepted her disability and how the inconvenience of having to get changed to participate in swimming may possibly have been just an excuse to avoid the activity.

I use it as an excuse at times. Like yeah. So I, I've just, come to terms and accepted it. I'm, accepted it in 5th form so I've come to deal with it so I can't, it won't go away. So I had to learn to deal with it and accept it and embrace it at the same time yeah so I was just like, it's actually, I don't actually mind anymore because at times people don't actually notice (Moana).

The participants' mothers expressed concerns regarding parental attitudes towards their adolescents' experiencing a physical disability. This was illustrated in the following:

I think it's may be the parents' attitude; like, you know, you're disabled; you can't really do anything...regardless of her disability, we want to give her the best (Sefina's mother).

I can see other people taking about me...and I tell them my daughter's the same as you...don't be like that...one day you could be like that...when I see the kids like that, I feel the love of the kids...when I see, disabled kids (Teuila's mother).

These parents were concerned at the insolence of other people's discernment as a result of their daughter experiencing a physical disability. They accepted their daughter's physical disability and felt frustrated at other people's ignorance.

6.1.7 Cultural attitudes and perceptions due to the adolescent's disability

Indirect inhibitors to physical activity participation

Specific cultural attitudes around the participants' disabilities were not raised by the researchers themselves; this was due to ethical reasons and to ensure cultural safety. However, all of the girls or the girls' mothers expressed concern at the attitudes and perceptions, from people of Pacific culture and other cultures, toward adolescents with disabilities. When the topic was raised, the researchers did not probe to explore. However, strong cultural influences may impede the adolescent girls' self-esteem, influencing physical activity participation and caregivers may make access difficult due to their cultural beliefs. This was clarified in the following story:

The child is seen more as a burden, yeah (sigh) which is yuck...She is just been treated with no acceptance, that is more difficult for her. It's kind of a tricky one (Kali's mother).

Sefina's mother also described how other parents viewed her child with a physical disability when she referred to other people's perceptions. She reflected on her own family's experience of their child in relation to another family, but also had a sense that she must accept and respect the attitude of the other family.

And without seeing the disability as a burden, you know...That's the biggest thing I think, is when I heard those parents, they were looking at it like, oh, he's a burden to them. And I said to my husband, I came out of there like I was trying to hold my tears. Like, you know, he's your son, how can you say that? But my husband had said to me, we're all different. You have to respect the way that is the way that they raise him...Yeah. We're different (Sefina's mother).

One of the girls, Lelei, referred to how people perceived her physical disability in Samoa. She had a sense that people were not only surprised to see her in the community in a wheelchair while she was visiting Samoa, but that she was also educated. She elucidated:

In Samoa, if you are disabled you're not allowed to go out, it's kind of an embarrassment. Yeah it's kind of like they think it's a curse, like God cursed them and so, if you come out then people will know that we're cursed. Yeah so it's a bit like that. However when Lelei visited Samoa she explained how the Samoans were they were buzzing out that, like, they were kind of, shocked that, hey this is a girl in a wheelchair... Yeah and there was like an able-bodied, like, non-disabled class. Yeah they would expect me to be in like a different class, not knowing what ABCs are. Yeah (Lelei).

Lelei goes on to mention that it was her perception that it was the attitude of the elders who had specific rules for people with disabilities. As she says: *"It's mainly elderly. It's mainly elderly because they've been in the, they've got certain rules."*

Similarly, another participant expressed her perception of having a disability in Samoa when she remarked:

I think it's nothing over there, they are a burden... Yeah, I see people, when you saw kids like disabled, it's like they're brought, like, down... They're thinking they're can't really do anything... no brain or nothing. They think they're sick or something like that (Teuila).

Moana reflected on how people perceived her due to her physical disability. She attributed her robust cultural background as a possible source, but also revealed how this discernment was an uncomfortable experience for her. She explained how at times, she did not like the way people treated her. In addition, she referred to how her family did not understand her, leaving her feeling like an outcast.

I know this is hard, it's just, it's just sometimes the way they treat people and I don't like it... Yeah and so and in coming up from a strong cultural background it's quite difficult. And like because I've got a different mind-set to everyone in my family. If you met everyone in my family they, at times I feel like I'm an outsider because they don't understand me (Moana).

While discussing physical activity, Tanielu reflected on her experience of racism and remarked:

Yeah, coz some people are quite racist; not with me but, coz I've got quite a few African disabled girls, the colour of their skin, yeah, people don't like it. But I tell them to leave her alone coz it's not nice (Tanielu.)

On reflecting on her experience with her own family, Masina explained:

Coz with my family, they didn't exactly, you know, when they found out I had a disability, they thought it would be a straight burden on their financial side. And so pretty much they just saw me as a, what do you call those people that, not dumb but, what do you call those people that you look at them and they just look blank? One of those people, yeah. My family thought I was one of those people; that I wouldn't amount to anything...I had a good education but they just thought she wouldn't go anywhere further from finishing school. And they just looked blank coz they thought; in our culture if you have a disability they think it's a curse. And it's bad luck on their, on my family and whoever's family. So that's what my family thought of me. So I proved them wrong (Masina).

Masina went on to comment that in her home country:

It would be worse because they wouldn't know what to do with me. They wouldn't know how to go about taking care of a person with disability. All I got told from my Mum was if you had a disability they'd treat you like a five-year-old. They have everything; you know, in a bedroom, have everything in your room. You don't leave that room. You just stay confined to that room for the rest of your life. And only once in a blue moon you would ever come out to say hi to family members and stuff like that (Masina).

Masina's story suggests that she felt that there was a strong cultural belief that having a physical disability was viewed as a curse in her family and that there was an absence of understanding around her intellectual capabilities. She went on to mention that in her home country, she had a sense that the attitude toward her disability would be even more problematic due to strong cultural beliefs around disability perceptions.

The mothers that were interviewed were extremely supportive of their adolescent daughters, however, as one mother mentioned this could be difficult. Kali's mother reflected on how she felt in apportioning time to assist Kali with participating in physical activity and caring for her generally. She was committed to looking after Kali, but also had a sense that one can only do so much and that for her personally, having an adolescent with a physical disability could be arduous.

Yeah, it just about finding that time, it becomes your whole world and a kinda resigned me to be it anyway. You know when you have to you cannot try make lemonade out of your lemon. If your forever fighting

it and feeling that is a burden then there is no motivation. But you do go through all of that, definitely. But you go through the process (Kali's mother).

6.1.8 Policy

In the wider context, the participants and their families were dependent on community and government policy, which enhanced or impeded their access to participation in physical activity. The issues raised that were identified as having a connection to government policy were access to physical activity via transport and disability funding and financial support. For purposes of anonymity, the organisations mentioned by the participants were replaced with XXXX.

Enablers

The participants were receptive to any new programmes which usually involved travel, which was evident in Kali's story when Kali's mother explicated "*so we go to the North Shore because it is relatively new and we are trying to see what they are doing and how they are doing it (Kali's mother).*"

Inhibitors

It was apparent from the participants' stories that without funding, access to physical activity was problematic. The participants were reliant on funding for transport to the activities and for the unique equipment necessary to play sports such as wheelchair basketball. This was explained in the following:

In wheelchair basketball, it doesn't cost us anything because XXXX have given a grant to pay for the court and stuff until the end of the year. And from there, we try to get the parents involved and we're looking at fund raising. For petrol that's the biggest thing. As far as equipment XXXX gave wheelchair, for basketball which is a really a blessing. They funded the wheelchair and we just use the spares out there. We are not gonna have any tournaments because that is expensive (Kali's mother).

In addition, the funding differed depending on if the physical disability was acquired or congenital. Some participants were eligible for funding, while others were not. The participants mentioned:

It's really, unfair don't know. It is just a difference a disabled who acquired the disability to those who were born with it. And its lot more privilege and make it lot more pretty because people go Oh you poor thing, you used to be a rugby player, or you use to and now we can't fight you now guys... Have never been able to change that because this

was you know... So they are on different funding from... while our guys are on XXXX funding... they don't get much at all (Kali's mother). My daughter she's ah 17 now but I never got any money now. There's the money go to the different people that's why we are not happy about it (Lelei).

Yes I've got a disability card and also in the XXXX society has helped Me out a lot financially, so yeah so (Moana).

XXXX is another awesome person that we came across. He's very supportive. If he comes across funding that he thinks XXXX would be eligible for, he'll flick me an email straightaway. There is funding... The thing is, you've got to look it up. That's what I did...we had applied to XXXX, just to see whether she, and apparently she was on that thin line where she is eligible to be part of that society. And they have funding too, the XXXX Club that XXXX, he sends stuff. There's XXXX, the scholarships; she was granted a \$5000 scholarship. And XXXX had offered to fund it because she's from XXXX. So they were looking for someone and when XXXX sent her details, they felt that she was the right candidate... if the accident happened and she was probably about, a little bit, quite older, she wouldn't be eligible (Sefina's mother).

There appeared to be confusion or uncertainty around entitlements and where and when to apply for funding. Funding inevitably allowed the participants to access participation in physical activity. If they did not have someone to guide them towards accessing funding, they were disadvantaged. This was illustrated in the following stories:

I don't know. I haven't looked at that. I don't know where to look...I get the taxi vouchers from the XXX but without my TM card, yeah, it's expensive (Tanielu).

Well, because they tried, I think it was through funding to get, you know, taxis. The funding, like, sort of once a year or something like that, I don't know how the funding side works but all they told us was a taxi was going to come and pick us up once a week to take us to XXX. But that fell through (Masina).

Some of the participants expressed how they were reliant on other people or funding which would enable them to engage in physical activity. While funding was available, for reasons unbeknown to them, the funding was then withdrawn and as a consequence, participation in physical activity became inaccessible.

Someone from XXXX gave up their time, like an hour and a half, every Tuesday, just to pick up those that were, you know, we could transfer into a car and take us to basketball... And then, the people couldn't find transport, they just couldn't come. So there did more people want to go to basketball but they just couldn't get there coz they don't have

transport or their parents didn't trust the people that, you know, did basketball. And we just ended up staying home (Masina).

They've got no funding for kids' taxi...Yeah, he was running a programme at XXX on the North Shore I think for physical activity things...before they go there but now the taxis, they stopped, no funding for the taxis or something like that and that's why they were here before... Yeah, some people they say they can't afford to pay the taxi to go to the North Shore...They have no funding for disabled kids. But before they always go, so they go over two days a week...They, sometimes they say they go to activities and they go bowling somewhere. Yeah, may be three or four years now, there's no taxi coming, funding, something like that, they go take this kid (Teuila's mother).

Yeah, I want to do more activities...Yeah...but because of the taxi problems...Well, before they always go for nothing, they're free to go, but now they have to pay the taxi. They said they have no funding. That's all they said (Teuila)

Teuila's mother attempted to gain funding for her daughter to access transport, but was advised to encourage her daughter to use the bus service. However, due to her daughter's disability, walking any extended distance was not an option for her. She explained:

And I ask the people for taxi and he said that they can't apply for a taxi voucher or taxi something like that and they told me that she's able to get the bus. And I told him, well, the bus is too far to walk down. It's, for XXXX, it's not good for her (Teuila's mother).

6.1.9 Restrictions

Enablers

As previously suggested, the participants all showed an interest in participating in physical activity. However, there were diverse and complex reasons behind the participants not participating. This section discusses the restrictions in relation to participating in physical activity with a physical disability, including restrictions relating to travel, time, expense, and attitudes to the Pacific participants with a disability.

This mother felt the financial implications of engaging her daughter in swimming but as her daughter began to achieve in her sport, she found funding became available to her. Primarily, Sefina demonstrated aptitude in her swimming, and as a consequence, she qualified for funding. However, as explained, generally Pacific families struggled financially and allocating money for physical activity was problematic, especially if the family perceived it was needed for other expenditures. Sefina's mother also suggested

Pacific parents did not have an understanding of the long-term implications or benefits of involving their children in physical activity. She had a sense that these long-term benefits may counteract the probable monetary commitment, but thought other parents had a different view than she did.

Well, when we first started off with the whole swimming thing, it cost her a lot, like, financially it really, and then with all the results that she was achieving, then we started getting the funding... Yeah, I think that's the biggest issue with the Pacific Island kids. Not just with kids with a disability but you see it with able-bodied kids, where a lot of parents, financially they can't afford it, and then sometimes they're like, gosh, we could use that money for something else, you know. They don't look at it in the long run (Sefina's mother).

Inhibitors

The participants all had to travel capricious distances to access the physical activities they wanted to participate in. This became problematic especially when as discussed previously, they were dependent on their parents for transport and the physical activity was not local. This was illustrated in the following comments:

So these things are a bit of a pain but you just get used to doing that... The only reason going to the XX is because they started this one on the North Shore for the kids, and you don't want to go because it is so spread out. I'm trying to talk to someone about setting something up in XX but XX pulled out. If I have a bigger car or a van, I could take at least another 2 or 3 in it (Kali's mother).

I was meant to try tennis but it's like all the way at North Shore and yeah that's like too far because my mum doesn't know how to drive there and I want to try it but. They used to have it in Manukau but it's, I think they said it's shut down because hardly anyone went. I was like okay then stay home it is (Lelei).

It costs a lot of money to get these kids to physical activity, just in petrol in the car and stuff (Sefina's mother).

These stories show the evident frustration of not having opportunities for physical activity local to the girls. Moreover, one of the mothers remarked how she found the cost of petrol problematic when her daughter was required to travel to her physical activity by car. Even more frustrating, Lelei mentioned how she only needed to attend one session and it was her understanding that funding would have been made available to her. However, she could not find a way to travel there. As a consequence, the participating in tennis was not possible. She described:

Yeah they said that the open day if I was interested I would have to get my own ride to open day and I couldn't make it to open day and so I can't do it. So if I was to go to open day they would have got me a ride to the lessons afterwards but I couldn't make it to open day. Yeah she's told me. And she was the one who contacted the tennis people. So yeah, but they said if I couldn't make it to open day they would find funding um to get me transport yeah but yeah I didn't even make it to the open day (Lelei).

Participants expressed frustration at attempting to gain access to physical activity. Moana found Auckland daunting due to the size, which restricted access for her. Similarly, Taniela remarked how in her experience, the community environment was difficult for people with disabilities in terms of access to facilities.

In XXX it was so easy because it was so small. Um in Auckland it's so big (Moana).
There's not that much accessibility for, you know, in the community for people with disabilities (Taniela).

Taniela also mentioned that she was dependent on her mobility card, which she had to keep current in order to gain access to travel. However, renewing her card was problematic in itself due to issues with replacing the card itself and getting access to the building where it can be replaced. She explained:

No, it's a hassle actually because you've got to go to, you've got to go to XXX Transport, XX, and you know that place?...And you've got to go see them. And the card itself, it's eight dollars but they don't, coz when I pay my stuff I go into the building myself and pay it. But these people say they don't have wheelchair access (Taniela).

In addition to frustration at having difficulty attempting to renew her disability card, she reflected on the extra expenses she incurred as a result of her disability.

I have a lot of bills and I have medications and that's not cheap and not having wheelchair access is stupid... Well, I have a lot of medication. I have a lot of bills to pay. I have a lot of, like, board and stuff like that... Yeah, and the people just think because she's disabled – I don't know if you've heard this before – but I've seen it. Because you're disabled, they think you're rich (Taniela).

The participants previously had access to physical activity through the funded taxi service. However, this service was no longer available to them. This was illustrated in the following stories:

I think they had it at North Shore when we, when we had before the taxi. But there's lots of things that go on before. Sometimes they'd go bowling or something like that (Teuila).

Yeah, and so that's possibly going to affect a lot of the kids... all the things like the sports and stuff, are probably on hold because you can't get the taxi I'm guessing, yeah (Sefina's mother).

The participants expressed concern over the amount of time required to access physical activity for the adolescents. While she expressed this was easier for her because Kali was the youngest, Kali's mother described:

There are the fact of transport, time, and yes the procedures that needs doing for the kids and Kali being the youngest it was easier for me than others whose child may not be the youngest as I have more time for her (Kali's mother).

This mother also commented when she was referring to taking Kali horse-riding and the story below illustrates:

She needs to have someone there, you have to play with her the whole time. It takes a while and you need time to do that (Kali's mother).

Some of the physical activities engaged demands on caregiver's time such as horse riding whereby the adolescent was required to have someone to stay with them. As a consequence, Kali was not horse riding. However, Sefina's mother mentioned:

I have to stay with her because she trains in XXX, yeah...I guess because we've done it for so long that we already had that routine. And our kids are normally, coz they're normally at the after-school programme till about 6 o'clock when one of us can pick them up, yeah. So we've kind of, things are fine with us now because we've got a routine that's been going on for almost two years (Sefina's mother).

While Sefina's family appeared to manage, clearly transporting and allocating time to attend Sefina's swimming activities placed demands on the family's time. Sefina's family has accommodated this with her other siblings attending an after-school programme, allowing this family to meet the requirements her swimming demands.

Participating in various physical activities was also expensive. Kali's mother also reflected on how it was expensive to participate in varying physical activities when she explained:

But we couldn't do that on a Tuesday night, on Wednesday night basketball and Friday night, is it just too expensive... getting there is too expensive (Kali's mother).

The extra financial strain placed on families by participating in physical activity was evident in the following story, where Lelei relayed her experience of the difficulty of not accessing tennis or swimming due to financial restrictions.

No, I am not playing tennis or swimming at the moment because well we're having financial problems at the moment. Yeah so it's a bit hard because mum's on the benefit and um I got on the benefit too but then her one got cut, she has to pay for the bills, so we're only living on my one and it's like \$180. Hmm and that's supposed to last us like a week... Hmm... But that doesn't even last us til Friday (Lelei).

Another participant expressed her experience of financial hardship. Lelei was required to take medication, which she found expensive. Furthermore, her doctor had suggested she buy meat, but due to the cost, she cannot afford meat. As a consequence, she was deprived of essentials to maintain her health.

Everything is just so like expensive and you know... Especially meds. Like right now I'm like low on my med kind of stuff, iron. And the doctors like eat some more meat and I'm like sorry can't afford it. It's easy for you to say but I can't afford it! (Lelei)

In addition one participant also referred to her understanding of why her disabled friend was not participating in physical activity when she explained:

A lot of us Pacific Islanders struggle with money and so like I've got a close friend who is really struggling. At the time she can't come to the club because of petrol and I understand that's alright. But it's hard. It's, it's just pretty much like money and finding the time (Moana).

As the literature reported, users of Pacific services were not always aware of the financial assistance available to them. Additionally, most physical activity placed strain on the family's financial resources because of the transport or equipment required. Furthermore, some girls had additional medical costs attributed to their physical disability.

The participants mentioned how they enjoyed going to church and one participant referred to the activities at her church. In her story she clarified:

Yeah, my family does have lots of church stuff but my parents got to the point of not taking me anymore coz they thought just me and my chair was being a hassle... I still want to go to church but my parents are getting to the stage of, you're a hassle to go to church. But I keep in my, you know, if I don't go to that church I go to church, my friends' churches, keep interacting with them. And yeah, my parents don't take me ever since I was – what? – 17 (Masina).

While this participant wanted to attend church and activities at church, this eventually proved problematic for her family. Another participant reflected on her experience of her daughter attending a gymnasium recommended to her by a national sporting body. The gymnasium was made available for her daughter to use, she explained:

Oh XXX was doing gymnastics last year... they were really stink about it and they said she was not allowed on the equipment ...XXX had just facilitated it and as it was their gym. They said we could use and it and it was in the dark corner of the gym late on a Saturday afternoon when everyone else was cleaning up and there was powder flying around, it was just shocking. The instructor did not know what she was doing. But Kali loved it, these kids just loved it. Yeah it was super fun (Kali's mother).

Despite having a sense that her daughter was given low priority due to her disability, the conditions or the attitude of the gymnasium instructor did not prevent her daughter from enjoying the experience. Sefina's mother also reflected on the attitudes toward her daughter while attempting to swim with her physical disability. Her mother did not accept the attitudes of the club members and as a consequence, removed her daughter from her local club. She described:

We were quite fortunate with the whole swimming. We were with another club and unfortunately we felt like Sefina was just kind of brushed to the side. And to me, that wasn't on. You know, I'm not going to have that. I'm paying money for my daughter (Sefina's mother).

While showing an interest in rowing, Moana expressed that attending rowing on a Sunday morning proved problematic. This was attributed to clashes with attending church and the distance Moana would have needed to travel to attend the initial open day.

They have used this have a go rowing day and, I was like oh, a Sunday. It's not just the distance but it's the day of it. Because for Pacifica, you usually go to church on a Sunday (Moana).

Moana went on to comment that while Sunday was not necessarily the day she went to church, it was the day that she found to relax. The following story illustrates how Moana found it problematic if the physical activity commenced at 10 am as it was too early in the day. She explains:

We don't usually go to church but the thing is it's on a Sunday and I, I like to relax on Sunday so it's like ah I just have one more day to relax. And usually it's really early. Yeah so I, and it's like usually goes from like 10-1 and I understand why I know why they do that at that time but at the same time it's like too early (Moana).

This participant experienced frustration while attempting to catch a bus. Not only was access difficult for her but she relayed her feelings on how the bus drivers treated her when she explained:

Because I know the bus drivers and I go, ride the bus, and some of them be so rude and go, oh, you know, a taxi would be easier for you? And, like, you've got the money mister? Coz I don't. Are you going to pay for the taxi for me? Coz the taxis are really expensive. And sometimes wherever I go I don't have \$40-50 to spend on a taxi (Tanielu).

6.1.10 Sedentary behaviour

Enhancers to physical activity/ decrease in sedentary behaviours

One participant went swimming most days. When asked how much time her daughter watched television or was on the computer, Sefina's mother commented:

Hardly ever. She's like, home, homework, eating, trying to rest a bit and then she's off because we're stuck in traffic for about an hour. So yeah, she doesn't have that much time to watch TV (Sefina's mother).

Sefina was preoccupied with her swimming, which took up a large proportion of her time. As a result, there was little time for watching television, resulting in low sedentary behaviours or under two hours per day.

Inhibitors to physical activity/ increase in sedentary behaviours

The following story illustrates the difficulties for one mother when she remarked:

It seems that they just come home, sit in their room, sit on Facebook and just sleep a lot, and that is terrible, it is sad... Yeah, it's hard but most kids can't even watch TV... If the parents are working, the kids would just go home and do nothing (Kali's mother).

I just stay in my room... Oh I just go on Facebook. Yeah... Just from morning and then, til afternoon see if I've got anything planned and then go back to sleep yeah (Lelei).

When I'm not doing things but in my spare time I like going on the computer. And Facebook, chatting to my friends that are not in the country, at least it keeps me active with, you know, talking to different people that I don't know and introducing myself and this is me, this is what I do, yeah, I just keep in contact with other people. I am on Facebook; about two hours and a half a day (Masina).

Yeah, I go on Facebook about an hour or more a day (Teuila).

Most of the participants reported spending a significant amount of time on the computer and Facebook with their friends. While most of the participants had at some point engaged in physical activity on a regular basis and two participants were partaking regularly, boredom was mentioned as a barrier to participation. Boredom was connected to becoming bored with the activity itself, as the participants' explained:

But yeah, I gave it up because I just got bored with it...I did it for a couple of months but I got bored of it (Taniela).

I'm kind of getting bored doing athletics again (Moana).

So it's, well, it is boring if you just do it all the time (Tanielu).

I find the game quite boring (Masina).

Or, not having access to participating in physical activity anymore. Coz it's difficult now coz you're used to being busy and going to activities and then you can't so you get bored (Teuila).

Lack of motivation was also problematic for some of the participants, as evidenced by the following comments:

Oh yeah I used to do like jump jam and all that stuff. I used to walk when I was little yeah. But then I became lazy and unfit...Yeah I'm not really into sports. Yeah I'm a lazy kind (Lelei)

It's quite hard to keep yourself motivated in that sport (Moana).

In addition, one of the mothers had a sense that she felt lack of motivation was a significant factor for her daughter and she had a sense that she was always fighting it, she mentioned:

You're forever fighting it and feeling that is a burden, then there is no motivation. But you do go through all of that, definitely (Kali's mother).

This participant illustrated in her story her understanding of the connection between fun, boredom, and motivation:

Yeah they need something that's really fun and exciting and, something different because that's how I get motivated in my sports is by watching something new and oh I'm actually going to have a go and it's just um, because you do get sick of doing the same old thing because that's what I've noticed with my sport, is I'm kind of getting that I can't be bothered

anymore. I want to do something different because um, that's what I've noticed there's this volleyball sitting down and I was like that's the first time I've seen that, that looks like fun (Moana).

Chapter 7: **QUALITATIVE RESULTS - STUDY THREE**

7.1 Introduction

This study's aim was to answer the following research question: From a provider of services perspective, what are the factors that enable or inhibit the Pacific adolescent girls with a physical disability, accessing physical activity and sport? Service providers of disability services were interviewed to explore their opinions of factors that may influence, impede, or encourage physical activity for Pacific adolescents who experience a physical disability. Each of the providers regularly engaged with physically disabled Pacific girls and their families. The *talanoa* with the service providers focused on their experience of working with the girls and their families. This included the services that were offered in relation to physical activity for physically disabled adolescents, as well as in the context of their connections with other organisations that ran physical activities for disabled adolescents. Their stories are presented and organised under themes that emerged from the data. The data is categorised under the following headings relative to the Pacific girls with a physical disability: sport club roles, coaches, gymnasiums and financial implications, participation in physical activity, sedentary behaviours, access to physical activity and equipment, dance, attitudes including not providing access for disability users, schools, family/parents, and other factors influencing or inhibiting participation in physical activity. In this chapter, the Pacific girls with a physical disability are referred to as girls. The twelve different providers, already described in Table 4-3, are referred to by the pseudonyms provider 1-8.

7.2 Findings

The providers themselves were very empathetic and demonstrated an appreciation of the importance of physical activity for the girls. Furthermore, an in-depth knowledge of the multitude of factors surrounding their participation was shown in the following stories.

7.2.1 Sport club roles, coaches, gymnasiums and financial implications for facilitating participation in physical activity

Sports club roles

Enablers

It was found that sports organisations attempted to engage physically disabled adolescents, particularly at a national level, by distributing resources to sporting clubs that facilitated encouraging the girls to participate. This included writing guidelines or

resources for clubs in order to assist them to work with and cater for the physically disabled. Provider 2 revealed:

A lot of the sports are writing up or are making resources that they can hand out to clubs so that, you know, if they get, for adaptations for physical disabilities so that they're being able to give them as a resource. So that's happening a lot more at national level (provider 2).

Moreover, if the girls sought to participate in Paralympics, the selection process was similar to the one for able-bodied adolescents. The pathway to competitive sports for the disabled girls was similar to the one for able-bodied adolescents. They were selected and placed into representative teams through talent spotters and talent identification programmes or camps.

It's just, it's similar to able-bodied; as they get better they get picked into representative teams and stuff like that. So there are pathways. And then XXX New Zealand has a talent identification programme. So we act like talent spotters for them as well if we've got some kid who like go to talent ID camps for different sports (provider 2).

Inhibitors

Engaging the physically disabled adolescent into mainstream sports clubs could be challenging for the clubs themselves. In part, the clubs did not have the experience of accommodating physically disabled adolescents, particularly when the clubs already found it problematic to manage the club members they already had. The following story highlights the difficulty sporting clubs experienced.

You know, it's sort of going in a little bit into the unknown for them and it's a bit scary for some of the clubs. You know, some of them are struggling enough to cater for their main audience and then you're asking them to do something extra on top for physically disabled kids. But in general, just trying to integrate, whether they are running a race by themselves or not, they are integrated on the day. They're doing it on the day of the same event. It's not like a separate event or a completely separate day or it's not being offered (provider 2).

In contrast, for school sports, they were running the activities nonetheless, so this provider had a sense that the physically disabled adolescents should be integrated when possible.

Furthermore, as provider 2 explained, organisations did not know how to accommodate the adolescents who experienced a physical disability, particularly if they were obese, and articulated how this was problematic for parents. This provider had

managed to accommodate one particular girl who was now regularly participating in mainstream gymnastics.

Yeah, there's one really recently; her name's XXX and she was actually referred to me through XXX. They have a programme for obese kids and they're getting quite a lot of referrals from, oh, a few referrals, from parents with physically disabled kids and they're not sure how to cater for them. So they referred her on to me and then we set up a meeting and now she's in to doing a regular gymnastics programme, mainstream programme (provider 2).

Some providers conveyed that accessing physical activity for the girls could be difficult because attending required travelling a considerable distance. It was challenging if the physical activity was not geographically close to where they lived. It would be preferable to have, for example, basketball and tennis in every major suburb throughout Auckland. This would make basketball or tennis more accessible for the girls as they would not be required to travel extended distances.

The fact that we're based in South Auckland doesn't really help the girls get here. I guess it's where the sports are. It would be nice if we could have basketball in every part of Auckland and things like tennis as well (provider 8).

It certainly means that geographically if things aren't in your area it makes it a lot more difficult to get to those if they're not in your area (provider 5).

The access and the transport, those are the things that restrict their access (provider 3).

The possible rationale for not setting up physical activities in more areas was highlighted below when provider 8 clarified the situation. Due to funding restrictions, they had limitations on the specific number of physical activities they could set up. The low number of adolescents that attended compounded this problem. Furthermore, a person needed to have the initiative to drive the activity, otherwise it would not eventuate. As a consequence, it was their perception that it was more advantageous to focus on one activity and expand from there.

Yeah, we just don't have the numbers of people to get involved to set up something else elsewhere coz funding's always going to be an issue. And then, yeah, coz then you struggle; once you struggle with numbers then, it takes one person really to really start to push one particular sport. And unless that one person's there to do it then nothing will happen with it. So it's easier just to have the one and then if it does expand then it's because there's more people involved (provider 8).

Coaching

Enablers

Provider 6 referred to coaches who experienced physical disabilities themselves, mentioning that they provided worthy role models for adolescents, giving adolescents something to aspire to. This could possibly influence or encourage participation.

Provider 6 explained:

And so you know, they're fantastic role models because they're at that top level and you know, they can relate because they're obviously in wheelchairs and stuff as well. So there's that really good role modelling, mentoring, and going on. And the coaches are actually finding it really rewarding as well so it's sort of mutually beneficial (provider 6).

Inhibitors

Nevertheless, as another provider explained, it was difficult to find coaches for the girls. Provider 8 commented:

Trying to find a coach is a difficult... They've had a problem with trying to find a coach and participants in the other parts (provider 8).

Gymnasium

Inhibitors

A significant factor inhibiting the girls' participation in physical activity was attempting to engage in physical activity at a gymnasium. Provider 5 explained how the gymnasium staff struggled to facilitate physical activity with disabled members due to inadequate training in working with physically disabled adolescents. While the girls were able to utilise some of the gymnasium equipment, this was problematic.

They are able to use certain pieces of equipment but it can be quite a struggle because for most gym staff members they haven't, just haven't the experience or the expertise of working with people with disabilities (provider 5).

Moreover, this provider highlighted a general problem with girls, who needed extra support at times, some to the extent of requiring one instructor to each adolescent.

Yeah, and some of them when they need to go, they need one-to-one support at all times while they're there (provider 3).

Financial/funding implications

Enabler

One provider mentioned how their organisation attempted to make physical activity available to physically disabled people. This provider offered funding and information to different sports clubs and schools, and also attempted to identify which particular physical activities girls would like to be included in. Additionally, they aimed to ensure the adolescents were involved in sports alongside able-bodied adolescents, rather than going home, sitting on the side-lines, or sitting in the classroom while able-bodied adolescents were competing. This included including them in athletics, swimming, and school sports. The provider also explained how these adolescents could still participate in ways that worked for the girls and that they were attempting to work with schools by educating them about how to include physically disabled students and educating schools on how to do this.

We provide funding and we provide information on different clubs or sports and stuff that they can go to. It's just basically our job is, what we're doing is finding physically disabled people, finding what sports they're into and then making sure that they're being included and inclusive...But we're trying to do some things nationwide now I think so there's some core sports, like, you know, like probably athletics or swimming for example; just making sure that for example in school sports days, those kids are being included. They're not just either told to go home for the day or sitting in the classroom or sitting on the side-line cheering, you know. They can still participate in their own way...So you know, we're trying to work with the schools to make sure these kids are being included and educating the schools on how to include them as well (provider 2).

Provider 2 also relayed a problem associated with the costs of participating in physical activity – that the girls themselves may be expected to pay to participate. This was challenging, as the girls did not have the financial means to meet costs associated with some physical activities, such as gymnasium membership costs, which included joining and weekly fees. While there were other options, generally the girls could not meet this expense.

Again, it's all sort of, it all sort of ends up being user-pays...some of them just can't afford it. They just can't afford to join; there's membership and the weekly fee they have to pay. And it's just, it's sad...There are avenues; they don't always have to fork stuff out of their own pockets (provider 2).

In addition, some providers mentioned that the resources were limited. Resources and funding were not available, despite adolescents showing the potential to represent their sport at a national level. Some providers simply did not have the financial resources to cover the costs of the equipment.

Yeah, we'll be okay with that part but we when it comes to physical activities we don't have this, it's about resources.

Mm, there's not the resources there... We do have good people there that can go for sport. They can represent New Zealand. They can do something better but we don't have very good bits of resource to support that (provider 7).

We don't have the funding for money for equipment... yet (provider 8).

Provider 2 also mentioned how the Pacific families experienced poverty and how this may impede participation when there were costs associated with travel, programmes, joining clubs, lessons, or coaching.

The main issues that I'm finding with Polynesian families that I'm working with, is that obviously quite a lot of them have hardship so it's the cost of the travel and the cost of the programme and stuff like that if they want them to join a club or to get some lessons or coaching and stuff like that (provider 2).

The families may have had other financial commitments too, such as to their church, which placed a strain on the family finances. In turn, this made it difficult to extend money to other areas, such as costs associated with their adolescent's medication or associated with physical activity participation, such as the travel required, the programme, or the activity itself. The problem is compounded if the Pacific family has a financial loan that requires repayment, or they are making large financial contributions to their church. Both of these costs compete with the families' limited monetary resources. This was explained in the following story by provider 3:

For example, they participate in community church stuff and then at times they contribute huge amounts of money into church and when it comes home to school stuff there's a shortage there. And then that's why they end up with big loans. For example, costs around medication, costs around transport or cost around day programme or activity (provider 3).

While there was funding available to the providers for the purpose of providing physical activity, it needed to be accountable and sustainable. The organisations that provided the funding required outcomes and the providers needed to report these

outcomes regularly, on factors such as the number of adolescents attending and what was actually happening in the programmes themselves. To allocate funding, this provider had a sense that it was easier for the organisations that distributed the funding to direct it to mainstream sport. This is a result of them feeling that the mainstream sport was able to be more accountable. However, they went on to mention how this was a learning curve for all concerned. Provider 2 mentioned:

I mean, that's a big thing for us; it's about, especially with our funding is, you know, the whole legacy and making sure that you know, what they're doing is sustainable...They certainly make you accountable with the funding that they give. They want outcomes...So you know, so we have to report back to them on a regular basis about what's happening and in our programmes and the numbers and that sort of stuff as well...I suppose if it was a mainstream sport they would probably feel more confident and provide more direction but it's a bit of a learning curve for them as well. I think a lot of them, they like the active stuff (provider 2).

Provider 3 explained how funding for adolescents who experienced a disability due to an accident or congenital reasons differed. The adolescent may have a congenital disability. If the disability resulted from an accident, the funding then needed to come through XXX. After XXX had determined that the rehabilitation or recovery period was complete, the funding was then transferred to the next level service provider. Provider 3 clarified:

If it is congenital, which means that it's, you know, they're eligible, the funding is there. But if it is the result of an accident or if an adolescent might have an accident, what we tend to do is that we put our service on hold. Because if it is an accident then XXX will cover that until, to a certain amount of time when XXX decided they're finished the recovery/rehab, whatever you call it. Then we'll pick that up from there, yeah (provider 3).

7.2.2 Participation in physical activity

Enablers

Provider 2 shared their story of how girls were encouraged to participate in shot-put as a result of her seeing Valerie Adams, a well-known Pacific sportswoman, participating in the sport. The girls related to Valerie as a Pacific female from their community and culture, so they identified with her. As a consequence, they made the connection which left them with a sense of wanting to that they wanted to participate in the same physical activity. Provider 2 commented:

I know XXX is loving it. So yeah, sort of more the active type sports I think. There is a bit of a catchment out south at the moment with, and it's probably to do with XXX, but with shot-put. So I suppose has had a bit of an impact there because she was South Auckland born and bred and stuff like that as well (provider 2).

Provider 2 also explained how they perceived that one girl succeeded in the wheelchair shot-put, and mentioned how, at times, the girls interacted with the mainstream population:

In the shot-put in the wheelchair and she did well and how the girls sometimes either they mix and mingle with the mainstream kids at school holiday programme or they go with adults to their old, to the adults' activities, like their regular aerobics, their regular music time, you know? (Provider 2).

In their experience, the girls participated in physical activity with people who did not have a physical disability, such as in school holiday programmes or with other adults at aerobics. Swimming was another physical activity identified by the providers that the girls participated in, primarily due to the funding allocated to swimming. Provider 2 inferred that it is essential the girls learn how to swim for their own safety if they are going to the beach.

Swimming; most of our activity funding goes towards swimming lessons. That seems to be one of the main things people apply for. And I think that's because, you know, it's a life survival skill, you know, when they go to the beach or whatever as well. So this seems to be standard (provider2).

Swimming. One of them is swimming (provider 8).

Providers went on to mention how swimming is a popular activity amongst the girls. Basketball too, was mentioned as a physical activity that appeared to be prevalent and popular. Additionally, a few played wheelchair rugby. Basketball was an activity the girls enjoyed and it encouraged them to be active. However, there were a limited amount of girls playing. Nevertheless, as provider 1 mentioned, there are differing sports available for the girls. The providers commented:

Basketball I think's had a couple of them. There might be a couple in there at the moment (provider 8).

Wheelchair basketball I think is a really big one. I think a lot of them, they like the active stuff. So the stuff involving the balls and all that sort of stuff...That's why I think something like wheelchair

basketball...and we have just helped XXX set up a six week wheelchair basketball programme- in the spinal unit (provider2).

One of the girls went on to basketball. So she loves basketball (provider5).

There is a bit of wheelchair rugby...Yeah, there are not many girls though (provider 8).

We've got XXX participants tap into wheelchair basketball and do a number of different activities and things as well. So there are some different sports out there (provider 1).

Inhibitors

In general, the providers denoted that physically disabled Pacific girls were not participating sufficiently in physical activity. The providers explained that while the girls modified the types of physical activities they were in engaging in frequently, generally, the numbers were obstinately low. This may be attributed to the absence of physical activity facilities. They clarified:

A really low percent, I would say of Pacific girls (provider 1).

Kids sort of chop and change quite a bit...we are assisting and running but we're not actually getting huge numbers at them (provider 2).

I think the particular barrier is there's not a service there. There's just not, there are not the things to tap into (provider 5).

Nevertheless, provider 2 acknowledged that physical activity facilities were becoming more prevalent. They also mentioned how they had a sense that while there were still insufficient facilities, with effort and in time, new facilities were evolving.

Yeah, I mean, again, I think it's a work in progress. I think there is more stuff than there used to be but there can always be more. So you know, we just keep plugging away and adding sports on as we, you know, as some are established and you know, start something new (provider 2).

Furthermore, as another provider mentioned, participation in some of the physical activities required physical fitness and muscular strength. The girls did not always get the opportunity to increase their muscular strength. This lack of opportunity resulted from the physical disability itself. While there were still activities for girls to participate in, due to their physical disabilities, the provider had a sense that they would probably not have the same muscular strength as able-bodied adolescent girls. However, despite their muscular weakness, there were always some activities available for the girls. Provider 6 disclosed:

They require fitness and strength to be able to play and participate in sports and some of them don't have the actual physical ability to improve their strength a huge amount. They just aren't very strong and that's just the nature of the disability. But then they can still participate in something (provider 6).

Participation in sporting teams

Inhibitors

Provider 7 referred to how there were insufficient girls to form a wheelchair basketball team, so one girl had no choice but to play wheelchair basketball on team with older males who were not Pacific. They had a sense the girl accepted and accommodated these circumstances. While there were mixed teams available, the girls had differing levels of aptitude particularly in comparison to males. They attributed this problem to the lack of resources and funding.

Yeah, coz I had another girl that was doing wheelchair basketball – a Pacifica girl – and she seemed okay with it but she had to play in a non-Pacifica team with guys that were a lot older than her, you know, because there's nothing there for her...There are not enough girls to form a team and like the one that we have in Otara, we have a few girls. There's a mixed team. But some are better; some are just a beginner. So it's not really balanced, you know? But it just all comes back to, comes down to resources and funding (provider 7).

Moreover, finding physical activities to participate in or finding enough girls to form a team was problematic if they experienced physical disability. While this may be due to a variety of issues, this posed a dilemma and was a significant barrier to partaking, as the following providers described:

So you know, unless, if you're a young person with a disability, what are you going to do for exercise and activity? It's pretty limited. I think there's a different issue all over the place (provider 2).

Our numbers are quite low as you see so to put a team together where everybody does the same thing for exercise and activity...It's pretty limited. That's probably the biggest barrier, you know (provider 4).

In the following story, provider 4 explicated the difficulty of the girls trying to play in mainstream club sports.

If XXX went to a local club to play soccer she would not get any game time. You could guarantee that. Because the rest of the team are not going to want her on the field. She would love to be on the field. And she would enjoy the social thing. But in terms of the competition and the adolescents...a sports team is often about winning. And it's not

only the other members; it's the other members' families saying, why are you putting that child on the, you know, she can't kick the ball, why is she on the field when my child's standing on the side-line? When they're little you can explain that it's taking a turn but once they become adolescents, it's much more competitive (provider 4).

Provider 4 clarified how it would be the girl's preference to be permitted to participate in the soccer game. Nevertheless, the rest of the teammates and their families would preclude this as a result of the girl's capabilities. The girl was perceived to be a hindrance when the team was conscious of winning, and the team of able-bodied adolescents were not going to want her to participate with them in their soccer game. A team of younger kids may have approved, accepting that everyone should have the opportunity to participate. However, the adolescent team members did not accept this. Additionally, the families of able-bodied adolescents felt that if it meant their able-bodied adolescents were on the side-line while the disabled girl participated, the disabled girl should be excluded, as she was not as accomplished.

7.2.3 Sedentary behaviour

Inhibitors (factors that increase the likelihood of sedentary behaviours)

The providers also mentioned sedentary behaviours. High sedentary behaviours were possibly accredited to factors such as the girls having to be transported and the lack of physical activities available for them to participate in. Also, as one provider explained, it was difficult for parents to just drop their adolescent off at the park when they were vulnerable due to their disability.

I could imagine our girls go home. I would imagine XXX helps in the house. It's, getting exercise is really hard for our students because they're taxied to and from. They don't even walk to the bus (provider 4).

So, what sort of activities are there for them to do? So all they do, because there's none available to them they either they'll stay home all day all the time or they get to find something for them to do; you know, to occupy themselves with, like take a course, go to university (provider 3).

And there are safety issues... XXX not somebody that can, you can just say, oh, drop you off at the park for football practice or, mm – You need to be conscious of that. And they're very vulnerable I guess? It is difficult to leave them at practice when they are so vulnerable (provider 3).

Provider 3 explained that over the holiday time, the adolescents became less active. This reduced activity impacted on their physical fitness level, as they did not expend as much physical energy during this period. When the girls returned from their holiday break, there was an evident decline in the girls' physical fitness levels.

And we certainly see in the first term of each year people turning up who have been with us previously whose fitness levels have decreased significantly over the school holiday time because the expectations are they don't have to move as much when they're at home (provider 3).

7.2.4 Access to physical activity and equipment

Inhibitors

The providers mentioned that if the girls did not know a physical activity was offered or available to them, or they were not assertive enough to ask, they were not going to be able to access it.

They just don't know it's available and probably are not assertive enough to ask (provider 7).

It's, they don't know it's on. I mean, that's part of the reason I'd say; part of it, well that could be a problem for them (provider 8).

Equipment

Inhibitors

The providers highlighted other issues to impacting on participation, such as the specialised equipment needed. Moreover, the equipment needed to be modified specific to the due to the girls' disability. They described:

Yeah, some may need some adaptive equipment depending what the sport is... Sail Ability and stuff like that. There's some sailing and yachting and stuff; there's some crossovers. They sort of can help each other as well because some of their adaptive equipment, like a hoist to get them into the boat can be used for all of those; the same hoist could be used for all of those sports. The boats need to be modified as well for kids getting in the water and the boats and all that sort of stuff (provider 2).

They need to get the national sporting organisation to make sure that they've got the correct equipment and know how to use it and stuff like that and feel confident (provider 3).

While some of the equipment could be shared, some equipment, like the boats, required modification. As provider 3 stressed, it was imperative that the sporting organisations ensured this equipment was the correct equipment and that the people using

the equipment were confident in using it. However, as provider 4 clarified, a lot of the equipment was not designed for physically disabled people, especially those in a wheelchair.

The equipment in general hasn't been designed with people in wheelchairs in mind (provider 4).

Furthermore, the equipment that was available was either expensive or not available. Provider 8 highlighted the issue of available equipment. In particular, provider 8 mentioned how the adolescents could travel to play wheelchair basketball, but upon arrival, the wheelchairs might be either unavailable or the wrong size. As consequence, the girls had to either play with a chair that was too big, play with the wrong sized wheelchair, or miss out on playing altogether.

Yeah, because some of the best equipment is very expensive (Provider 4).

The equipment costs so much money... We have wheelchair basketball, they were trying to find chairs for, same as tennis...Basketball is a bit of an issue...They turn up to the game and then there's special chairs that they get allocated and sometimes the kids miss out because there's not enough chairs...Yeah, it's quite difficult for them...They try to play in a chair and it's too big and that can, I guess, it's an issue for them too...Yeah, so obviously everyone's different sizes so the chairs are limited...It is sort of first in, you know, first arrival (provider 8).

7.2.5 Dance

Inhibitors/enablers

Dance was not considered to be a physical activity. It came under the direction of the arts, as opposed to physical activity organisations, according to provider 2.

Yeah, dance is an interesting one... because we're directed by XXX New Zealand so they put dance in the arts (provider 2).

Dance programmes, particularly contemporary dance workshops, were available to the girls. However, not many girls attended them because they preferred forms of dance specific to their own culture, such as Pacific dance. Consequently, provider 6 created a Pacific dance group for the girls to enjoy.

So yeah, that programme is available and they actually have professional paid disabled dancers that host workshops for young Pasifika people. They can learn about dance and its contemporary

dance so it's, it's not a world I'm very used to. It's very much exploring the body and movement and things like that. In my experience it hasn't been taken up all that well by Pacific disabled girls... We've created our own dance group. So we have our own Pacific dance group and the girls like that... We've had about four gigs (provider 6).

7.2.6 Attitudes including not providing access for disability users

Enabler

Providers generally believed that society's attitudes towards the physically disabled needed to change. Provider 2 suggested it was critical for the focus to be on what the girls were able to participate in, rather than on what they were not able to do. He attributes this problem to how society in general perceives the girls participating.

I think they still work on general society's attitudes as well. You know, that's an ongoing thing that we need to keep sort of pumping out there, you know, about what these kids can do. I think sort of the stigma of, you know, making sure that you're not concentrating on what they can't do. You know, concentrating on the negative side of things. So you know, the attitudes are a big thing (provider 2).

Provider 6 remarked that if they could just get an adolescent to start participating, then the adolescent may find the activity interesting and would enjoy it. However, encouraging them to engage or attempt the activity was a common problem.

But then of course I think if they just, it's just not something that really interests them. But then I'm sure it would be, just trying to get people to start it because once they do it, then they can actually find this is quite good. But it's trying to get that, break that barrier and that's pretty common (provider 6).

Inhibitors

Providers illustrated inhibitors created by gymnasium. They explained how the physically disabled girls were not comfortable attending gymnasiums due to the way the gymnasiums were set up. Inaccessibility was a problem; this included the absence of ramps for wheelchair access and that some gymnasiums were upstairs. Parents of disabled girls wanted their daughters to attend gymnasiums, but the gymnasiums had not accommodated the girls by providing suitable facilities. While the girls preferred participating in physical activity at the gymnasium, there was a lack of facilities for disabled and the girls did not feel comfortable in this environment.

There are no gyms currently that focus on disabled populations as such. And most gyms still – the way that they're structured – would not make

most people with disabilities feel very uncomfortable. I know that, you know... people are saying that their kids want to go to the gyms but the mainstream gyms don't cater for people with physical disabilities. They don't have the ramps or... Yeah, so, I mean, I think, I think beyond the actual access issue – which can be an issue; so, actually getting into the gyms, you know, whether they're upstairs or whatever else – gym (provider 5).

The mainstream gyms have a lot of weight to bear in this issue because not a single one of them has addressed the needs of disabled people... And I think, you know, often talk on disability issues in general, I often end up mocking these very elite people because I say things like, you're cutting out an entire market. You are supposed to be smart people. What are you doing? So, that would be my comment; that the mainstream fitness industry has a lot of weight to bear (provider 6). They don't have any access for disability. So we enter; we have to either go back or we have to lift the person up (provider 3).

The following provider also explained that gymnasium location was a problem for disabled people in general. If they wanted to attend a gymnasium, it was preferable to have it nearby, as opposed to having to travel considerable distance to access the gymnasium. It would be advantageous to set up a gymnasium catering to people with physical disabilities, but people were unlikely to go if they had to travel up to 40 minutes to get there. Provider 5 stressed the importance of a gymnasium's geographical location in relation to access and to participation.

The fact that, what we know in the gym industry is that geography dominates everything. So if you've got a gym that is two minutes from your home you're more than likely to go there as opposed to a gym that's five minutes from your home. So can you solve the problem by putting a central gym for disabled people in? Questionable; because are people going to travel 40 minutes across Auckland to go the gym" (provider 5).

Providers also acknowledged difficulties in communication resulting from language barriers. Understandably, some Pacific people experienced problems with speaking English, as it is not their native language. As a consequence, sometimes their needs or requirements were not met. It was essential that the girls have communication skills if they wanted to compete at a national level in physical activity. These skills are important for being able to initially approach the persons concerned and for ongoing purposes, such as getting assistance in terms of ongoing coaching and support. Provider 7 mentioned that, as is the norm with many adolescents, the girls may not communicate sufficiently, instead giving short answers or feedback and their needs may have been

disadvantaged if the providers are not receiving enough information. If they did not know the appropriate person, this may be problematical due to communication issues.

These providers mentioned:

The network of communicating that is not very good. So you wouldn't know what they want sometimes, actually (provider 3).

And get the communication out there as well...It's a collaborative sort of thing (provider 2).

Yeah, there's a whole lot of things...You know the language thing...Yeah, well the main one would be the language barrier coz one of the reasons they would access our service is because they're unable to speak English properly ...So if I was a kid wanting to move up to the next level and to do the XXX, you know, the communication, you'd have to probably it's who you know or, you may need assistance...To communicate well and know how to approach them; that's the other thing. Because our Pacific people, most of them, they always say yes and no, short answer, straight away, cut off (provider 7).

7.2.7 Schools

Enablers

Schools that had daily contact with students provided a pathway for the girls to access physical activity through referrals to service providers. Additionally, physiotherapists who treated the adolescents could act as a go-between, providing the adolescents with access for the adolescent. Provider 2 explained:

So a lot of our referrals now are coming from schools because they're directly dealing with these kids on a sort of daily basis within the schools. So that's where the physio's sort of get in contact with us and say, well, you know, XXX really keen on wheelchair basketball; what have you guys got going at the moment? Is there anything that you can offer him? Are there any programmes that are going at the moment? That sort of thing (provider 2).

Provider 2 also emphasised that schools were attempting to include disabled adolescents in the schools' physical education activities. Not only were schools asking for ideas, but the teachers were also willing to engage in workshops to learn how to adapt the activities to suit the needs of disabled adolescents. Provider 2 explained how able-bodied adolescents have varying abilities when it comes to engaging in physical activity. Therefore, it was advantageous for all kids, both physically disabled and able-bodied, to have the activities adapted to meet their specific needs.

The schools are trying to make sure, especially you know, even in PE, they're trying to make sure the kids are inclusive. They're coming to us and trying to ask, and asking for ideas...like, a couple of weeks ago I did a workshop for the whole staff of a school – 40 teachers – and they had one kid who had a physical impairment and two others with an intellectual impairment, but the whole staff did the course and stuff. Because the courses that we run, it's about adapting sport and they can use it, because even able-bodied kids, there's a massive range within a class anyway, so, in terms of the adaptations (provider 2).

Inhibitors

Schools found figuring out how to include disabled adolescents in mainstream physical activities difficult. They had to attempt to accommodate all the adolescents, including those with a physical disability. However, it was challenging for the schools to know exactly where and when to include them knowing that having a physical disability was going to affect the adolescents' performance. Inclusion was also dependant on how many disabled adolescents there were, and if including them with able-bodied adolescents was going to prove detrimental. Nevertheless, schools must attempt to make a decision regarding whether disabled adolescents are to compete against able-bodied adolescents or not, and this proved to be perplexing.

Yeah, and it's a hard one. You know, it's a small base. So do you run them against the able-bodied kids and they're way behind for example or do you put them with some younger kids so that there might not be a bigger gap. Or do you make them, or do they run a race by themselves? Yeah, so I mean, you've got to look at the options and depending on the numbers and how much of a disadvantage that kid's going to have compared to the other ones and make the call based on that sort of stuff I think (provider 2).

This comes back to that, that same argument of, you know, should these kids be in mainstream schools or should they be not in mainstream schools? There's arguments both sides. I know that people are vehemently opposed and vehemently supportive (provider 5).

Provider 1 explained that the environment of the school, including how culture or perception of school employees within that environment is managed, could influence the adolescents' participation in physical activities. This provider had a sense that currently, there were schools that had disabled students participating at NCEA level 1, and that it was necessary to ensure they were included in physical activity participation at school as well as having any needs due to their impairment accommodated. This was to the extent that the NCEA criteria has been modified to cater for the student's physical disability, making targets more attainable for the adolescent.

Again, I guess it comes down to the school environment and how they manage that culture within the school environment. I wouldn't like to think so. I would like to think that within that environment that everyone is, everyone's needs are met no matter what level they are as a student within the school...There is work being done specifically around disabled students that participate in the NCEA level to ensure that there are modifications made to the NCEA criteria to accommodate the impairment an individual may have so they're more achievable targets, which is great (provider 1).

On the other hand, the following provider explained that some schools did not recognise that they had students with a physical disability. This provider felt it was possible that if the physical disability was not visually evident, as with student in wheelchairs, the schools themselves may not know they had physically disabled students attending their school. As a consequence, this provider remarked how general public too were becoming acquainted with these dilemmas and suggested it was important to educate general public.

Yeah, to be honest, sometimes, like, we've rung up schools, have you got any physically disabled kids at your school? A lot of schools don't even know that they've got them. So, you know, or they say no, but they do. You find out that they did. And it might be a small impairment, you know, it might just be a small amputation or something like that. The only ones that they seem to know of are the obvious ones who are, say, in wheelchairs. So it's sort of, an ongoing education thing for the general public as well (provider 6).

7.2.8 Family/parents

Enablers

Providers mentioned the importance of approaching and talking to the whole family when attempting to engage the girls in physical activity, as opposed to only talking with the girls. They highlighted that in the Pacific culture in general, Pacific families had close-fitting connections and usually valued the church as a significant part of their lives. Since family ties were often close, the providers explained that it was advantageous to involve the parents of the girls.

I think, to make sure that those kids are engaged is, and it's more about talking to the whole family rather than trying to talk through that kid. Because I suppose a lot of them are either church-based, and its part of their culture that, you know, everyone's pretty tight-knit with their family and stuff like that. So I mean, my first port of call is quite often the parents and trying to get them on board. Coz I find that if I get them on board those kids just follow (provider 2).

In order to engage with kids we have to engage with the family. So we go to their...either we go there or they'd like to come here. And we sort of build that relationship with them (provider 6).

Provider 7 explained that they had an appreciation that the families themselves needed holistic support and emphasised the importance of a holistic viewpoint of the family, acknowledging the need to accommodate all family members. Inevitably, this holistic support could extend to driving the girls to physical activities or educating them and their families.

Our Pacific families we like to include in to make sure that they have the holistic support... A simple thing is driving them around or accessing sports, you know, leisure, recreation and all of that and education (provider 7).

Inhibitors

Provider 1 explained that the family makeup or dynamics and the family's expectations influenced participation in physical activity for the girls. The ambitions and aims of particular family members can differ, and these differences were also dependant on the family size, gender of the family member, and place in the family. It is the norm in Pacific families for the older members to care for younger siblings.

Working with Pacific Island communities is, it's potentially, yeah, the family make-up. And also, yeah, so the aspirations and goals around what's expected of a male versus a female within the family social make-up. Pacific Island families have got quite big family units and it's may be the eldest member is looking after some of the youngest members. And so, just the whole sort of family make-up as well (provider 1).

However, parents had other family commitments and issues they needed to contend with too. This could be challenging to manage while also attempting to accommodate their daughters and essentially get them to the physical activity. Provider 2 explained:

Can parents get kids there in the weekends or after school – and that sort of stuff, so there's different, I think there's different issues all over the place...Can still do those family stuff, that family stuff that they used to do in the past for example. The rest of the family is not restricted or limited by that person. So that's what I mean by the whole holistic (provider 2).

In addition, in some larger families, it may be the norm for the girl with a physical disability to miss out in activities such as engaging in physical activity. The family itself has difficulty attempting to accommodate everyone in the family. It could be an issue for the family to attempt to provide for one family member if it was going to impact on the rest of the family's needs. This could restrict the girl's necessities. This provider had a sense that in order to engage the girls, it was important to look at the issue from the viewpoint of the family, which included taking into account if the parents themselves could actually get the girls to the physical activities during the weekends or after school.

Yeah, I suppose, I suppose that's a thing; quite often these are big families and they're just one... I had a chat with XXX the other day; he was telling me, you know, they were one of I don't know how many kids, and if someone had to miss out it would always be the physically disabled girl first. So I think that probably is an issue; it's trying to cater for everyone in the family (provider 2).

It was important to recognise the importance of how the girls rely on their family to be responsible for their needs which was evident in the following. Provider 7 clarifies:

So they still think that the whole family should be responsible for themselves... Sometimes mum and dad, so they will text and say, oh, mum and dad would like to catch up with you and just talk about this and that; generally around, sometimes they're getting on mum and dad's nerves so it's around that (provider 7).

However, the following providers went on to explain that they had a sense that some of the families needed to change their attitudes, and this could possibly be achieved by making the family aware of the universal benefits of physical activity. They also explained this may be perplexing due to opposing challenges such as time, access issues, and culture. Provider 2 explained that the families this provider normally supervised were not problematic, it was the families they were not in contact with which were perceived as the problem.

I think yeah, I think making them aware of the holistic benefits of getting that individual into sport, yeah. I suppose for some families it needs to be a complete mind-shift as well. You know, even in terms of, you know, if you're trying to teach a kid about good nutrition and all that sort of stuff as well (provider 1).

You know, so it's a complete change of mind set for a whole family rather than just the individual... Yeah, and I suppose, I mean, I find the attitudes of the families themselves, the ones that I've been involved with, are awesome. It's probably the ones that you don't see (provider 2).

So, and sometimes families just don't have time for that and then it got cancelled or didn't turn up or play stuff. If that is sort of in the culture as well, it's quite difficult then to access...for these kids to access services if you know, if they do have that, if the family does have that cultural thing over their head as well. That is coming out (provider 3).

Alongside attitudes, expectations of the girls generally, were mentioned. These included the caregivers' perceptions that the girls should not be expected to do too much. Moreover, the caregivers attempted to ensure the girls did not undertake anything strenuous. As a consequence, this could cause the girls to become less active, as they moved from a walker to a wheelchair and then to a power wheelchair. However provider 5 also had an understanding that these expectations influence the general health of the girls by exacerbating conditions such as muscular atrophy, especially if the parents themselves were not encouraging their daughters to be active. Furthermore, there were a variety of issues, such as the parents not willing to drop the girls off or due to work commitments, unable to transport to extracurricular activities. As a consequence, the girls may have needed to catch a bus or train to access the activity.

The expectations of those around them and often of their nearest and dearest – their parents, caregivers and things – is they shouldn't have to do too much. So you know, if they're in a walker, how can we make it easier for them? By putting them into a wheelchair, for example. Once you put them into a wheelchair, then it becomes, oh, it becomes a bit difficult for them to get around in a wheelchair so we'll put them into a power wheelchair. All of that simply causes more and more muscle wasting. So we find if we can get them back into first of all a self-pushed chair or a walker, then you're going to have to, you know, it's use it or lose it sort of stuff...So if they wanted to get to an extracurricular activity, that they would need to catch a bus or a train because mum and dad wouldn't drop them off or couldn't drop them off or were working and therefore unable to or whatever else (provider 5).

Provider 5 also noted that lack of parental involvement in the girls' physical activities may create additional barriers. This may be attributed to the adolescents' dependence on their parents for resources such as money and travel.

Again, possibly linked with that lack of parents being involved, it makes, it creates more barriers. So if you're a young person and you know, you are struggling for resources, i.e. transport and money or whatever else, then you're very dependent upon your parents to provide some of that resource. And if they are not providing that resource then it just creates more barriers to you doing whatever you want to do (provider 5).

Provider 6 explained they ran their programme on Saturday mornings, nevertheless, parents may have work commitments and do not necessarily have employment hours that fit in with the programmes their daughters want to attend. This may be problematic, particularly if the girls are dependent on the parents for access.

I think that the way we've structured on a Saturday morning, it makes it easier. It just depends again on – I don't have the stats – my perception is possibly that their parents may not necessarily be working normal sort of nine-to-five office hours...You know, so I think in general, society's busy. When you put a programme, whether it's evening or anywhere, it's not going to suit everybody (provider 6).

Some families were not aware that the services available to their girls did not incur costs. Therefore, provider 6 thought educating the families could be one way of engaging the girls into physical activity.

So it's also around education around the families as well. And some families just won't budge eh. We say, no, no, it's free here, but yeah, I think educating, education to families as well (provider 6).

While provider 8 was referring to a disabled male, the following story highlights the personal challenges parents can experience while watching their disabled adolescent attempt to participate in physical activity.

Yeah, and what about attitudes of families and parents and that type of thing...I think it can be a problem... We actually just raised that yesterday. It was one of the sports and they said that the father was kind of, he didn't want to go to sports because he didn't really want to see what would happen to his son as his son got older (provider 8).

Parents may be apprehensive about allowing their adolescents to participate in a new experience. Families or parents normally motivate the adolescents, according to this provider, so this can be challenging.

I think parent sometimes with children with disabilities, they're scared to try a new experience...Normally it's the parents' motivation to get their kids involved in a sport, yeah. I mean, that's the same with any child really, isn't it, I mean, whether they're disabled or not. The family are in the background you know (provider 8).

Moreover, provider 2 explained how some parents have preferences regarding whether they want their disabled adolescent intermingling with other disabled

adolescents, and some of the adolescents did not view themselves as having a physical disability:

And it depends also on the parents. Because some parents like to have their kids socialising with other kids with impairments and others like the mixture, you know, a bit of both. And others like, well, their kid doesn't see themselves as having impairment. They want to be normal, sort of thing, as well (provider 2).

The cultural values of some of the Pacific ethnic groups created specific preferences when it came to who took care of their girls. Additionally, these preferences can vary amongst Pacific ethnic groups. In particular, one provider described how Pacific people found it challenging when service providers not known to the family came into their home, as illustrated in the following stories:

It's a cultural belief, I don't know, but I think it's, I believe, like, for us Tongans we prefer only our own immediate family to look after our disabled. And in some other families they don't want their own ethnic group. They want another to a Pasifika family; quite a cultural element in the sense that it's more difficult to engage into (provider 3).

With Pacific girls in Pacific families it's a cultural and it's, it's similar to other Pacific ethnic, which they don't want outsiders or any other, you know, stranger to come in to your home and provide the workers (provider 3).

So the family say, well, don't worry about that then; we'll do it ourselves (provider 2).

When referring to general assistance, the providers mentioned how Pacific families were very grateful for the support they received but were also not inclined to ask for the extra assistance they were entitled to. This could be due to cultural attitudes, lack of confidence, or language barriers.

With Pasifika families, what they're given, they're just thankful with that and they don't want more and more... They won't ask. Yeah, they won't ask. And I bet, and I'm not quite sure of the reason ... One would be cultural but one is that they're not confident that they have to be able to come back and ask for more (provider 2).

And some families have no idea. They need support. They need help around interpreting (provider 3).

Some providers explained that commitments and priorities of some families may have an adverse impact on the girls, particularly if their family was large. The providers had a sense that the girls may be a low priority in the family. The family may be

addressing the needs of the other family members at times, but the disabled girls may not be getting the support and attention they are needing. Sometimes family resources were not extensive enough to accommodate the girls' needs too, and in some instances, the girls were missing out on accessing their sports or activities. These issues were revealed in the following stories:

Some families, it's just a commitment, the commitment that the child's needs is also a priority. Sometimes they forget about that and it's just, it's just forgotten and it just, like, another person, the disabled, a person at home. They forget about their needs. They've got other important things. But until something happens they'll stop, turn around and realise, oh, there's someone's needs that need to be acknowledged and noticed and for us to support...Another one is family dynamics or family background where there is no commitment to, you know, support the individuals...So unfortunately, you know, they become last priority. Unless it's the only child, but normally in the big families they're the last priority. There just wouldn't be the resources for that. (Provider 3).

With the Pacific girls it's, normally there, it's their last priority. So all the other kids get dropped off to their sports, trainings; when we have time we'll drop you off. But if not, have to pay for your transport to get you here so you can be here on time. You know what I mean? (Provider 4).

The XXX would offer something, and they could go to XXX but at the XXX I have to get transport to get there eh? And, their mum and family and they are low priority because they've got other kids too (provider 6).

7.2.9 Other factors influencing or inhibiting participation in physical activity

It was evident that there were multiple problems preventing the girls' participation, including those of location, access, education, priority, financial factors, transport, medical problems, and time.

It may be location, where they're living, access to services, information around services, education, priorities. Yeah, socio-economic factors around...I don't think it's quite different, you know, no, but again, there seems to be less participation especially in Paralympic sport (provider 1).

There's a lot of barriers, like transport, finances, medical problems that have you waiting around for surgery and it's about educating the families (provider 6).

The access, the transport; those of the kind of things that restrict access (provider 7).

The time an issue for them as well, do you think or they've got the time? (Provider 5).

Enablers for general participation (barriers)

The providers mentioned how it was important to break down the barriers that were preventing the girls from participating in physical activities, making physical activity more accessible to them. Breaking down these barriers may include providing transport or educating the people around the girls on the benefits of participating in physical activity. However, the specific barriers to participating in physical activity could differ for each individual person.

Yes, physical activity just, it needs to somehow make it accessible to them doesn't it and it's quite hard to find that area that, you know... may be with education and providing the transport or, yeah - Mm, yeah, just breaking down all those barriers; whatever they may be. And they may be different for everyone so (provider 2).

Enablers for enjoyment and benefits to participation

One girl enjoyed participating in wheelchair basketball. Her parents also were benefited from their daughter's enjoyment. Her father, in particular, was elated. This enjoyment was also evident in the Pacific dancing they participated in. The enjoyment element the providers noted was also evident in the following stories:

And we've just helped XXX start up a youth wheelchair basketball programme – a 6-week programme – in the spinal unit. So she's part of that too. So she's doing something on Tuesdays and Thursdays after school now, which is, and she's loving it. She's having a ball. So it's just really rewarding to see. And I know the parents, you know, her dad's absolutely delighted (provider 2).

Yeah, and the girls love the Pacific dancing... They love it. We performed in front of the XXX... they loved it (provider 6).

Alongside the enjoyment factor, social benefits and health benefits were also highlighted by the following provider, including how the social benefits were often overlooked while engaging in physical activity:

So there are those sort of I think social benefits as well as health benefits (Provider 2).

So there are social aspects and that's in I think every sport, and I don't think that's as appreciated as much (provider 8).

Friends

Enablers

The providers mentioned friends were instrumental in supporting the girls to participate in physical activity. Provider 5 described how friends encouraged

participation by breaking down barriers and normalising the physical activity the girls were partaking in. They also suggested that it was their perception that friendships influenced physical activity participation.

If you've got a friend or two friends coming along to a programme then that breaks down barriers for you. You know, that makes it a lot more normal. I think those friendships and networks make a difference (provider 5).

Transport problems

Enablers

Some organisations provided travel or petrol vouchers, which helped to mitigate the problem of transport and served as an enabler, as provider 2 explained:

But I know people, like the XXX Society, give out petrol sort of vouchers, travel vouchers and stuff like that. So there are other funding avenues that we also signpost as well into... but they still have a physical disability, we don't want to, you know, say see ya later; we try and signpost them to places they can get the help (provider 2).

Inhibitor

Providers identified transport as a significant barrier to participation in physical activity. This was due to the time needed to access the activities, the absence of transport and the distance to physical activities. Challenges around travel included the additional time required for the family to drop off and pick up the girls, difficulty in accessing the physical activity itself, and available transportation. Furthermore, not being able to find anyone to transport the girls or access funding for travel expenditures was problematic. This was evident in the following stories:

I think it's back to transport... it's the added time for families to drop off and then pick up, that kind of thing...she's obviously interested yeah. When they come in and they're in the club and stuff, have they said to you, oh, it was really hard to get here; with the transport (provider 6).

I remember I had one of my clients from North Shore and they wanted to participate in the basketball games at the spinal unit but the problem was no transport...Coz there are members here that come from the Shore and Waitakere (provider 8).

Another one is transport, or could be a big issue for Tongans. No transport; there's no one to take me in their car (provider 3).

But there's so many of our people, you know, it's just the transport that's stopping them from participating in this (provider 7).

It's different trying to fund things for travel and how you do it and stuff (provider 1).

Providers also referred to how people with disabilities were reliant on others to get to various locations and stated that this could be challenging. Assistance with travel was usually required on weekends or in the evening. This was particularly problematic if the activity was not close to home, as it was a struggle to find transport at night or during the weekend.

It's always a problem for people, especially with disabilities; they're just relying on someone else and trying to get, it's always usually in the evenings on a weekend. That could be difficult for some people, to travel to and from especially when we're only located in sort of faraway areas. The sports that are played out here, and as we said, we've got people that live over the Shore and it's a long way to come if you want to come at night or on a weekend (provider 8).

Provider 8 explained that as a consequence of the travel challenges, some people could not make it. Inevitably, some adolescents were not partaking. While this provider appreciated that transport and the timing of the physical activities was challenging, they had attempted to address the problem by getting somebody to transport the girls. However, the providers explained that they preferred for the organisation running the sport to organise the transport.

So people are trying to get here to train and it starts at six. That a pain; we've had a few people say that. They just can't get here, which was just a bit of a shame and then we tried to get it sorted and may be someone can just drive through to pick them up. But then that sort of, we leave it up to the sport themselves to try and find a way to get them there...But there's not much that we can do. We can't really be providing transport for all the sports things (provider 8).

Providers also identified that time and financial constraints were a significant barrier for the girls attempting to participate in physical activity. Provider 6 had a sense that not only were time and transport issues for the family, but other challenges, such as the stress on the family dynamics, also affected other family members. They suggested that the family itself needed to put a lot of time into the girls as a result of the physical disability.

But yeah, I think the main thing is the time and the financial things are probably the biggest barriers for a lot of them (provider 2).

That it's difficult because of time and also with transport and stuff...There's a need for a large amount of time and effort to be put into that disabled person. And it can affect the dynamics of the rest of the family. So I think that's all of the programmes (provider 6).

Socialisation skills/self-esteem/cultural perceptions/health

Inhibitors

Providers also mentioned how the girls could be shy and socially inept. Despite this, Pacific adolescents in general showed a lot of potential while participating in sports, as noted in the following stories:

Yeah, I think just, I mean, if anything they're just a bit shyer. But they're probably, a lot of them are the most talented, which, I mean, I've been involved a lot in cricket and working in Samoan cricket. I coach Samoan cricket and stuff. And, just seeing natural talent in Polynesians in sport in general (provider 2).

Coz that's the main area that they're lacking socialisation skills; to be able to work within a group examples of them is any cultural service there to address, one, one is when they hit puberty and the other one is the services around Pacific counselling (provider 2).

Provider 3 mentioned the importance of building up the girls' self-esteem and confidence. They suggested the girls and their families should have access to Pacific counselling. In particular, the girls had psychological issues such as confidence and self-esteem problems. These problems needed to be addressed for their wellbeing and independence. However, Pacific counselling services for the girls were limited. Additionally, provider 6 noted they needed to look at the person holistically and specifically address the emotional problems the Pacific girls endured as a result of their physical disabilities.

You know, if they want supportive independence and they want to build up their self-confidence and self-esteem, there's no Pacific services out there to address those, they need Pacific counselling... They have to go through to a mainstream service for that... And I think the other one is around the, some of them need to do with the family counselling, I'm not aware if there's a specific for Pacific but I know that most of the services they're receiving are from mainstream. (Provider 3).

You have to look at the whole person. And I think we are very, one of very few, that actually address the emotional issues of a disabled young person and try to make them feel as part of society as we possibly can (provider 6).

Furthermore, while not specifically asked, the providers also mentioned how the girls could be seen as a curse in their culture. Therefore, the girls could experience the influence of the cultural perception that their family was cursed. In addition to socially isolating the girls, this could cause them to have to endure seclusion at home. This seclusion may lead to not participating in physical activity and higher levels of sedentary

behaviours. As also explained in the stories, the cultural beliefs can lead to the adolescents themselves not living very fulfilling lives.

I think there's still that stigma around, it's a, sort of, the Polynesian community, you know, in the past, having a kid with a disability is a bit of a disgrace to the family and stuff in a way, back in the day. And I don't think that happens anywhere near as much as it used to. I think that mind set's being breaking down but it's still around (provider 2). Yeah, yeah, and that's the challenge. That's a big challenge. I'm not sure whether it's a cultural belief or if it's a biblical sort of belief that, you know, it's a sin. There's someone in the family who's committed a sin and it could be grandparents, it could be their father and there's something wrong, you know. Your father, he must have done something wrong and the children, you know and that's why you've got a disability in the family...So families, it's a shame for them and it's, they, and because of that belief that someone, it's a curse, you know, they try and keep them at home; they keep the disabled person at home; not allowing the world to see that they've got a disabled child. So it got shut down in the room or stays there; they never be part of the community...It's still happening because I've come across a family, it still happened, and what I've done is I've just asked them about the opportunity, you know, this, but I know they've got a disability but the person also needs to live a self-fulfilled life. She also needs to live life how everyone else lives (provider 3).

I've got to go back to what I said about stigma and some of the families actually restrict their disabled young people from doing very much. I need to make you aware of that coz it's not really talked about. It's actually talked about at an extremely high level, the level that I work in, with national boards and government. They are aware of that. But it's almost an impossible issue for them to address. The government doesn't directly interact with families. It's just a simple fact... I think there's a lot of stigma, there's a lot of shame; some people even think they're cursed and that's why their child has a disability (provider 6).

Provider 6 highlighted the issues around stigma due to the disability and accessing services. This provider had a sense that while there was information for girls and their families in terms of available services, the stigma around disability needed to be addressed, initially, because if there was stigma, families weren't looking for services. They also relayed that the girls were not going to want to access services including physical activity, if they were experiencing this belief in their families. Provider 6 explained that this discrimination was unfortunate and they were attempting to address the issue. The provider also suggested that the various campaigns may not always be effective in reaching the community.

And there's been various campaigns produced in terms of providing information to services. But that doesn't directly address the stigma issue. If you've got stigma you're not looking for services...definitely

something about stigma around disability...Same thing with the communities we aren't reaching. I think there's a lot of stigma, there's a lot of shame; some people even think they're cursed and that's why their child has a disability. And it's very medieval, very unfortunate and I'm doing all that I can to help (provider 6).

Health problems – disability/motivation

Enablers (perceived benefits)

The following provider mentioned that they perceived the health benefits of physical activity for disabled girls, such as improvements in disposition, were similar to those experienced by able-bodied adolescents. They went on to refer to research on brain functioning in reference to adolescents with a physical disability. They remarked that the improvements observed in the participants from the research were attributed to participating in physical activity. Another provider referred to the holistic benefits in general for the girls participating in physical activity.

I think, I think that, you know, all the same benefits that are being shown now via mainstream research for physical activity, you know, it doesn't, people with disabilities aren't precluded from that. So a lot of the, a lot of the current research is on brain function and exercise. And I certainly think we see that. We see that, we see improvements in mood and things at the end of sessions versus the beginning of sessions. We've seen significant improvements in their function and their results and things (provider 3).

With sporting opportunities, it has the whole holistic benefit for them (provider 2).

Furthermore, provider 6 noted that the self-confidence of one girls had improved as a result of participating in physical activity. Identify formation and building a healthy self-esteem is crucial during adolescence and the following story suggests that this process was enhanced through physical activity.

We sort of saw may be it was hiding a bit of insecurity but we've really seen her grow to be actually confident and very grounded...So hopefully she will take that next step to get into the basketball (provider 6).

Inhibitors

Provider 6 explained the health issues the girls endure, some of which are to the extent that they prevent physical activity participation. In these cases, providers saw high levels of sedentary behaviours. Secondary complications from not engaging in physical activity and having high levels of sedentary behaviour were evident to these providers

and included diabetes, cancer, respiratory problems, muscular atrophy and weakness, heart disease, and obesity. The providers also mentioned that they appreciated that in general, physically disabled people experienced a range of other issues, and possibly, the secondary health challenges were not considered. Another provider suggested there was a general concern centred on good health and longevity for the girls. The providers were attempting to offer programmes and education, including suggesting that the girls could engage in physical activities without accessing a gymnasium not suited to their requirements. Additionally, the providers were offering advice and information on nutritional requirements specific to the girls' needs, considering their disability.

Yeah, so it would be hard to sort of keep them going because a lot of them probably do have a lot of extra health problems (provider 3).

With disabilities were dying young, not from their disabilities but from secondary complications of being inactive. And so you know, diabetes and cancers and breathing issues around inactivity and muscle weakness and wasting were all seen as being issues. And similarly around, around re-educating somebody who's in a wheelchair, that their nutritional needs are not the same as somebody who's walking around, you know, the streets. So that's where it came about. (Provider 6).

We've actually seen quite a few disabled people die from quite preventable situations. So, heart disease, respiratory issues, may be around being obese. So yeah, XXX developed this programme to just address the issue of fitness for disabled people and help them to realise that you don't have to go to a fancy gym and try to use equipment that's not made for you. They definitely want to be healthier and I think a lot of them have expressed concerns about their longevity, having disabilities (provider 6).

I guess they're probably dealing with all the other stuff around their disability and this is low priority but you know, it would be so great to get them to be able to – appropriate (provider 7).

Motivation was also raised by the providers when they explained how it could at times be challenging to motivate disabled people. The providers suggested that while some disabled people may not be mobile, they could still be educated on other activities. Moreover, another provider mentioned that they sensed it was difficult to identify which particular physical activity the girls preferred, but that they were conscious of not making the physical activity too repetitive. Provider 5 noted that Pacific people had low physical activity participation levels, however; explained this was possibly attributed to the specific location, as opposed to the incentive to participate.

With the disabled population, sometimes it can be really hard work to motivate the group. And other times it can be a lot easier. I mean, we have all sorts of sessions we run. We try to keep it so that there's not too much repetition with things; try to keep it fresh. To single out any

one thing and say, this is what Pasifika girls like the best is pretty impossible...But there's always going to be that latent population who don't want to play sport. Certainly people with disabilities maybe are unable to but need some outlet where they can be taught how to move and things...Certainly we haven't had the same stick ability with Pasifika people that we have with other, other people, but I wonder if that comes down to geography more than anything else (provider 5).

Another matter mentioned by a provider was how the girls themselves may be too self-conscious to participate in in some physical activities, such as rowing. This may be due to the fact that the girls needed to be lifted from their wheelchairs, placed on the floor, and then placed into the boats, while other people were watching. As a consequence, the girls become self-conscious and uncomfortable.

But part of the reason, some of them can be quite self-conscious. I guess, I mean, that's across the board with all adolescents and that can really limit some people and the sports they do... You have to get out of the chair and then onto the floor and then into the boat. And someone said that some people were quite uncomfortable about being seen getting in and out. Coz people watch; they just, coz you know, they can't help it if the guys are getting in and out of a chair. And that can affect people. They don't want to be seen. They get embarrassed about their disability. Yes, particularly girls. And they're really conscious of doing it, okay, yeah (provider 8).

Provider 8 explained that the girls also felt overwhelmed when they went along to a new physical activity. This was in part was due to watching others participate who had partaken for quite some time, as illustrated by the following story:

It can be, yeah, they feel a bit intimidated when they come along and they see all the people who are, you know, they're there every week (provider 8).

Chapter 8: **DISCUSSION CHAPTER**

This chapter recapitulates the principal findings from studies one, two, and three and presents them alongside the available relevant literature. Despite the compounding evidence which suggests physical activity is beneficial for health and wellbeing, this is the first known mixed methods study to focus on Pacific adolescent girls with a physical disability and their physical activity participation. The findings relevant to the quantitative study are presented initially, followed by the qualitative findings.

This section is organised as follows: (1) findings from studies one, two and three including a discussion and interpretation pertinent to the study aims and research questions (2) mixed methods and a comparison of the quantitative and qualitative results (3) recommendations based on the findings (4) future research (5) study strengths (6) study limitations (6) links to current Government strategies and policies (7) conclusion.

8.1 Quantitative findings

8.1.1 Key findings

This section presents the key findings, and the hypothesis followed by the quantitative results under the research questions. The results from section 8.1.1 are all statistically significant unless specified. The key findings from the quantitative section of this mixed methods study showed:

Disability

- 7.2% of Pacific adolescents reported a long-term health disability.
- Of the 7.2 % adolescents who reported a long-term health disability, 44% also reported that their disability restricted them from activities.
- The Pacific adolescents with a disability and who experienced difficulties results showed they met the physical activity guidelines (SPARC, 2007) however the results were not statistically significant.
- The Pacific adolescents with a disability and who experienced difficulties with their disability results showed they were not undertaking active transport (to and from school) however the results were not statistically significant.
- Low sedentary (screen time) behaviours were significantly associated with reporting a disability and experiencing difficulties.

Physical activity

- 14.4% of Pacific adolescent males and 8.4% of females are meeting the recommended physical activity guidelines.
- Female Pacific adolescents were less likely to participate in physical activity in comparison to male Pacific adolescents.
- Adolescents who reported that they hardly ever ate breakfast were less likely to meet the physical activity guides.
- Adolescents who reported that they hardly ever consumed dinner were more likely to meet the physical activity guidelines.

- Physical activity participation and meeting the guidelines was associated with competing, and if physical activity was an important part of their lives.
- If the adolescents reported they spent time on activities such as music, arts, dance and drama or computer and electronic games, they were more likely to meet the physical activity guidelines.
- Not working during the past 12 months was associated with the adolescents less likely to be meeting the physical activity guidelines.
- The adolescents who felt safe in their neighbourhood all of the time were more likely to be meeting the physical activity guidelines.

Active transport (to and from school)

- The results showed that if the adolescents were able to walk, bike or skate to and from school within a 30 minute time frame, they were more likely to be undertaking active transport (to and from school).
- Socialising with peers and positive peer relationships were associated with positive active transport (to and from school) behaviours. In contrast, negative feelings associated with peer relationships showed the adolescents were less likely to undertake active transport (to and from school).
- Active transport (to and from school) was more likely if they reported they were spending time (3 hours plus a day) with their friends.
- Active transport (to and from school) was more likely if the adolescents felt safe in their neighbourhood all of the time.

Sedentary behaviour (screen time)

- From the total sample group the results showed that 22.8% of adolescents were not sedentary, or their screen time, as measured, was likely to be under two hours.
- Female Pacific adolescents, in comparison to Pacific male adolescents, were less likely to be sedentary (screen time).
- Sedentary (screen time) behaviours were found to be higher in adolescents who participated in physical activity to pass the time and who chose physical activity as a way of socialising with their friends.

Hypothesis

1. That the sample group of adolescents who have a disability will participate in less physical activity and active transport (to and from school) than the group who do not have a disability.

The null hypothesis was supported. Whereas there were indications that the Pacific adolescents with a physical disability were less likely to be meeting the physical activity guidelines and undertaking active transport (to and from school), there were no statistically significant findings between these dimensions.

2. The group of adolescents who have a disability will report more sedentary (screen time) behaviours than the group of adolescents who do not have a disability.

The null hypothesis was rejected: The results did not support the hypothesis that the group of adolescents who have a disability will report higher sedentary (screen time) behaviours than the group of adolescents that do not have a disability. The results showed that the adolescents who experienced a difficulty as a result of their disability were likely to report lower sedentary (screen time) behaviours.

8.2 Quantitative results

Study one conveyed how active Pacific adolescents with a physical disability were in comparison to Pacific adolescents with a physical disability in terms of frequency and sedentary (screen time) behaviours. Study one focused on the adolescents who experienced a difficulty as a result of their disability, as this was the measure more likely to target the sample group with a physical disability, consistent with the aim of this thesis.

Study one reported on the association or correlation between the three independent dimensions of physical activity guidelines, active transport (to and from school) and sedentary (screen time) behaviour guidelines. While they are related, in particular physical activity and sedentary (screen time) behaviours, are independent of each other (Biddle, Gorely & Stensel, 2004). Furthermore, undertaking active transport (to and from school) alone may not transpire into meeting the physical activity guidelines (De Meester, Van Dyck, Bourdeaudhuij & Cardon, 2014).

The findings from the quantitative study are presented alongside the research questions, from study 1, under the following headings, physical activity, (to and from school), sedentary (screen time) behaviours, and the available literature. The following refers to the ‘adolescent participant’ as the adolescents from the quantitative results in this study.

8.2.1 Quantitative discussion relevant to each of the research questions and reported results

1. What are the demographic characteristics of Pacific adolescent boys and girls to include age, sex, and ethnicity?

A total of 1,201 Pacific adolescent participants from 8,500 secondary students were surveyed from the Youth2000 Survey Series. The Samoan ethnic group was the largest reported ethnic group followed by Tongan and Cook Island Maori. Around 73% of the adolescent participants reported that they were born in New Zealand. This is consistent with census data which report Samoans as the largest ethnic group and that over 60% of Pacific people who are currently living in New Zealand were born here (Statistics New Zealand & Ministry of Pacific Island Affairs, 2011). The Pacific population in New Zealand is projected to increase to 9.6% in 2026 particularly within the Samoan, Cook Island Maori, and Tongan ethnic groups (MoH, 2012). In New Zealand the Pacific population are a lot younger compared to the overall population, with the average age in 2006 reported to be 21 years (MoH, 2012).

Based on the 2006 New Zealand socio-economic deprivation index, 58.2% of the adolescent participants from this study reported that they were in the lowest socio-economic groups, with one in five living in crowded conditions. While historically, policies have aimed to address this issue, economic deprivation remains common amongst Pacific families impacting on physical activity participation and their standard of living (MoH, 2008b). This finding is comparable to the other Pacific ethnic groups living in New Zealand where statistics show that a higher proportion of Pacific adolescent participants are living in overcrowded households (Statistics New Zealand & Ministry of Pacific Island Affairs, 2011). Nosa et al., (2014) identified that overcrowding in Pacific households was 4.4 average per household, compared to 2.7 for other New Zealand households. This is of concern as this may be detrimental to their overall health (Statistics New Zealand & Ministry of Pacific Island Affairs, 2011).

The adolescent participants who reported that they experienced a disability for longer than six months were 7.2% in comparison to the non-disabled adolescent

participants. Furthermore of the 7.2% who reported a disability, 44% (3.2%) reported difficulties as a result of their disability. While there is currently very limited literature pertaining to Pacific adolescents with a physical disability, Denny et al., (2014) found that Pacific adolescents who experience chronic health conditions are also further hindered by socialisation problems and distress. The New Zealand 2013 Disability Survey estimates that approximately 2,000 (5%) of Pacific adolescent participants experience a physical disability in New Zealand compared to 4% of European adolescents, 5% of Asian adolescents and 6% of Maori adolescents (Dr Catherine Brennan, Ministry of Social Development, personal communication, November 21, 2014). However, as the Statistics New Zealand Survey focus was on Pacific adolescents with a physical disability solely, this may explain the 2% difference. Nevertheless, as the Pacific population increases this figure is likely to rise too. It is therefore imperative that health outcomes for Pacific adolescents with a physical disability are prioritised. Increasing physical activity participation and reducing sedentary behaviours is essential for improving these health outcomes.

2. How active are Pacific adolescents with a physical disability compared to those without a physical disability, in terms of frequency of participation and sedentary behaviours?

Physical activity

Physical activity participation is essential for the health and wellbeing of adolescents (WHO, 2011; Sport New Zealand, 2012). While there may be opportunities for adolescents to participate on a regular basis, analysis of this data showed the majority of Pacific adolescent participants are not meeting the recommended physical activity guidelines as outlined in Chapter Five.

Despite Government initiatives aimed at increasing physical activity for the general health and wellbeing for Pacific adolescents, findings from this study show that only 14.4% of Pacific males and 8.4% of Pacific females are meeting the physical activity guidelines. Overall, 11.4% of the adolescents were meeting the physical activity guidelines. Previous findings using a similar sample group reported that 14% of Pacific adolescents were more likely to be meeting the recommended physical activity guidelines (Helu, Robinson, Grant, Herd & Denny, 2009). Helu, et al., (2009) also found that males participated in physical activity more than females (Helu et al., 2009). This suggests that physical activity may have decreased in this populace. Moreover, Pacific youth are

reported as being the less active groups in comparison to Maori and European youth (MoH, 2008b).

Findings from this study show the participant adolescent's physical activity levels declined each year from year 10 to year 13 however the results were not statistically significant. This finding is comparable to results from another study who also found physical activity participation progressively declines with age in Pacific adolescent groups (Clark et al., 2013) and generally in adolescent male and females (Biddle et al., 2004).

In this study there were no statistically significant differences with regards to meeting the physical activity guidelines between adolescent participants with and without a physical disability. Of the adolescent participants 7.2% reported they experienced a long-term health disability lasting (longer than 6 months). Slightly under half of the 7.2% group or 44%, reported that the disability did not prevent them from engaging in normal adolescent everyday activities that other people your age can usually do. Considering recent statistics are reporting 5% of Pacific youth experience a physical disability it is imperative further research should aim to target this population. However, recruiting enough participants for quantitative research on physically disabled adolescents, remains problematic (Edgren et al., 2015).

Active transport (to and from school)

The results showed that if the adolescents were able to walk, bike or skate to school from home within a 30 minute time frame, they were more likely to undertake active transport (to and from school). Mandic et al. (2014) also noted distance to school was strongly associated with the choice to walk to and from school by the adolescents. As discussed in the literature review, Pacific children have higher rates of incidental physical activity such as undertaking active transport (to and from school) (MoH, 2008b). If the adolescent participant reported a disability and difficulty due to this disability, they were less likely to be undertaking active transport (to and from school), however this finding was not statistically significant. Active transport (to and from school) should be encouraged as a way to promote physical activity participation in Pacific adolescents, however safe neighbourhoods, the level of their disability, weather conditions, and distance to their school need to be considered.

Sedentary (screen time) behaviours

The adolescents who reported to be less sedentary, as measured by screen time lower than 2 hours per day (MoH, 2012; Sedentary Behaviour Research Network, 2012) were those with a disability and who also experienced difficulties with their disability, in comparison to the other adolescent participants. However, this is in contrast to other findings in other studies. Ezeugwu, Klaren, Hubbard, Manns, and Motl (2015), who utilised accelerometry measures, suggest sedentary behaviour in adolescents with a physical disability is attributed to the severity of the disability; with the more severe the disability, the higher the sedentary behaviours. Rimmer (2006) also reported that adolescents with a disability were found to be have higher sedentary behaviours sedentary, in comparison to abled-bodied adolescents and additionally found these adolescents were also likely to be overweight. The finding from this study may be attributed to the sample group, as discussed in the limitations. Moreover, this finding may be connected to socioeconomic reasons such as Pacific adolescents having less access to screen time devices, overcrowding or cultural such as church participation, in comparison to the adolescents from the Rimmer and Ezeugwu studies. This view is shared by Tandon et al., (2012) who suggest children who experience economic hardship have lower access to televisions and video games (screen time). Moreover, the results in this study showed that females in comparison to males, and those who were born in other countries were more likely to be less sedentary (screen time) .

Findings from this study showed generally, the majority of Pacific adolescent participants' sedentary (screen time) behaviours were likely to be high. Oliver, et al., (2011), who also noted sedentary behaviours are high in Pacific children, proposed television free days as an effective strategy for improving physical activity and reducing sedentary behaviours. Whereas earlier stratagems have aimed to increase physical activity, research is emerging which suggests high sedentary behaviours are detrimental to the health of the adolescent. As a consequence, measures to reduce sedentary behaviours should be prioritised particularly as sedentary behaviours are independent of meeting the physical activity guidelines (Verschuren, Darrah, Novak, Ketelaar & Wiart, 2014).

3. What factors enable or inhibit participation in physical activity for Pacific adolescents including peers, their immediate environments, and their physiological and psychological health and wellbeing.

Physical activity

Multivariable analysis

Multivariable analysis showed that the adolescents more likely to be participating in physical activity if they reported that belonging to a sports team and that sport or exercise was an important part of their life and that they chose physical activity as they liked competing. Similarly, Utter, Scragg, Schaaf, & Fitzgerald (2006) reported that the Pacific adolescents in their study, reported enjoyment, feeling competent in sports and how they like to win as prime motivators to physical activity participation. These factors should be considered when attempting to engage adolescents into physical activity but facilitators should also be mindful that adolescents may also prefer to have the option to participate in social teams of their choice (Thomas & Bedini, 2011).

Moreover, spending 3 or more hours participating in music, arts, dance, or drama and spending time on a computer and electronic games were more likely to be associated with physical activity participation. While these factors may be deemed as typical of adolescent behaviour, they too were identified as important factors in this study that were related to participating in physical activity. This finding may suggest that the adolescents who are participating in physical activity are also involved in other recreational activities. In particular, Pacific dance should be promoted as an opportunity to promote physical activity. Furthermore, as identified by Biddle et al., (2004) adolescents typically find time for both physical activity and screen time behaviours such as computer and electronic games.

Furthermore, not working in the past 12 months showed the adolescent participants were less likely to be participating in physical activity. These adolescents may not have been able to afford the costs associated with physical activity participation due to socioeconomic reasons (MoH, 2008b; MoH, 2008e). Feeling safe in the neighbourhood was identified as a factor that was positively associated with participating in enough physical activity to meet meeting the guidelines. This is comparable with findings from Utter et al., (2006), who found neighbourhood safety was an important factor to consider promoting physical activity for New Zealand youth. Utter et al., (2011)

further suggest communal solidity and security, were also certainly related to physical activity. Further analysis showed that while not significant, the adolescent participants with a disability and who experienced difficulty with this disability were more likely to be meeting the physical activity guidelines. It is imperative factors associated with physical activity participation be identified, to increase opportunities for these adolescents.

The results showed associations between not meeting the physical activity guidelines and likely to be hardly ever breakfast. These findings are comparable to Utter et al., (2006) who reported that more than 40% of Pacific children from aged from 5-14 years were more likely to skip breakfast. Furthermore, an association was reported for partaking in physical activity and sometimes eating dinner which may be attributed to the adolescent participant missing meals at home. This is of concern as regular meals are essential for general health and wellbeing. This finding may be linked to socioeconomic status, or possibly dinner time competes with physical activity and/or training sessions. Likewise, these findings were reported by Utter et al., (2005) who found Pacific children aged between 5-14 years regularly missed meals and as a consequence, may be inclined to eat purchased food contributing to obesity. This may also be connected to socioeconomic deprivation. Similarly, Statistics New Zealand and Ministry of Pacific Island Affairs (2011) report Pacific adolescents eat more “junk food” in comparison to other ethnic groups and that these food choices are linked to family affordability. Moreover, Geller, Hendricks, Alvarez, Bracerros, and Nigg (2013) found Pacific parents were particularly influential in governing adolescent eating behaviours. While currently there are Government initiatives aimed at addressing dietary habits in lower socioeconomic schools, results from this study show these initiatives may not be reaching target groups.

Univariate analysis

The quantitative findings from this study have demonstrated a significant positive association between meeting the guidelines for physical activity and enjoying school due to school sports. This compares with results from Utter et al., (2011) who found New Zealand secondary school students’ high school sports participation was closely associated with participating in physical activity.

Moreover, the adolescent participants were more likely to meet the physical activity guidelines if they had attended a physical education class within last seven days,

or chose physical activity as they reported they are good at it. Whereas, participation in physical activity classes is compulsory until year 10, physical activity during school should be encouraged as a way to promote participation. To ensure optimum participation factors such as choice, making the adolescents feel proficient while participating, some competition and encouragement in physical education classes need to be considered to ensure the adolescents want to participate through to the end of year thirteen. Furthermore as suggested by Utter et al., (2011), schools should be encouraged to promote physical education and to give all students the opportunity to participate. In turn, this may increase and or promote physical activity participation. This study also showed that the adolescents who reported that they take part in sports teams or clubs outside of school time for over five times per week were nearly six times as likely to be meeting the physical activity guidelines.

Other factors which were found to be associated with meeting the physical activity guidelines included reported using alternative healthcare. Whereas the injury may be connected to physical activity participation, youth may be more inclined to utilise traditional healing and medicine because it is what their families had conventionally utilised in the Pacific Islands, as was identified in this study (MoH, 2008d). Furthermore, the adolescent participants were more likely to be meeting the physical activity guidelines if they reported that they spent time socialising with their friends. This is comparable with findings from Geller et al., (2013) and Palaone et al., (n.d.) who found Pacific adolescents in their study reported more physical activity if they were given the opportunity to participate with their friends. Whereas it is the norm for schools in particular to select their teams based on competence levels, wherever possible based on these findings, adolescents should be given the opportunity to participate in physical activity with their peers.

The results showed that the adolescent participants who were living in deprived neighbourhoods were less likely to be meeting the physical activity guidelines. The socio-economic variables from this survey used to identify deprivation and create these indicators, relate to geographical area or neighbourhood as opposed to singular people or family (Clark et al., 2013). Based on the New Zealand deprivation indicators, the adolescent participants were grouped into low, medium or high deprivation which considers the New Zealand Deprivation Index for the geographical neighbourhood (mesh block) (Clark et al., 2013). High levels of socio-economic deprivation amongst Pacific adolescents may impact on physical activity participation. This view is shared by Teevale

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et al., (2010) who found in their questionnaire administered to 2,495 Pacific adolescents, that socioeconomic environments influenced physical activity participation.

Furthermore, if the adolescent participants reported that their positive social behaviours toward others were “somewhat true”, they were less likely to be meeting the physical activity guidelines. This finding may suggest the adolescent participants who are not meeting the physical activity guidelines, may also have difficulty with peer relationships. All adolescents, including adolescent participants with a physical disability may endure rejection or isolation from peers leading to low self-esteem, low self-worth and social isolation (President’s Council on Fitness, Sports & Nutrition, 2008). As adolescence is a precarious period of development for identity formation, encouraging physical activity participation may be one way to develop positive relationships amongst peers.

While there was no effect on the bullying measures overall, the adolescent participants were less likely to meet the physical activity guidelines and if they reported that they did not know why they were bullied. This finding may be as a result of the prevalence of bullying at New Zealand secondary schools. Fleming et al., (2007) found that approximately 30% of New Zealand secondary school students were bullied at school during the past year and that 3% of students did not attend school during the school year as a result of experiencing bullying. Physical activity may to encourage cohesion and teach students to be respectful, collegiality, and tolerance which could reduce bullying.

The following findings as reported by the adolescent participants are associated with not meeting the physical activity guidelines and included that they were “unhappy to okay” about their current weight and underweight to overweight. In particular, Pacific adolescents residing in New Zealand are prone to obesity (Dewes, Scragg & Elley, 2013). As documented in Chapter Two, there is increasing literature to suggest physical activity patterns have an association with weight management and this should be considered for Pacific adolescents who experience problems with their weight, particularly obesity.

Active transport (to and from school)

Multivariable analysis

Active transport and in particular promoting active transport to and from school, has been postulated as a useful and opportune solution for increasing physical activity in adolescents (Duncan, Duncan & Schofield, 2008). The results showed that if the

adolescents were able to socialise and have the aptitude to make and keep friends, this had a positive impact on active transport (to and from school).

Moreover they were likely to report undertaking active transport (to and from school) if they had a sense that and other people their age generally like them, reported peer problems and they expended over three hours socialising with their friends. As it is the norm for adolescents to socialise with their friends, in particular walking, may provide this opportunity (Mandic et al., 2014). These results compare to Mandic et al., (2014), who found the factor most strongly associated with adolescents undertaking active transport included the chance to mix with their friends. They also noted the age of the adolescent, the setting or scenery, parental sensitivities around security, school coeducational status, household resources, time constraints, and the adolescent's preference for transport, having access to a vehicle and for reasons of convenience (Mandic et al., 2014). Whereas active transport may be an opportunity for physical activity for the Pacific adolescents, there may be a variety of factors impacting on their decision to undertake active transport to and from school. Due to school zoning constraints, adolescents will normally live close to school so active transport should be encouraged, particularly by parents.

Findings from this study suggest the participant adolescent participants were more likely to undertake active transport (to and from school) if they felt safe in their neighbourhood the majority of the time. Similarly, Teevale et al., (2010) report that Pacific adolescents' low socioeconomic communities and unsafe neighbourhoods inevitably impedes on active transport to school and home. In contrast however, Carlson et al., (2015) found in their study the adolescents' walking rates were also low in highly walkable neighbourhoods and suggest that individual factors should be considered prior to interventions are put in place.

Walking school buses have been extensively accepted as a means to encourage physical activity for younger students (Duncan, Duncan & Schofield, 2008) and these may be also applied to adolescents residing in unsafe neighbourhoods. Any future interventions which incorporate activity monitors to promote active transport to and from school may be feasible and advantageous (Duncan, Duncan & Schofield, 2008), however, factors impeding active transport should be initially considered. This view is shared by Mandic et al., (2014) who also suggests parental concerns and neighbourhood safety are influences that need to be addressed at the onset.

Univariate analysis

This study found the adolescent participants were more likely to undertake active transport (to and from school) if their youth centre was in an area where they live and to attend, they found they were able to walk there, to, and from home. Accessibility for the adolescent is strongly associated with active transport if they live in close proximity to their schools (Mandic et al., 2014), and it is probable this too is a factor in accessing their youth centres. In contrast if the results showed if the adolescents belonged to a church group they were less likely to be undertaking active transport (to and from school), so involving the church in programmes to encourage physical activity or active transport, may prove advantageous to the adolescents.

The adolescent participants who experienced a disability and had difficulty with this were less likely to undertake active transport (to and from school) however, this was not statistically significant. However, undertaking active transport (to and from school) is problematic for adolescents with a physical disability who may be particularly vulnerable if they are in a wheelchair. This vulnerability may range from environmental factors such as the weather or the conditions of the travel route they are taking, or that are possibly exposed to more hazards, while in their wheelchairs.

To encourage active transport (to and from school) a multitude of factors need to be considered which may also include providing lockers at school or lockers for sporting equipment. Moreover, having sport training sessions at time which are conducive to the Pacific adolescents permitting active transport in daylight hours and which consider their time restrictions, are essential.

Sedentary (screen time) behaviour

Multivariable results

If the adolescent participants reported that they participate in physical activity as a result of it passing the time, they were more likely to be was report high sedentary (screen time) behaviours. This finding may suggest they have a preference for partaking in screen time activities in comparison to physical activities. Moreover, the finding that the adolescent participants were more likely to report they had higher sedentary (screen time) behaviours if they enjoyed school as a result of “hanging out with friends” may be related to prolonged hours on social media with their peers. This is comparable to findings from Geller et al., (2013) who found sedentary behaviours are strongly

associated with extended screen time as a result of socialising with friends. Furthermore, afterschool programmes promoting physical activity may be an option to address this problem (Geller et al., 2013). However, Geller et al., (2013) found that if the adolescents were on the internet to find out about music, hobbies, sports, or interests, or to play games, they were less likely to be sedentary.

Univariate results

The adolescent participants conveyed they were more likely to be sedentary (screen time) if they reported emotional problems, conduct problems, hyperactivity, peer problems, or that people generally liked them. As noted by Law, Petrenchik, King, & Hurley (2007) participation in recreational activities for children and adolescents living in poverty has been shown to have a positive impact on emotional wellbeing, peer relationships, and academic performance. Future interventions are necessary to target sedentary behaviours to enhance participation and possibly improve physiological and psychological wellbeing for the developing adolescent.

Additionally, the adolescent participants were more likely to be sedentary (screen time) if they were spending over two hours per day on activities such as arts, chores, spending time doing activities with friends and texting. Helu et al., (2009) report it is of concern that a high number of Pacific adolescents are sedentary and while these activities may be typical of adolescent behaviours, the results show they are associated with deleterious sedentary behaviours and should be considered when initiating intervention programmes.

If the adolescent participants belonged to a group or club not run by their school such as a church group, the results showed that they were more likely to be sedentary (screen time). Church affiliation is common amongst Pacific adolescents (MoH, 2008a), and may be an avenue to promote physical activity behaviours and reduce sedentary activities.

Adolescents who reported living in overcrowded conditions reported that they were less likely to be sedentary which may be attributed to the unavailability of screen time due to socio-economic reasons, as already discussed. The finding that adolescent participants who may be likely to live in lower socioeconomic environments may be less sedentary, may be attributed to the sedentary measure in this study as screen time. Due to socio-economic reasons, they may not own televisions, electronic devices or have

access to the internet. Crowding is particularly idiosyncratic and will vary according to the specific context of the household, culture or environment (Goodyear, Fabian, & Hay, 2011). As there is no specific standard measure for overcrowding, in New Zealand it is the norm to refer to the Canadian National Occupancy Standard (CNOS) (Goodyear et al., 2011). While the size of the bedrooms may differ, and the criteria may not consider age, gender, or relationships, generally overcrowding is founded on the basis that there should be no more than two people per bedroom (Goodyear et al., 2011). The results from this study showed that the adolescent participants who reported that sometimes or hardly every eating dinner displayed lower sedentary (screen time) behaviours. Williams and Mummery (2015) found a relationship between unhealthy eating behaviours and sedentary behaviour and suggested that health promotion, particularly at school, may be beneficial for these adolescents.

The adolescent participants who reported choosing physical activity to keep fit were associated with lower sedentary (screen time) behaviours and this finding may suggest this particular group does not value protracted sedentary behaviours. Furthermore, belonging to a volunteer group, not run by their school, was associated with lower sedentary (screen time) behaviours in the adolescent participants. As noted by Biddle, Petrolini and Pearson (2014), future interventions should reflect on findings from previous research and also consider the involvement of the family, behavioural interventions and monitoring electronic devices and/or screen time to address sedentary behaviours in young people.

8.3 Qualitative discussion

8.3.1 Introduction

Previous research and information specific to Pacific adolescent girls' experience with a physical disability is limited. This is of concern due to the increasing numbers of reported Pacific peoples with a physical disability (MOH, 2008a). An understanding of the enablers and barriers may provide information relating to the overcoming of obstacles associated with physical inactivity and high levels of sedentary (screen time) behaviour.

The factors which impact on physical activity participation and sedentary behaviours were discussed in the literature review in Chapter Two. This section summarises the findings from studies two and three and the factors emerging from these studies that inhibit or facilitate physical activity and sedentary (screen time) behaviours. In the following section "this study" or "the study", refers to findings from study two and three. If the findings were specific to study two or three only, this was emphasised in the text. This analysis of the views of the girls, their mothers, and the service providers is considered alongside the available literature pertinent to the findings and Pacific adolescents. Appendix G is a summary of the findings with the corresponding quotes from the participants. The findings showed that these girls wanted to participate in physical activity and indicated clearly the physical activities they preferred. However, their participation was influenced by the interaction of a variety of gender, cultural, age-related (adolescence) and socio-economic factors together with policy and structural limitations.

8.3.2 Participation in physical activity

All the Pacific girls with a physical disability who were interviewed had, at some stage, participated in physical activity with differing levels of intensity, duration, and frequency. However, at the time of the interviews two of the girls were meeting the recommended physical activity guidelines (SPARC, 2007) and five of the girls' sedentary behaviours were too high, (or over two hours per day), placing them at risk for poorer health. Lower levels of physical activity participation have also been noted in other population groups of adolescents who experience a physical disability (Nooijen et al., 2014; Fong et al., 2014).

While all of the participants were participating in some type of physical activity at the time of the interviews, the rationale behind inactivity was complex. Furthermore, the

inactive participants did express a concern around inactivity, articulating a need to participate more regularly. Results from the qualitative study showed multiple personal and environmental enablers and inhibitors to physical activity and sedentary behaviours as presented in Chapters Six and Seven. This finding is comparable with Palisano et al. (2011) who argue participation for the physically disabled adolescent is dependent on multiple family and environmental factors. Findings from this study suggest that the girls prefer and enjoy swimming, wheelchair basketball, and Pacific dancing with their peers. Other preferred activities included soccer, baseball, yoga, wi sports (computer video game), botchers (similar to petanque), tenpin bowling, gym, shot put, and walking. This finding is in line with existing literature which suggests Pacific adolescent girls who did not experience a physical disability showed preferences for swimming, walking, athletics, running, touch, netball, dance, cycling, basketball, and volleyball (Sport New Zealand, 2012).

As previously discussed, most of the girls from the qualitative interviews were not partaking regularly in organised sport. This is consistent with findings from Packer et al. (2006) who reported that the physically disabled adolescents from their study rarely participated in sport outside of school hours, finding organisations and able-bodied persons were not aware of how to include them. In this study if the girls were participating in wheelchair basketball, it was the norm to find it necessary to play in a mixed gender team of mixed abilities including men of differing ethnic groups, who they found to be more competitive. Whenever possible, teams of equal gender and ability should be organised.

As highlighted throughout the literature review, enjoyment is a well-documented factor for determining physical activity participation (Fong et al., 2014). Engel-Yeger et al. (2009) also found that the girls who experienced CP were the group who reported the highest levels of enjoyment in comparison to the able-bodied adolescents. Consistent with the previous research findings, this study found enjoyment and socialisation opportunities were mentioned frequently and have evident robust influences on participation. The attitudes of others, unavailable peers or girls they prefer to participate with, and challenges to their self-esteem, were the main factors impacting on enjoyment while participating. Choice or preference was also an important predictor inspiring participation. This study found that while some schools accommodate the girls, thereby encouraging participation, gymnasiums, and access issues, restrict their preferences. The school environment, where physical activity is compulsory until year 10, may provide an

opportunity for the girls to attempt a variety of physical activities, which may in turn widen their preferences. This is essential to ensure they have an exposure to a variety of activities, possibly safeguarding lifelong participation. Nevertheless, the absence of opportunity to participate was frequently mentioned by the participants. This included physical activities they had previously participated in at school, and occurred after moving to Auckland or when they had access complications, including the physical activity not being geographically close to their home, transport being unavailable or the cost associated with transport being too great.

Findings also suggest that a number of the physical activities themselves require some level of physical fitness which is problematic for the girls as a result of their impairments. Equally, the impairments were challenging for the girls when they experienced muscular, and limb weakness, were recovering from operations, or experienced other medical complications or difficulties. These included changing into physical activity attire, finding standing is tiring and running problematic. Furthermore, the girls may also be reliant on others to assist them in some activities such as swimming which also may be problematic. In comparison, Blinde and McCallister (1999) also reported that girls or women with a physical disability are faced with multiple challenges while attempting to engage in physical activity, including the physical constraints attributed to the disability itself.

Further research is essential to identify physical activity guidelines the girls may adhere to that are specific to their disability and that are workable. This may prevent muscular atrophy and general decline in physical health and fitness due to inactivity or high sedentary behaviours.

8.3.3 Physical impairment and physical activity

Another finding was that the girls may not have the essential skills necessary to allow them to participate in physical activity. The inherent nature of the disability itself may have impeded participation in earlier physical education training therefore limiting their skills. Therefore, the physical activities need to be instituted with regard to the individual's needs by skilled facilitators and instructors. It is essential these facilitators or instructors are knowledgeable and equipped to engage with and coach the girls, and are sensitive to their cultural and physical limitations. Considerations should include the girl's needs, abilities and preferences, and the physical activity should be safe and enjoyable, preferably with friends. Moreover, Pacific people's health belief systems are

embedded in a multifaceted arrangement of cultural principles which impact on their daily lives (Fairbairn-Dunlop et al., 2014). Therefore, healthcare workers and physiotherapists who have regular contact with the girls as a result of their disabilities, may provide an opportunity for the girls and their family but need to be culturally sensitive. This may include initiating and encouraging physical activity participation by providing information on how to access physical activities, education on the benefits of physical activity, or encouraging home-based physical activity.

Currently in New Zealand there is a talent identification programme in place which aims to create pathways for the girls into the Paralympics. Two of the girls expressed an interest in participating in this programme. However the findings from this study showed identification to enable participation maybe challenging. Commonly, the programme seeks to identify potential disabled athletes through the school; however, this may be problematic if the girls do not have other competitors to compete against to be able to display their talent. In this study, one of the mothers whose daughter was showing ability in her swimming eventually changed swimming clubs. Only at the new club was her daughter accepted and acknowledged and, as a consequence, she is now competing nationally with a view to international competition. Conversely, one of the girls who had expressed an interest in Paralympic sports mentioned she was still waiting, after six months, for a person to return her call upon enquiring about competing in shot-put. While pathways maybe available and primarily are left up to the schools, future directions should preferably include a Pacific disabled athletic identifying talent for future competition. In turn this may also alleviate language and cultural barriers and provide an opportunity for more Pacific adolescent girls with a physical disability to compete both at national and international levels.

As one provider mentioned, the girls were sometimes not assertive and reliant on others to speak out in regard to their needs and if their English is poor, this compounds the communication problem. This reticence not doubt stems from Pacific adolescents' traditional respect for authority figures which may impede the girls' communication skills when endeavouring to deal with challenges such as enquires about engaging in physical activity (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011).

8.3.4 Role models/coaches and gymnasiums

Findings suggest role models encourage participation and, similarly, watching Paralympic sports or other Pacific people competing may also encourage physical activity. Positive role modelling is important for identity development and instils a sense of achievement for physically disabled adolescents (Tuffrey, 2013). Conversely, findings from this study found coaches were often not available, or that they were not aware of how to accommodate the girls due to their impairment, or were simply inexperienced. Additionally, gym instructors were either not trained or the gymnasium surroundings made the girls feel uncomfortable; furthermore, access to the gymnasiums or the geographical location of the gymnasiums were problematic if the girls were in a wheelchair. Those operating gymnasiums may want to consider timetabling classes run by suitable qualified physically disabled persons who are culturally aware and whom specifically target girls or people from similar ethnic groups. This may result in the gymnasium class been economically viable and may also provide for the girls' needs. Barriers such as location and accessibility may be overcome if the girls find these sessions enjoyable and beneficial. Financial assistance would need to be considered as the costs associated with the gymnasiums were found to be problematic in this study for the girls and their families.

8.3.5 Schools

While these findings suggest some schools had attempted to accommodate girls in physical activity, teachers should all receive training on engaging in culturally safe practice to promote participation and access. Participation at school level may be influenced by the knowledge and skill of the coach to adapt the physical activity, and possibly the rules, to permit inclusion. Generally, the participants suggest it remains challenging for teachers to accommodate the girls into mainstream sports. In order to make change, government bodies that have identified the need to implement strategies to increase physical activity participation in all adolescents with a physical disability, must commence with changes at school level.

Moreover, sporting equipment is not generally suited to the girls and equipment may need to be adapted or specialised equipment made available to those with physical disabilities. This was noted as problematic for one of the organisations running wheelchair basketball as sometimes the girls were not able to participate, even after

managing to arrive at the activity, because of the unavailability of suitable wheelchairs designed for wheelchair basketball.

With physical activity being a compulsory element of the school curriculum up to year 10, it may be that the schools together plan days for their physically challenged students who may compete together, thereby sharing equipment and resources. However, this study found the sporting organisations were endeavouring to promote physical activity in schools with making guidelines and resources available, within the limited resources available to them.

8.3.6 Physiological and psychological impact of physical activity

The participants appreciated physical activity was beneficial to their physiological and psychological health, and this impacted on participation. This finding is comparable to Thomas and Bedini (2011) who also reported they found the adolescent girls with a physical disability benefited from the physiological and psychological effects of physical activity. More specifically, relaxation, stress relief, increasing self-esteem and confidence, brain functioning, improving cardiovascular fitness, stamina, energy, muscular strength, balance, and weight control were mentioned. Conversely, the participants expressed concerns around inactivity, high sedentary behaviours and showed a concern around their physical impairment and how these adversely affected the health of the girls such as their longevity.

The study showed that the participants and in particular the service providers, had an understanding of the secondary complications attributed to inactivity including muscular atrophy, respiratory problems, cancers and diabetes. From a cultural perspective, healthy and strong Pacific families are of utmost importance and are commonly viewed as a holistic basis for wellbeing (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011).

Additionally, as mentioned by one participant, the girls should be encouraged to focus on what they can do. However, participating from a wheelchair may make it challenging to participate, prompting fear as one participant mentioned when attempting to play basketball. Furthermore, some of the participants also mentioned motivational difficulties. While motivation may be linked to the severity of the disability, the literature suggests that by increasing awareness of the health benefits of physical activity and

allowing for more choice of activities, the difficulties around intrinsic motivation may be overcome (Kosma, Cardinal & Rintala, 2002).

8.3.7 Other factors

Other findings included how the girls had previously experienced the assistance of volunteers who transported them to activities therefore, assisting participation. Moreover, as mentioned by one provider, if the girls had initially had the encouragement to attend the physical activity, they found they enjoyed it and wanted to continue to participate. Conversely, the girls who either walk or need to walk to access public transport indicated that unfavourable weather may impede their participation. This is comparable to findings from Lindsey (2014) who suggested the weather is problematic for adolescents with a physical disability particularly if they are in a wheelchair. One participant was concerned about the attitudes of bus drivers to her disability making public transport problematic for her. While active transport such as walking to physical activities is undoubtedly preferable, the distance to the activity and limitations due to their disability need to be considered. Furthermore, the girls may not be aware the activity is available to them or as stated above, may not have the confidence, assertiveness, or initiative to make the requisite inquiries. Furthermore, time constraints may prove challenging if the physical activity is competing with cultural or work commitments or scheduled medical appointments related to their disability.

Pacific groups regard family, culture, and spirituality as the most important concepts to themselves (MOH, 2008d). This study found that physical activity time often competes with other family commitments such as looking after siblings and attending church. Therefore, to ensure participation, any physical activity programmes need to accommodate these obligations. In comparison to European adolescents, Pacific adolescents are up to four times more likely to attend church (Mila-Schaaf et al., 2008). The church may be a forum in which respected Pacific elders can promote the benefits of increasing physical activity and reducing sedentary behaviours. Bopp, Peterson & Benjamin (2012) found that faith-based interventions have the potential to increase physical activity and consequently improve health outcomes.

8.3.8 Peers

While adolescents with physical disabilities have a preference for participating in physical activity with their friends, it is the norm to experience social exclusion as they age, as a result of their physical disability (Tuffrey, 2013). The girls may perceive

engaging in physical activity as a venue for enjoying and spending time with their friends and, furthermore, creating lifelong friendships. This may be attributed to their peer groups creating a supportive environment, intensifying the enjoyment factor, encouraging adherence, normalising the activity, providing transport, and generating confidence, comfort and companionship.

These friendships need to be encouraged as they are pivotal in establishing lifelong physical activity habits, by providing access to social clubs, and access to other girls through schools or the internet. This study found a preference for Pacific dance amongst the girls and this form of physical activity should be encouraged. Hayward (2010) also indicated that Pacific dance is prevalent amongst Pacific adolescents generally and proposed that it should be encouraged. However, this present study showed that the girls may not have had the opportunities to participate with peers, and may be socially inept and needing confidence. This study found that the girls felt intimidated when they initially arrived at physical activities if they did not have any friends participating or they found that participating in physical activity in front of able-bodied adolescents is disconcerting. The adolescent is already developmentally self-conscious (Pudney, 2014), which may be exacerbated depending on how they view their physical disability. Hutzler et al., (2012) “reverse integration” model, as discussed in 2.3.2, where the facilitators ensure that the majority of the adolescents participating in the physical activity experience a physical disability, may be one way to overcome the problem. In turn, this may also address the problem of not finding enough girls to make up a sports team.

Counselling services specific to girls are necessary to help overcome some of these socialisation and self-esteem issues, permitting skills to overcome these psychological barriers and foster resilience (Pudney, 2014). If possible, the counsellors should be of an ethnic group preferable to the girls themselves to avoid therapeutic resistance. However, as mentioned by one provider, this study found that girls do not readily have access to Pacific counsellors which is problematic and impacts on their personal and family psychological health and wellbeing.

8.3.9 Parents

The findings from this study show the girls were dependent on their parents for their general health and wellbeing. It is important therefore that any support should be directed at the family to strengthen the families' resilience. This is consistent with findings from Kristèn, et al. (2003) who suggested parents have a significant role in

supporting the adolescent with a physical disability. The adolescent's dependence on their family included transport, psychological support, financial assistance, and a commitment as a conduit for them to participate in physical activity. It is imperative that the family be consulted wherever possible to encourage physical activity participation, and that preference be given to a Pacific health care worker from an ethnic group of their choice.

The study results suggest that if the parents of the girls perceived or understood the importance of physical activity, their attitudes to physical activity were conducive to participation, and if the parents themselves had participated in physical activity, this favoured participation for the girls. Family preferences were also noted by Palisano et al. (2011) in regard to adolescents with a physical disability and explained how they can impact positively or negatively on participation. Nevertheless, the parents themselves, who have other family or work commitments, may find their available time is limited. It is important to help families understand the importance of physical activity and the detrimental effects of inactivity and high sedentary behaviours for their girls. Conversely considerations need to also be given to accommodate the families' resources, and adolescent and family preferences, and encourage the family to be aware of community resources available to themselves including assistance and funding. A study by Packer et al. (2006) found that over 40% of the parents were not aware of the physical activity resources for their physical disabled adolescents that were available in the community. However, this present study found that some parents may not see the value of physical activity, believing the girls' time spent in such activity may compete with her cultural role in the home. Some of the parents were also found to be too protective or hesitant to allow their daughters to participate in mainstream sports which may possibly expose them to ridicule.

These parents may be impeding their daughters' development as strong social networking through positive physical activity experience is crucial for identity and brain development, possibly impacting on later psychological functioning (Tuffrey, 2013). Recent research suggests that the adolescent brain is very plastic during adolescence and adolescent experiences may have an impact on the person later into adulthood (Tuffrey, 2013). If these experiences during adolescence are negative, they are irreversible and may limit resilience during adulthood (Tuffrey, 2013).

Language barriers may hinder the ability of the Pacific adolescent or their parents' ability to articulate their views (MOH, 2008d). Any persons coming into contact with the girls or their family need to be proficient in their language, and should be culturally sensitive with competent communication skills (MOH, 2008d). Pacific people do not generally have adequate information relevant to their or their families health needs and therefore are unable to make fully informed decisions (Statistics New Zealand and Ministry of Pacific Island Affairs, 2011).

Additionally, transporting the girls may be problematic due to the time it takes to get to the activity. These problems are exacerbated if parents are required to stay with the girls, if the location is geographically distant and they have costs associated with travel such as petrol costs. Tuffrey (2013) reported similarly that sporting clubs may be some distance from the adolescent's home or the family themselves may not be aware of physical activities that are offered locally. Furthermore, the family dynamics may impede participation for the girls if they have other siblings also requiring care and, additionally, if the girls are low priority in the family. While the families appreciate the support they receive, they may be reluctant to ask for more or there may be language or interpretation barriers. Also, some of the families feel they do not require support. The findings also suggest that the family may already be struggling financially and they may simply not be able to factor in the extra expense required to engage the girls into physical activity. Generally Pacific people are within the lower socio-economic groups and socioeconomic determinants exert a strong influence on family expenditure (MOH, 2008d). As identified by the participants, participating in physical activity is sometimes beyond their financial resources for the family.

The parents themselves have the ability to foster or impede participation; however, holistic support should include resources for the family, volunteers to help with transport, education around the girls' needs, transport assistance, petrol vouchers, and or access to a taxi service for their daughters. Furthermore, educating the girls and the family may assist engagement in regular participation and may include motivators such the use of odometers on the girls' wheelchairs to encourage them to monitor their own physical activity participation.

8.3.10 Stigma related to the physical disability

Historically, Pacific peoples who experience a physical disability may be perceived as a burden and the findings from this research suggest that some of these beliefs may still be persistent in Pacific countries and in New Zealand today. “There is a need to address the disability stigma and discrimination against peoples within Pacific families and all parts of the Pacific community, including the church” (MOH, 2010, p. 12). While governing bodies are aware of this and are attempting to take initiatives, this discrimination was mentioned by most of the participants. This discrimination may be a result of misunderstandings about physical disabilities, the causes and implications of disability, fear of the differences or contamination, or cultural views of disability (Bhabha, 2013). It is compounded by poverty, social isolation, and a hostile environment leading to isolation (Bhabha, 2013). Such discrimination may impede participation in physical activity if these beliefs impact on the girls’ self-esteem or their family has this perception. If the girls are experiencing this stigma, it is imperative that it should be managed to ensure participation in physical activity and other daily activities. While government initiatives are aiming to address this issue, one provider explained that these initiatives were not reaching the people concerned.

Stubbs and Tawake (2009) furthermore suggested that Pacific females with a disability, in comparison to disabled males or non-disabled females, are often less educated, experience more abuse and unemployment, are poorer, more isolated, experience poorer health outcomes and have a lesser social status. Counselling services for these girls may assist them to overcome this discrimination, allowing more resilience for the girls and acceptance from the family.

8.3.11 Policy

Government policies or initiatives were found to be instrumental in influencing participation in physical activity. New programmes encouraged participation with the girls having a sense they wanted to ‘try out’ the new activity. Government initiatives, at this level, benefiting physical activity participation included providing information, services, disability cards, special equipment, funding for physical activities and some transport. If the girls showed ability in their chosen physical activity, funding became available to them. However, government funding to the service providers was limited and they need to demonstrate sustainability. Despite advances in international laws and policy, minimal attention has been directed at Pacific girls with a physical disability

(Bhabha, 2013). Findings suggest there is confusion over entitlements and frustration over funding allocation being determined by whether the disability was acquired or congenital.

There was a substantial concern and frustration over the withdrawal of the taxi service which was previously available to the girls. The girls and their families had become accustomed to and reliant on this service. Consequently this has recently hindered their physical activity participation. To ensure future participation, it is necessary for government bodies to take heed of the family requests. This may include reinstating the taxi service which enabled participation and providing more resources to the family and the girls or to providers of physical activity services. Further considerations may be given to running physical activity programmes in each of the main suburbs throughout the main cities. Girls who were experiencing transport problems were expected to travel considerable distances to access the physical activities. While these measures may incur financial costs, health prevention is a more cost effective strategy than treating those of ill health due to possible inactivity long-term. The size of Auckland makes it geographically challenging for the girls to access physical activity when they are already confronted with transport and financial concerns. Most of the girls also mentioned the importance of attending church. Facilitators of physical activity programmes run for the girls need to appreciate that any open days, running of new programmes or existing programmes should be organised with an awareness that Sundays may be reserved for family time or attending church.

The findings suggest that funding for factors relating to participation in physical activity including daily living costs may alleviate some of the extra expenditures the girls endure. These include normal living costs, transport, and additional medical expenses attributed to their disability. Some of the girls expressed concerns around the overheads of participating in physical activity when they were struggling to meet everyday living budgets. Moreover, policy makers must remember that Pacific families are disproportionately represented in the lower income socio-economic groups (Mila-Schaaf et al., 2008).

8.3.12 Sedentary behaviours

The study findings suggest that, with the exception of one participant, the girls are all engaging in sedentary behaviours high enough to be detrimental to their health. This is comparable with other studies which also suggest adolescents with a physical disability

are spending extended hours in sedentary behaviours (Shkedy Rabani et al., 2014; Nooijen et al., 2014). Theoretically, these high sedentary behaviours may have an adverse effect on their health, including their metabolic and cardiovascular systems (Taylor, 2014). In part, the girls do not have the opportunity to participate in physical activities sufficiently to meet the recommended guidelines. Their impairments compound this problem as they face additional restrictions in comparison to able-bodied adolescents. Furthermore, the girls usually need to be transported, further reinforcing higher sedentary behaviours and they are also failing to undertake active transport (to and from school). Due to their disability, they may also be more vulnerable in the community which may mean they spend more time at home. The study findings also suggest that the girls were spending extended time in sedentary behaviours during the school holidays and that their physical fitness is somewhat reduced at the commencement of the school term.

8.4 Extended quantitative and qualitative results showing a “side-by-side” comparison approach of the results between studies one, two and three (Creswell, 2014).

The mixed methods and side-by-side comparison approach, congruent with the convergent (or parallel or concurrent) design, supported the study aims allowed a comparison of the results across the two sets of quantitative and qualitative data (Creswell et al., 2011). Furthermore, the quantitative provided statistical certainty in comparison to the qualitative method which provided the rich in-depth understanding of the experience. The different approaches generated different findings not identified in the other method, some findings which were similar, and findings that supported the results of the quantitative or qualitative results. The multiple perceptions, identified in the following, allowed for an overall insight into the research problem, relevant to the aims of this study. The similarities found are between the general Pacific adolescent population and the Pacific girls with a physical disability.

8.4.1 Finding 1: Demographics and socio economic status

Quantitative

The Samoan ethnic group were found to be the more prevalent. This was followed by Tongan adolescents. The quantitative results showed 58.2% of the Pacific adolescents were living in the most deprived households in this sample group.

Qualitative (Study two)

Five of the girls and their families were of Samoan ethnicity and two were Tongan. All the participants expressed concerns over economic deprivation.

Comparison

Both the quantitative and qualitative study results showed the Samoan ethnicity group followed by the Tongan ethnicity group were more common, which is consistent with the findings from the literature. Both datasets indicated that the Pacific adolescents are living in lower socio- economic conditions in comparison to other adolescents living in New Zealand. Moreover, the qualitative results showed all the families or girls were under financial pressure with the quantitative results also showing that the adolescents living in the most deprived conditions, were the group less likely to be meeting the physical activity guidelines. Moreover, the Pacific girls with a physical disability have extra monetary pressures attributed to their disability which include additional medical care and transport.

8.4.2 Finding 2: Physical activity participation

Quantitative

The disability sample group results were not significant however overall, the results showed that 11.4% of the adolescents without a physical disability were meeting the physical activity guidelines and physical activity was less in females (8.4%).

Qualitative (Study two & three)

Study two and study three results showed that the majority of Pacific girls who experience a physical disability are not meeting the physical activity guidelines.

Comparison

Findings from both data sets show that the majority of Pacific adolescents with and without a physical disability are not meeting the physical activity guidelines.

8.4.3 Finding 3: Sedentary behaviours

Quantitative

The results showed that the group of adolescents who experience difficulties as a result of their disability were less sedentary (screen time). In comparison, the results showed that the majority of the adolescents' (77.2%) sedentary (screen time) behaviours were too high.

Qualitative (Study two & three)

The results from study two showed that the majority of the girls' sedentary behaviours were too high (5 out of the 7 girls). The providers (study three) expressed a concern over the sedentary behaviours of the girls to the extent that it may possibly be impacting on their general health and longevity.

Comparison

While the overall results showed the Pacific adolescents and the Pacific girls with a physical disability sedentary behaviours were too high, the results showing the group who experience difficulties as a result of their disability from study one, oppose this result. Two possible explanations for this contradiction may be the sample group itself which is explained in the limitations section of this thesis, or as emerged from the discussion section, that the adolescents may have limited access to screen time devices or television due to financial restrictions.

8.4.4 Finding 4: Active transport (to and from school)

Quantitative

Active transport (to and from school) was shown to be undertaken by the adolescents who were able to walk to and from school within a 20-30 minutes. However, the results pertaining to active transport (to and from school) in the disability group were insignificant.

Qualitative (Study two & three)

The results from study two and three showed that the girls were dependent on taxi services or their parents, for transport to and from school. Some of the girls attended school with a physical disability unit attached. The schools or the units were not geographical close to their homes.

Comparison

Based on the findings from this study, the results may suggest that the disability group is not undertaking active transport (to and from school) in comparison to Pacific adolescents who do not experience a physical disability. This may be attributed to the inherent nature of the disability itself where the girl may need to attend a special school or that the physical disability may make undertaking active transport to and from school problematic.

8.4.5 Finding 5: Factors that influence, enable or inhibit participation in physical activity/sedentary behaviours

Disability

Quantitative

The results showed that the group who experience a difficulty with their disability were less likely to be sedentary (screen time) and while not significant, the group who experienced a difficulty with their disability, were less likely to be undertaking active transport (to and from school) and more likely to be meeting the physical activity guidelines.

Qualitative (Study two & three)

The qualitative results showed that their physical disability generally impeded their physical activity participation but that having a support person did alleviate some of the difficulties.

Comparison

It was difficult to compare the quantitative disability group due to insignificant results and limitations in the sample group itself. As previously suggested, this may be indicative of other factors such as the sample group and the sedentary measure, which is screen time.

Peers

Quantitative

Peer relationships had the potential to increase active transport (to and from school) but in comparison, “hanging out with friends” had detrimental effects on physical activity and sedentary (screen time) behaviours. In addition, peer problems too had an adverse impact on physical activity participation.

Qualitative (Study two & three)

From study two and three, it was evident that peers had a positive impact on peer relationships and the results also showed the importance of social interaction for the adolescent.

Comparison

The quantitative and qualitative studies both yielded differing results giving an overall depiction of the impact peer relationships have on participation in physical activity. Whereas the expectation was that peers would have a positive effect, “hanging

out with friends” may not necessarily be beneficial to participation, if this transpires into high sedentary behaviours and inactivity. Whereas the quantitative results gave an overall portrayal of how peers influence physical activity, active transport (to and from school) and sedentary (screen time) behaviours, the qualitative results showed how peers influence participation from a social perspective. Moreover, the larger quantitative sample revealed peer relationships have both positive and negative impacts on participation, while the smaller qualitative sample presented a deeper understanding of the positive influences peers have on participation.

Eating behaviours

Quantitative

Hardly ever eating lunch or dinner had a positive association with physical activity participation whereas if the adolescents hardly ever ate breakfast, they were less likely to be participating in physical activity.

Qualitative (Study two & three)

No results

Comparison

It is well-known growing adolescents are dependent on a healthy diet however, these results are suggesting they may not getting the sustenance they require. One explanation for the correlation between not eating lunch and dinner and physical activity participation may be more a characteristic of the adolescents overall socioeconomic status which is causing them to miss mealtimes. Or, they may be purchasing fast food as a substitute for eating lunch or dinner at home.

School

Quantitative

Enjoying school showed a negative relationship in physical activity participation but positive for undertaking active transport (to and from school). However, enjoying school due to school sports showed it was beneficial for physical activity participation, and resulted in lower sedentary (screen time) behaviours.

Qualitative (Study two & three)

Study two and three yielded a variety of results pertaining to the adolescents attending school. These included that the schools may provide a pathway to national disability sporting bodies, and how the schools face daily challenges including the

adolescent with a physical disability into physical activity participation. Moreover, there is a need to train teachers to be able to include the adolescent with a physical disability in any physical activities at school. It was evident the girls with a physical disability were not participating in school team sports.

Comparison

These results show how the able-bodied adolescents benefit from schools in relation to physical activity participation which includes school sports and active transport (to and from school). However, the results further highlight the differences between the groups of adolescents participating in physical activity at school. Whereas the quantitative findings showed the relationship between school and physical activity participation, the qualitative results gave a more in-depth understanding of the challenges schools face engaging adolescents with a physical disability into physical activity.

Family

Quantitative

Having family fun together and choosing physical activity as their parents imposed it, had a positive association with physical activity participation for the adolescent.

Qualitative (Study two & three)

The parents had the potential to encourage or inhibit physical activity. This included multiple factors such as their attitudes to physical activity, their perception of their daughter's role in the family or time versus other family commitments, and transport. In some instances, overprotective parents impeded physical activity. Moreover, the results showed from a cultural perspective, that it is imperative the Pacific family be approached holistically and considerations be given to family dynamics and time within the family themselves, for encouraging physical activity behaviours.

Comparison

Whereas the quantitative results identified two elements pertaining to physical activity participation, the qualitative results yielded an in-depth understanding of the complexity of the family influences for the Pacific female adolescent with a physical disability.

Time

Quantitative

The findings showed that choosing physical activity as it passes the time, and time expended on music, arts and drama, chores, internet and electronic games all had a positive effect on physical activity participation. In comparison, choosing physical activity as passes the time, time on activities, internet and texting all had negative impact on sedentary (screen time) behaviours.

Qualitative (Study two & three)

The qualitative results showed how the adolescent with a physical disability, have different demands on their time. These include medical appointments, and expectations to assist the family. The results also suggested that the girls have difficulty managing their time due to cultural expectations, which competes with time for physical activity and the importance of allowing for these cultural expectations in relation to time. Moreover, they were spending extended time in sedentary (screen time) behaviours.

Comparison

The quantitative results gave an insight into how the Pacific adolescents utilise their time and how this impacts on physical activity and sedentary (screen time) behaviours. The qualitative results showed the challenges the Pacific adolescent with a physical disability endures pertaining to the use of their time and how it competes with physical activity participation.

Church affiliation/culture

Quantitative

Belonging to a church group had a negative impact on undertaking active transport (to and from school) and sedentary (screen time) behaviours.

Qualitative (Study two & three)

The qualitative results revealed a deeper understanding of the importance of church affiliation amongst the participants and moreover, how the church competes with time for physical activity participation. Additionally, the qualitative results showed that there is a negative cultural perception concerning the adolescent girl with a physical disability

Comparison

Both of the results suggest church affiliation is important amongst Pacific adolescents. The results suggest either time competes with attending church or that the adolescents who are attending church have higher sedentary (screen time) behaviours and are less likely to be undertaking active transport (to and from school). The qualitative studies furthermore highlighted the cultural stigma around Pacific adolescents who experience a physical disability.

Physiological and psychological wellbeing

Quantitative

If the adolescents perceived that physical activity, sport, or exercise was important to them, they were over three times more likely to be meeting the physical activity guidelines. Positive social behaviours also had an affirmative impact on physical activity participation.

Using alternative healthcare in the last 12 months, not knowing why they were bullied and feeling safe in their neighbourhood were also associated with meeting the physical activity guidelines. Similarly neighbourhood safety was also associated with undertaking active transport (to and from school). Whereas higher sedentary (screen time) behaviours were associated with emotional, conduct problems and hyperactivity. An injury requiring medical attention was related to lower sedentary (screen time) and higher physical activity participation levels.

Qualitative (Study two & three)

The qualitative results showed that the adolescents had an understanding of how physical activity participation improves their physiological and psychological wellbeing. They conveyed how participation relieved their stress and anger while giving them increased energy and stamina and induced relaxation. They mentioned how participation in physical activity gave them opportunities for socialisation and increased their self-esteem. Moreover, improvements in brain functioning, cardiovascular performance, and muscular systems were noted too.

Comparison

Both studies provided an overall depiction of how the adolescents perceived that participating in physical activity was beneficial for the overall health and wellbeing.

Other factors

Quantitative

Factors such as employment, involvement in volunteer work, or if they had a youth centre in the neighbourhood, and they enjoy competing all had a positive association with physical activity behaviours. Undertaking active transport (to and from school) was also more likely if they enjoyed competing. Choosing physical activity to keep fit was connected to lower sedentary (screen time) behaviours whereas playing on the internet and on their cell phones, showed higher sedentary (screen time) behaviours.

Qualitative (Study two & three)

Enjoyment was noted as a prime motivator to physical activity participation whereas extended hours spent on Facebook or the internet were connected to higher sedentary (screen time) behaviours. Other factors which all impacted on physical activity participation and sedentary behaviours included transport problems, the disability itself, implications of current policy, playing in a mixed gender team, the attitudes of others, access to sports clubs, coaches and role models, gymnasiums and equipment.

Comparison

With the exception of enjoyment and sedentary behaviours such as time spent on the internet, the studies relayed differing factors impacting on the adolescents' participation in physical activity and sedentary behaviours. While the statistical results provided statistical certainty, the qualitative results provided a more in-depth understanding of the results. This included in particular what constitutes enjoyment for the adolescent, and the difficulties they endure as the result of their disability resulting in spending expanded hours on Facebook.

8.4.6 Recommendations

The following recommendations were developed from the study findings and are discussed under the following headings; government initiatives, education, policy, school environment and family.

8.4.7 Government initiatives

Based on the findings from this study, a key recommendation would be to establish a multi-disciplinary working group or advisory panel at government level, tasked with promoting participation in physical activity. This working group or advisory panel should include representatives from all relevant stakeholders including Pacific peoples, Pacific

church representatives, Pacific family members, and physical disabled Pacific youth. The notion is that they would work alongside advisory bodies, advocacy groups, disability organisations, and relevant government bodies.

The primary focus of the working group or advisory panel would be to collaboratively implement initiatives to address the physical activity participation, sedentary behaviours, and health disparities amongst Pacific adolescents and more specifically, Pacific adolescent girls with a physical disability. To be effective, it is essential that the voices of the Pacific people themselves are heard to improve the issues identified in this thesis, which inevitably will safeguard culturally safe, and workable strategies. This working group or advisory panel should develop a national framework to guide physical activity strategies that ensure equal participation for all youth, including Pacific youth with physical disabilities. Once established, it is essential ongoing leadership should include Pacific people who are able to implement policies and strategies and oversee the working of these strategies initially to identify pitfalls and then to monitor the outcomes from the group. Physical activity should be available to all adolescents in New Zealand and campaigns, in the first instance, should raise awareness of physical activity, sedentary behaviours, and active transport. This study identified that the majority of Pacific adolescents and Pacific girls with a physical disability were not participating in physical activity. This finding was comparable to adolescents in a similar sample group from a 2007 study (Helu et al., 2009), suggesting policies currently in place, may not be effective.

It is the norm for Pacific peoples to be actively involved in their communities through strong family ties and church affiliation, and there is evidence to suggest that community-led initiatives may improve nutrition and physical activity including disadvantaged communities (WHO, 2004). Currently, the information relating to improving health outcomes for Pacific people available through mainstream literature for Pacific people is not effective (Statistics New Zealand, 2010). While these initiatives and the following recommendations may be deemed costly, the cost of physical inactivity to New Zealand in 2010 was reported to be \$1.3 billion (Auckland Council, Waikato Regional Council, Wellington Regional Strategy Committee, 2013).

8.4.8 Community level

Despite Government initiatives, the stigma around disability is still prevalent throughout the Pacific community. Counselling for the family should be available in the

community. This may help the family to develop coping strategies for their daughter experiencing a physical disability, and furthermore may encourage approaches to help build resilience and assist in the adolescent with a physical disability to living a fulfilling life. The Pacific adolescent girls with a physical disability and their families are challenged daily, and while participation in physical activity should be prioritised, there may be psychological problems that need to be overcome in the first instance. Community initiatives are needed to address the problem of stigma which include input from the local church groups. It is necessary to aim initiatives at the community level to change the attitudes of some people towards others who experience a physical disability. It is imperative that disability awareness in the community is raised to reduce stigma around disability.

In particular, for the adolescents who may not be able to access gymnasiums or sporting activities, stratagems should be encouraged whereby the adolescent is inspired to participate in activities which may be cost effective, such as walking or swimming. Community initiatives may also include offering the adolescents with a physical disability the use of pedometers or odometers and home-based internet physical activity programmes through subsidised schemes, to encourage physical activity. Moreover, preferences should be given to encourage participation with friends wherever possible.

Pacific leaders and Pacific sport facilitators should be readily available and more transparent in the community, particularly Pacific with a physical disability. All physical activity programmes in the community need to consider preferences and enjoyment, and contemplate financial implications for the adolescent. It would be advantageous to encourage family and church participation or input. Access to facilities and how time may coincide with other commitments, should be well-thought-out.

Local swimming pools should be subsidised, walk ways improved, and Pacific dance encouraged at community level. More Pacific disabled role models in the community who are trained in physical activity facilitation should be encouraged to engage the adolescents into physical activity. Furthermore, gymnasium memberships should be subsidised to encourage physical activity participation and gymnasiums should encourage their coaches and facilitators to be trained to work with adolescents with a physical disability and also modify access, if necessary.

Safe neighbourhoods and walking buses to and from school with older adolescents, parents or other volunteers should be encouraged. Volunteering by older

adolescents to help families who have other commitments, such as other children or work obligations in the community, should be supported.

8.4.9 Education

Adolescent friendly literature in the various Pacific languages should be readily available to the Pacific adolescents and their families. This literature should be available in the community and should include information about physical activity, inactivity, and sedentary behaviours. This may include health benefits, recommended levels of participation, the detrimental health risks of inactivity and sedentary behaviours, and literature relevant to active transport. The literature should also include suggestions on how to accumulate the recommended physical activity levels, including examples of physical activities that will not incur a cost, or that may be incorporated in their daily lives such as undertaking active transport (to and from school) or using stairs.

8.4.10 Policy

Health promotion and prevention agencies should be targeting groups in need and stakeholders should be monitored and consulted regularly to ensure effectiveness. Initial considerations may include what initiatives have been effective and how these can be further developed. It is this candidate's option that necessary support includes education, access, transport, taxi services, equipment, subsidised gymnasiums, and swimming pools, safe neighbourhoods with recreational facilities, trained coaches and financial assistance as well as leadership around physical activity participation. Interventions need to reach minority groups who face socio-economic hardships while considering the barriers and facilitators to physical activity, active transport, and sedentary behaviours. Moreover, prior to removing services such as the taxi services the girls were reliant on, there needs to be more consultation amongst the parties changes to these services will impact on. Finally, the results showed that the adolescents were not eating meals at home and this issue also needs to be considered at a Government policy level.

8.4.11 School environment

Pacific school counsellors, preferably with a disability themselves, should be readily available in schools to guide and support the Pacific adolescent girls with a physical disability. These girls are challenged with momentous daily barriers which they may possibly need to overcome, including stigma as a result of their disability, to ensure they can participate unrestrainedly at school and in the community. As in the quantitative study, it was also identified that through policy changes, schools should extend physical

education to be compulsory up to year 13. Moreover, consideration should be given to the preferred choices of physical activity, such as Pacific dance at school. Additionally, schools should encourage all adolescents to participate cohesively with the focus on enjoyment and participation with friends, as opposed to accomplishment. Physical activity should be readily available prior to school, during lunch-times, after school and during school holidays.

All teachers or coaches should be trained to facilitate physical activity in adolescents with physical disabilities. To encourage partaking in activities with other Pacific girls who experience a physical disability, schools should collaborate with other schools to encourage participation together. These may include the schools hosting monthly physical activity days whereby the Pacific girls with a physical disability travel to schools to participate together. Moreover, this may provide an opportunity for talent spotters from sporting organisations, such as Paralympics, to identify potential athletes. This study has shown that Pacific adolescent girls have a preference for participating with girls of their own ability, and to ensure participation this should be considered. As transportation to activities is problematic for Pacific adolescent girls with a physical disability, the physical activity may be held at their schools prior to or after school to reduce travel. Wherever possible, Pacific adolescent girls with a physical disability should be encouraged to utilise active transport to and from school. These may include the use of encouraging the use of pedometers or odometers (for wheelchair use) which evidence shows inspires physical activity. Neighbourhood safety needs to be initially considered and this may include volunteers, peers, or caregivers arranging walking buses to ensure safety to and from school. As adolescents are particularly self-conscious, it would be preferable to encourage older adolescents to assist wherever possible.

Furthermore, schools should encourage the adolescents to take responsibility for their own participation, incorporating models into the school curriculum on physical activity, active transport, and sedentary behaviours. This may include integrating projects into the school curriculum where the Pacific adolescents themselves devise their own strategies to increase physical activity participation and reduce sedentary behaviours. In turn, this may encourage the adolescents to learn skills to improve and maintain or monitor their own general health and wellbeing. Such considerations should also account for the use of 'time' and Pacific health models.

8.4.12 Family

Another finding from this study highlights the importance, if possible, to engage the family in rather than simply targeting the individual adolescent girl with a physical disability. Initially, consideration should be given to initially identifying the barriers to participation from the family's perspective. This may include holistic family support for the family from an individual to specifically address the issues explicit to that family. These may include access issues, and resources for transport. As the parents may be working in the weekends and after school, volunteers should be encouraged to assist with transport. Furthermore, it is important to educate the family on the benefits of physical activity, and raise awareness of inactivity and sedentary behaviours and the services or physical activities in the community.

To encourage participation, it is important to initially engage the whole family especially in making the parents aware of the benefits of physical activity participation. It is important a relationship is developed ensuring inclusion of the whole family and preference should be given to a Pacific service provider who may alleviate any language barriers and who is culturally aware and sensitive. It is imperative the family be fully consulted as to which ethnic group they prefer to liaise with and their preferences, specific concerns and the barriers should be identified. Any family intervention should be implemented by persons who appreciate Pacific health care models and have an understanding of Pacific culture in relation to health, wellbeing and physical activity, attitudes to physical activity and the use of their time. All families should be educated on what it means for their daughters to experience a physical disability and literature on disability stigmas should be readily made available.

Support to the family should include counselling, education, and financial assistance to permit easier access to physical activity including transportation and subsidies for the use of swimming pools and gymnasiums and physical activities of their choice. Those providing support should have an appreciation that the time required for physical activity participation may compete with other responsibilities for Pacific female adolescent with a physical disability. These may include family commitments, or time constraints, so it is imperative the family should be consulted prior to implementing any recommendations.

Home-based activities should be encouraged particularly if the family is facing financial hardship. Facebook, texts, social media, and internet-based activity

devices/programmes may be used to encourage or monitor participation. It is imperative that the taxi service previously available to the girls with a physical disability is reinstated. Families should be provided with petrol or taxi vouchers and encouraged to organise carpooling. The family unit should be encouraged to participate together in activities which do not incur financial cost and how to meet the physical activity guidelines so that they can accumulate the recommended levels throughout the day. For adolescents who are autonomous from their family, although some of the above recommendations are still applicable, further recommendations may include that they be encouraged to join the social or support groups which are available for Pacific adolescent girls with a physical disability.

8.5 Future research

Based on the findings from this thesis recommendations for future research include the following:

Quantitative randomised controlled trials with family based interventions to increase physical activity and reduce sedentary behaviours would be beneficial to improve health outcomes for Pacific adolescents and adolescent girls with a physical disability. These studies may include holistic family interventions incorporating motivational devices such as pedometers, education, and support. Modifications may include the use of odometers on the adolescent's wheelchair or waterproof pedometers for the adolescent with a physical disability.

Future research could also aim to listen to the voices from the whole family including fathers and siblings, and the church in relation to increasing physical activity and reducing sedentary behaviours. It is imperative the voices of the Pacific adolescent girls and their families are heard and acknowledged prior to implementing future strategies to improve the health and wellbeing outcomes for Pacific peoples. It is of utmost importance that researchers should attempt to communicate and engage the family alongside the Pacific adolescent.

Future research that seeks to identify recommended levels of physical activity participation, sedentary behaviours, and active transport specific to adolescents who experiences a physical disability is recommended. Considerations should include time, intensity, frequency, and long-term effects while determining these recommended levels. While there are guidelines available for adolescents generally, more evidence is necessary

to base recommendations for increasing awareness and promoting healthier physical activity and or sedentary behaviours for this population. In turn, interventions and strategies may be developed based on these recommended guidelines.

Sedentary behaviours are currently emerging as an area of concern whereas, in earlier research, the focus was on increasing physical activity. In particular Pacific adolescent girls who are primarily based in a wheelchair are experiencing high sedentary behaviours and, as a consequence, potential ill health. Any interventions aimed at reducing sedentary behaviours for this population would be recommended and, in particular, for the adolescents who spend extended periods in their wheelchairs. While these adolescents are seated during the day they may still be expending energy and this should be explored further.

Despite some neighbourhoods potentially being unsafe, active transport (to and from school) is becoming more accepted as an avenue to contribute to physical activity participation. The use of pedometers and odometers (placed on the wheelchair) may prove to be an effective intervention to increase undertaking active transport (to and from school). These objective measures may increase awareness for the adolescent themselves, thereby encouraging more active transport (to and from school). Moreover, walking buses, where volunteers, members of the community or older adolescents facilitate the group, may be another intervention to increase active transport (to and from school), particularly for adolescents with a physical disability.

Results from this study showed that the Pacific adolescent girls indicated preferences for physical activities if they had the option to engage in activity with their peers, enjoyed the physical activity and had the option to participate in Pacific dance. Culture, plays an important role in the Pacific adolescent girl's daily life and future research should also aim to explore this factor. Influences such as these, and others as identified in the findings should be considered prior to implementing physical activity interventions to increase physical activity.

This thesis identified home-based physical activities programmes or interventions utilising video games to increase physical activity participation. Home-based interventions may alleviate problems such as access to facilities, and may be an effective long-term strategy for the adolescent to increase physical activity participation. Furthermore, strength-based training or intervention programmes targeting muscle weakness and increasing flexibility would be recommended. However, as outlined in

Chapter Three, previous studies aimed to increase physical activity in similar population groups had problems around research sample sizes and general quality of their designs, and future research needs to be mindful of such matters. Moreover, researchers should be mindful of new devices such as the ActivPal monitor. This accelerometer has the capacity to measure sitting, standing, and steps through its accompanying software (Hinckson, Hopkins, Arminian & Ross, 2013).

This thesis identified multiple areas of concern and various opportunities for the Pacific adolescent with a physical disability, to increase physical activity and reduce sedentariness. Future mixed methods research approaches, including control groups for interventions, would be recommended to address these concerns for the physiological and psychological general health and wellbeing of the adolescents.

8.6 Strengths

This is the first known study to utilise a mixed methods approach to examine physical activity participation and sedentary (screen time) behaviours in Pacific adolescent girls with a physical disability. Furthermore, a notable strength of this study is the findings from the qualitative interviews. These findings provided a perspective from the Pacific adolescent girls with a physical disability themselves, providing an insight into the barriers and facilitators to participation. It is the only known qualitative study to examine these factors. Moreover, the quantitative data from a large sample group, identified associations between Pacific adolescents with and without a physical disability physical activity participation, active transport (to and from school) and sedentary (screen time) behaviours.

The findings from this study on Pacific adolescents and, in particular, Pacific adolescents with a physical disability contribute to the existing literature and provided new perspectives while addressing gaps in the literature. Furthermore, the results from this study are principally pertinent for future interventions to address the health disparities and for future health promotion programmes.

8.7 Limitations of this research

There are some potential weaknesses with the studies reported in this thesis. Attempts have been made, however, to account for these. The subjective cross-sectional survey was reliant on self-reported behaviours from the adolescents' perceptions, at the time they undertook the survey. As a consequence, from the results, the direction of

causation of participation measures cannot be reported. However, participation levels, associations between the measures and demographical data was reported. Longitudinal or objective measures may assume differing results however, the majority of the results were consistent with findings from the literature. It is the norm to utilise a cross-sectional survey with similar sample sizes. Moreover, as also noted in the previous literature, it is the norm for the adolescent to possibly under or over-report activities.

One of the disability questions for the AHRG on long-term disability (over six months) also included sensory impairments (hearing or visual impairment) and learning difficulties (AHRG, 2013). As a result, this may have not precisely measured the activity of adolescents who only experienced a physical disability. As previously discussed, the sedentary measure of screen time may be problematic if the adolescents are not using or accessing these devices due to socioeconomic reasons. Other sedentary behaviours were not measured such as sedentary transport and furthermore, active transport to other destinations was not measured. Some of the results for the Pacific adolescents with a physical disability from the quantitative sample (study 1) were insignificant. As reported in the preceding chapters, sample group sizes for adolescents with a physical disability remain problematic. The majority of participants from both studies were from the Samoan ethnic group. Therefore in comparison to the other Pacific adolescent ethnic groups in New Zealand, the Samoan adolescents' results were over-represented.

As with the nature of qualitative research, the small number of participants may not reflect the experience of other Pacific adolescent girls with a physical disability as the experience is unique to the individual. Furthermore, the data was based on self-reported information from the adolescents, their mothers and service providers or their perception. While an attempt was made to engage all the family members, this proved problematic. As a consequence, not all of the mothers were interviewed and the stories were not captured. The candidate has attempted to identify any potential bias, but acknowledge that, in writing this thesis, any personal assumptions will have influenced the interpretations. The candidate reflected on the findings, analysis, and interpretation with the candidate's supervisors to limit the amount of personal bias.

8.7.1 Current policies this study is pertinent to

After reviewing various policies and emailing relevant governing bodies, the following policies which aim to improve the health outcomes of Pacific people with a physical disability, increase physical activity and promote research in this area, were

deemed to be particularly relevant to this study. This was further confirmed after again emailing the relevant governing bodies. As highlighted in the HRC protocols, it is important findings from this research should be returned to the Pacific community and disseminated wherever possible to advocate for the needs of the Pacific adolescents. These include: Healthy Eating – Healthy Action (MOH, 2004), Faiva Ora: National Pasifika Disability Plan 2010-2013 (MOH 2010). Sport and Recreation - Everyone. Every day (SPARC, n.d.). Sport and Recreation New Zealand's Strategic Plan 2009-2015; Faiva Ora National Pasifika Disability Plan 2010-2013 (MOH 2010). Faiva Ora National Pasifika Disability Plan; January 2014-June 2016 (MOH, n.d.), 'Ala Mo"ui Pathways to Pacific Health and Wellbeing 2010-2014 (MOH, 2010).

8.7.2 Conclusion

The conclusions of this thesis are based upon and drawn from the findings of the quantitative and qualitative data and the pertinent literature. Meeting the physical, activity guidelines is essential for the health and wellbeing of the adolescent and furthermore, sedentary behaviours have been shown to be detrimental to adolescent health. To maintain health, physical activity should be available to all adolescents including Pacific adolescent girls with a physical disability, becoming part of their habitual regime throughout adolescence to adulthood. Moreover, strategies to reduce sedentary behaviours need to be addressed. The study findings support previous evidence that has suggested Pacific adolescents generally are not meeting the physical activity guidelines and their sedentary (screen time) behaviours are too high.

Additionally, the cross-sectional quantitative study identified a variety of associations between physical activity, inactivity, active transport (to and from school), and sedentary (screen time) behaviours. These included socioeconomic factors, eating behaviours, if the adolescents reported that physical activity was an important part of their lives, choosing physical activity as they like competing, spending time on activities, if they felt safe in their neighbourhoods, peers, and not in employment. This study also noted that adolescents were likely to be undertaking active transport (to and from school) if the adolescents reported that they were able to walk to and from school within 30 minutes. Furthermore, feeling safe in their neighbourhood, enjoying school due to other arts or school, peer problems and time socialising with their peers also showed associations with undertaking active transport (to and from school). Choosing physical activity as it passes the time, socialising with friends and those with a disability who

experienced difficulties were also connected to sedentary (screen time) behaviours, as reported by the adolescents.

Moreover, the qualitative study identified multifaceted factors that enabled or impeded physical activity participation and sedentary behaviours for the adolescent girl with a physical disability, providing an in-depth understanding while adding strength and richness to the literature. These included numerous physiological and psychological influences and factors such as enjoyment, physical limitations, or attitudes due to their disability, school, access, peers, parents, transport, policy, coaches, financial restrictions, and sedentary behaviours.

This is the first known mixed methods study in a New Zealand context to investigate the experience of physical activity and sedentary behaviours in Pacific adolescent girls with a physical disability. As the number of girls with physical disability are likely to increase as a result of medical advancements and an increasing population, it is imperative recommendations such as the ones highlighted in this thesis, are observed. This may provide an opportunity for participation in physical activity and reduce sedentary behaviours. Failing to address the girls' health and wellbeing will prolong the current Pacific health disparities with negative social and economic consequences. Pacific adolescents with a physical disability already face serious challenges to their self-esteem and human rights (Bhabha, 2013). This may impair their sense of self-confidence and encumber the positive change from adolescence to adulthood (Bhabha, 2013).

This study gave insight into how healthcare is influenced by cultural values and beliefs and the importance of the approaching and incorporating the family to encourage habitual physical activity participation through culturally safe practice. Holistic views of wellbeing are embraced by Pacific peoples and are central to their culture. It is essential any interventions be personalised to the needs of the Pacific adolescents including incorporating the family as a whole while integrating their levels of social connectedness and church affiliation as a way to promote physical activity. Pacific health model views and values, should be considered including the value and use of time in relation to physical activity participation. In turn, this may encourage engagement while reducing resistance to new strategies.

All future interventions should consider facilitators and barriers when implementing programmes to increase physical activity and reduce sedentary behaviours. Physical activity should be available to Pacific adolescent girls with a physical disability

and considerations should include their preferences which are accessible and enjoyable. While they may have to endure their physical disability throughout their lives, habitual physical activity may improve their general physiological and psychological health and wellbeing through to late adulthood. Moreover, habitual physical activity participation has the potential to alleviate some of the daily challenges they experience. Participation in physical activity and sport is a human right that must be prized and freely available worldwide (United Nations Office for Sport Development and Peace, n.d.).

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Appendix A: Auckland University of Technology ethics approval letter



MEMORANDUM

Auckland University of Technology Ethics Committee (AUTEC)

To: Erica Hinckson
From: **Dr Rosemary Godbold** Executive Secretary, AUTEC
Date: 11 November 2011
Subject: Ethics Application Number 11/172 **Pacific Island adolescents with a physical disability: Health and wellbeing through physical activity.**

Dear Erica

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 12 September 2011 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 28 November 2011.

Your ethics application is approved for a period of three years until 11 November 2014.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 11 November 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 11 November 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 6902.

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely
Dr Rosemary Godbold

**Executive Secretary
Auckland University of Technology Ethics Committee**

Appendix B: Pilot study for quantitative study (prior to deciding to use the AHRG data) (Chapter 5)

Prior to applying to access the data from the Adolescent Health Research Group, the initial intention was to use a survey the candidate had accessed and gained permission to use from Australia and as a consequence, completed a pilot study.

The purpose of the pilot study was to quantify physical activity, health, and wellbeing levels in Pacific adolescent boys and girls with and without a physical disability with the aim of piloting the survey, prior to study one. While the sample size was not big enough to draw any conclusions, it gave a chance to familiarise the candidate further with the specific research questions. In addition, with the intention of participant recruitment, the candidate consulted a variety of government bodies, providers of disability services and schools. This provided an opportunity to meet a variety of Pacific people in the community allowing the candidate to discuss the research with them. As the questions in the pilot were either similar or the same as the (AHRG) questionnaire, it was advantageous having this familiarity with the questions through the data analysis phase of study. Furthermore, the candidate had the opportunity to discuss the survey questions with the participants, and felt confident that the AHRG survey matched the aims for study one.

Sample size-pilot study

All participants were aged between 12 and 24 years of age and were Pacific adolescent girls or boys with and without a physical disability, and who had gained parental or caregiver consent.

Survey-pilot study

The purpose of the pilot study was to quantify physical activity, health, and wellbeing levels in Pacific adolescent boys and girls with and without a physical disability with the aim of piloting the survey, prior to study one. The amended Physical Activity Questionnaire for Adolescents (PAQ-A) was used to collect data from participants (Maher et al., 2007). Furthermore, it has been found to be valid and reliable (Maher et al., 2007; Kowalski, Crocker & Kowalski, 2007). Two tick boxes were added to the survey whereby participants could identify their ethnic group and also if they wished to be contacted to be offered the opportunity to participate in further studies. The survey was divided into five sections to identify specific facts about the participant, general

health and wellbeing, health issues, activities including the use of technology and physical activity activities. For purposes of providing feedback on the survey, the survey also asked the participant to review this data and had five response options from poor to excellence.

Procedure-pilot study

After ethics approval and consultation with the community, including Government bodies, parents or caregivers, twelve participants were recruited through contacts at AUT University and schools. Purposive sampling ensured the group of Pacific participants were selected with two experiencing a physical disability and others from different ethnic groups.

Following discussions with potential contacts and parents or caregivers, a formal invitation by means of an invitation sheet, was given to the potential caregivers and participants explaining the research process and inviting them to participate. They were advised that if they were interested, they should notify the candidate by phone or e-mail. During this process the candidate was conscious of keeping the language to an age-appropriate level, and stressing that they are under no obligation at all, and will be free to withdraw at any stage, should they wish. It was also important that they and their caregivers should be able to fill out the consent forms satisfactorily and be willing to complete the survey. Parental consent was also required for participation, prior to the commencement if the participants were under 16 years of age. In addition, participant recruitment for the pilot study included four information sessions and a formal letter which was sent to physically disabled participants who had already participated in interviews for study two. The information sessions were organised by Pacific researchers at AUT University.

Participants who met the criteria, were invited to participate in the study after been allocated time to ask any questions. The data collection was by means of completing a hard copy of the survey or via survey monkey. Participants were reminded that they did not have to complete all the questions in the survey and that the information was confidential.

Results from the pilot study

The pilot study validated the use of the questionnaire and the adolescents showed a preference for completing the survey via survey monkey. Two of the participants recorded that the survey was too long.

Appendix C: List of schools/Universities and disability services contacted for participants during 2012 (Chapter 5, 6 & 7)

DATE	SCHOOL		OUTCOME
January	[REDACTED]	Visit to school nurse who approached Principal on my behalf. After considering the project, the Principal advised that they were concerned that Auckland University were already collecting similar data.	Visits to school
February	[REDACTED]	Pilot study for study one	Collected data from ten adolescent participants for study one
May August	[REDACTED]	3x visits to school After considering my invitation to recruit participants, the Principal was concerned that study one was too similar to a study they were already committed to through Auckland University. After reading [REDACTED] letter I was approached by a teacher who had a participant who was willing to participate in study two. After further emails, the teacher ([REDACTED]) then advised that the participant in question was not Pacific as she had thought.	Visits to school
June	[REDACTED]	I had three meetings with a teacher from [REDACTED] who fully supported the project and was willing to help with data collection. I attempted to make a time with her to further discuss when data collection would occur but she is still to respond to my emails. Emailed at a later date to say Auckland University survey students.	Visits to school
June	[REDACTED]	Still waiting for a response from my email.	No response
June	[REDACTED]	Visited school for data collection for study one and I was advised that the school was very supportive however, they were already involved in another project which was similar. For study two, I enquired about contacting students through my initial contact and as the Deputy Principal suggested he would like to assist, I sent invitations to the school as they potentially had three participants who may fit the criteria. After sending the invitations, I sent up a follow up email – no response.	Visits to school Invitations sent for study two- follow up emails
July	[REDACTED]	Deputy Principal advised they are already taking part in several other initiatives and they don't want to further distract them from their studies at this stage.	Possible future contact?

July	[REDACTED]	Approached special unit for study two and had a meeting [REDACTED] [REDACTED]g the Principal, my invitation was passed to a mother of a participant who in turn contacted me. [REDACTED] also sent me follow up emails with potential further contacts.	Emails and meeting Follow up emails for contacts First interview for study two.
August	[REDACTED]	Contacted the Principal and she was very receptive to a meeting. Participants did not meet entry criteria for study one or two (I did outline criteria in the initial email).	Meeting
August	[REDACTED]	Email and no response for study one.	
August	[REDACTED]	Email and no response for study one.	
August	[REDACTED]	Email and no response for study one.	
	[REDACTED]	No response	
August	[REDACTED]	Emailed and they replied that not at this point.	
August	[REDACTED]	Emailed and they replied that they had other commitments.	
August	[REDACTED]	Emailed and replied that they do not have any participants that meet criteria.	
August	[REDACTED]	Emailed and they emailed back that they did not have participants that would meet entry criteria.	
August	[REDACTED]	Emailed and no response.	
August	[REDACTED]	Information sessions and data collection via survey monkey in conjunction [REDACTED] [REDACTED]	Collection for study one (pilot)
August	[REDACTED]	Information sessions and data collection via survey monkey in conjunction with [REDACTED].	Collection for study one (pilot)

Disability organisations and Ministry of Health (disability sector)

Month	Organisation	Emailed	Response
19 June	[REDACTED]	Emailed for contacts/participants	No response
31 July	[REDACTED]	Emailed Jo for contacts to participants however, she was not aware of any that would fit the criteria.	I will refer to an earlier email she has given me on possible contacts for Disability Services.
July	[REDACTED]	Contacts and suggestions on how to access further data	Emailed [REDACTED]

August	[REDACTED]	[REDACTED] suggested I ask [REDACTED] to include some information in their newsletter.	[REDACTED] NZ Dance News newsletter and I had a teacher from [REDACTED] Grammar contact me however, the participant did not meet the entry criteria.
August	[REDACTED]	Sending out information in their newsletter via Lucy Green.	No response (not sure if and when info was included)
August	[REDACTED] [REDACTED] [REDACTED]	Email and no response	
August	[REDACTED] [REDACTED]	Emailed and said had no contacts (they only work with people with intellectual disabilities) but she would refer me herself to [REDACTED] Trust and [REDACTED].	No response from [REDACTED] [REDACTED].
August	[REDACTED]	Emailed me with varying contacts	Followed up with more emails.
August	[REDACTED]		No response
9 August	[REDACTED]		No response
16 August	[REDACTED]	Emailed me back and suggested I contact [REDACTED], Disability Support Services	Contact was made with [REDACTED] and meetings followed with [REDACTED].
22 August	[REDACTED]	Emails and meetings around introducing me to [REDACTED] which is an organisation which; .s to provide activities for adolescent girls and boys with physical disabilities.	Contacts for study 2 [REDACTED] seem particularly keen to ensure this project succeeds and have both proven to be very helpful and supportive.
August	[REDACTED]		Info sessions and contact for participants study two
September	[REDACTED]	Meeting to clarify/discuss the project and study two and to discuss info sessions and recruitment	
September	[REDACTED]	Two sessions at [REDACTED] informing potential participants of study two	Two interviews Contacts and rapport for future participants

Auckland University and study one data collection

<p>November/December 2011- 24 April, 2012</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Emails discussing access to their data and my project</p>	<p>Contacts for accessing data collection and a meeting at Auckland University for further discussions</p> <p>[REDACTED] suggested I contact [REDACTED]</p>
<p>28 April to August</p>	<p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Emails attempting to find a meeting time</p>	<p>Phone call [REDACTED] as she could not meet. Discussions around the project and a suggestion that I contact [REDACTED]</p>
<p>August/September</p>	<p>[REDACTED]</p>	<p>Emails and phone conversation to arrange a meeting in Dunedin</p>	<p>[REDACTED] is in charge of the data for the Pacific adolescents from the Youth'12 study and after discussions she has advised that if I meet with her again; she will assist in helping me to apply for the data relevant to my project.</p>

Appendix D: Quantitative study one: study objectives and full list of variables (Chapter 5).

STUDY OBJECTIVES

- A: What are the demographic characteristics of Pacific adolescent boys and girls to including age, sex, and ethnicity?
- B: How active are Pacific adolescents with a physical disability compared to those without a physical disability, in terms of frequency of participation and sedentary behaviours?
- C: What factors enable or inhibit participation in physical activity for Pacific adolescents including peers, their immediate environments, and their physiological and psychological health and wellbeing.

DEMOGRAPHY & ETHNICITY	STUDY OBJECTIVE	RESEARCH QUESTION
How old are you? Responses Under 12 years 12 13 14 15 16 17 18 19 Over 19 years	1	A
What sex are you? Responses Male Female	1	A
Where were you born? Responses New Zealand Australia Samoa Cook Islands Fiji Tonga United Kingdom Niue China (People's Republic of) South Africa Korea Taiwan	1	A

<p>Hong Kong India Sri Lanka Malaysia Indonesia Japan Europe Middle East North America South America Africa Another country</p>		
<p>Which ethnic group do you belong to?</p> <p>Responses New Zealand European English Australian Dutch Other European Māori Samoan Cook Island Māori Tongan Niuean Tokelauan Fijian Other Pacific Peoples Filipino Chinese Indian Japanese Korean Cambodian Other Asian Middle Eastern Latin American African Other</p>	<p>1</p>	<p>A</p>

HOME/SCHOOL/BULLYING	STUDY OBJECTIVE	RESEARCH QUESTION
<p>How many people, including you, usually live in your main or only home?</p> <p>Responses One - I live by myself 2 3 4 5 6 7 8 9 10 11 12 13 14 15-19 20 or more</p>	3	C
<p>How much do you and your family have fun together?</p> <p>Responses A lot Often Some Not at all</p>	3	C
<p>What Year (form) are you at school?</p> <p>Responses Year 9 (form 3) Year 10 (form 4) Year 11 (form 5) Year 12 (form 6) Year 13 (form 7)</p>	3	C
<p>How do you feel about school?</p> <p>Responses I like school a lot I like school a bit It's OK I don't like school I don't like school at all</p>	3	C
<p>What do you most enjoy about school?</p> <p>Responses Hanging out with friends Doing school work Sports Kapahaka or cultural activities Other arts and/or music</p>	3	C

Being away from home Some other reason I don't enjoy school at all		
Do you feel like you are part of your school? Responses Yes No	3	C
Do you belong to any school sports teams? Responses Yes No	3	C
Do you belong to any clubs or teams at school other than sports? Responses Yes No	3	C
Do you do activities to help others at school? Responses Yes No	3	C
In the last 12 months how often have you been bullied in school? Responses I haven't been bullied in school I haven't been bullied in the past 12 months It has happened once or twice About once a week Several times a week Most days	3	C
What was the reason you were bullied? I was bullied because of my ethnic group or culture I was bullied because of my religion I was bullied because of my size or body shape I was bullied because I am gay or because people thought I was gay I was bullied because I am smaller than the other people I don't know why I was bullied Responses No Yes	3	C

GENERAL HEALTH/HEALTHCARE	STUDY OBJECTIVE	RESEARCH QUESTION
<p>In general how would you say your health is?</p> <p>Responses Excellent Very good Good Fair Poor</p>	4	C
<p>Do you have any long-term health problems or conditions?</p> <p>Responses Yes No I don't know</p>	4	C
<p>Does this health problem or condition cause you difficulty with, or stop you doing.</p> <p>Everyday activities that other people your age can usually do Communicating, talking, mixing with others or socialising Any other activity that people your age can usually do No difficulty with any of these</p> <p>Responses No Yes</p>	4	B
<p>Do you have any long-term disability (lasting 6 months or more)</p> <p>Responses Yes No I don't know</p>	4	C
<p>Does this disability cause you difficulty with, or stop you doing...</p> <p>Everyday activities that other people your age can usually do Communicating, talking, mixing with others or socialising Any other activity that people your age can usually do No difficulty with any of these</p> <p>Responses No Yes</p>	4	B

<p>Where do you usually go for health care?</p> <p>Responses Family doctor, medical centre or GP clinic School health clinic An after-hours or 24-hour accident and medical centre The hospital accident and emergency Youth centre/youth one stop shop A traditional healer (e.g. tohunga, fofo) An alternative health worker (e.g. naturopath, homeopath, acupuncturist, herbalist, aromatherapist) Other I don't go anywhere for health care</p>	4	C
<p>When was the last time you went for health care?</p> <p>Responses 0 - 12 months ago 12 - 24 months ago More than 2 years ago</p>	4	C
<p>Which of the following places have you used for health care in the last 12 months</p> <p>Family doctor, medical centre or GP clinic School health clinic An after-hours or 24-hour accident and medical centre The hospital accident and emergency Youth centre/youth one stop shop Family planning or sexual health clinic A traditional healer (e.g. tohunga, fofo) An alternative health worker (e.g. naturopath, homeopath, acupuncturist, herbalist, aromatherapist) An alcohol or drug service Pharmacy or chemist shop Other I don't go anywhere for health care</p> <p>Responses No Yes</p>	4	C
<p>In the last 12 months how many times have you had an injury</p>	4	C

<p>that resulted in you needing to see a doctor, nurse, or physio?</p> <p>Responses Not at all Once Two or three times Four or more times</p>		
<p>In the last 12 months, which of the following caused the injury</p> <p>Responses Road traffic crash (for example, while in a motor vehicle, walking, or cycling) Fall Near drowning Work-related injury Sport or recreation related injury Assault (someone else hurt you on purpose) Attempt to harm yourself Other</p>	4	C

Study questions and objectives

EMOTIONAL HEALTH/FOOD AND ACTIVITIES	STUDY OBJECTIVE	RESEARCH QUESTION
<p>Are you happy or satisfied with your life?</p> <p>Responses Very happy/satisfied It's okay Not very happy or satisfied Not at all happy or satisfied</p>	4	C
<p>Strengths and Difficulties: Quest. Over the last six months...</p> <p>I try to be nice to people, I care about their feelings I am restless, I cannot stay still for long I get a lot of headaches, stomach-aches or sickness</p>	4	C

<p>I usually share with others, for example CDs, games, food</p> <p>I get very angry and often lose my temper</p> <p>I would rather be alone than with people of my age</p> <p>I usually do as I am told</p> <p>I worry a lot</p> <p>I am helpful if someone is hurt, upset or feeling ill</p> <p>I am constantly fidgeting or squirming</p> <p>I have one good friend or more</p> <p>I fight a lot. I can make other people do what I want</p> <p>I am often unhappy, depressed or tearful</p> <p>Other people my age generally like me</p> <p>I am easily distracted, I find it difficult to concentrate</p> <p>I am nervous in new situations.</p> <p>I easily lose confidence</p> <p>I am kind to younger children</p> <p>I am often accused of lying or cheating</p> <p>Other children or young people pick on me or bully me</p> <p>I often volunteer to help others</p> <p>I think before I do things</p> <p>I take things that are not mine from home, school or elsewhere</p> <p>I get along better with adults than people my own age</p> <p>I have many fears, I am easily scared</p> <p>I finish the work I am doing, my attention span is good</p> <p>Responses Not true Somewhat true Certainly true</p>		
<p>How often do you usually eat these meals?</p> <p>Breakfast</p> <p>Lunch</p>	4	C

Dinner Responses Always Sometimes Hardly ever		
Thinking about your weight, are you... Responses Very underweight Somewhat underweight About the right weight Somewhat overweight Very overweight	4	C
At this time how happy are you with your weight? Responses Very happy Happy Okay Unhappy Very unhappy	4	C
SPORT AND PHYSICAL ACTIVITIES	STUDY OBJECTIVE	RESEARCH QUESTION
Is physical activity, sport/exercise an important part of your life? Responses Not really Sort of Definitely	3	B
Why do you choose to do physical activity, sport or exercise? It's fun It passes the time I get to hang out with friends I'm good at it I like competing I like winning I have to (my parents or school make me) To keep fit Other Responses	3	B

No Yes		
<p>In the last 7 days, how many times have you done any exercise or activity that makes you sweat or breathe hard, or gets your heart rate up?</p> <p>Responses I don't exercise Not in the last 7 days 1 time 2 times 3 times 4 times 5 times 6 times 7 or more times</p>	2	B
<p>The last time you did this how long did you do this physical activity for?</p> <p>Responses Up to 10 min 11 - 20 min 21 - 30 min 31 - 40 min 41 - 50 min 51 - 60 min 1 - 2 hours 2 hours or more</p>	2	B
<p>During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?</p> <p>Responses 0 days 1 day 2 days 3 days 4 days 5 days 6 days 7 days</p>	2	B
<p>Over the last 7 days did you go to a PE class?</p> <p>Responses Yes No</p>	3	B

<p>How many times in the past week did you walk, bike or skate to or from school?</p> <p>Responses None 1-2 times 3-5 times 6-8 times 9-10 times</p>	3	B
<p>About how long does it usually take (or would it take) to walk, bike or skate to or from school?</p> <p>Responses Less than 10 mins 11 - 20 mins 21 - 30 mins 31 - 40 mins 41 mins or more</p>	3	B
<p>How do you usually travel to school?</p> <p>Responses Walking Driver of a car/van Passenger of a car/van Motorcycle/moped Bicycle Bus Train/rail Other</p>	3	B
<p>What are the MAIN reasons you use this method of travel to school?</p> <p>School is close/nearby/not far away Most convenient Travel with friends Safest method Quickest method Only method available Too far to walk No public transport Public transport unsuitable Good exercise/fresh air No car/motor vehicle available Laziness Too much to carry Parking problems Costs involved Other</p>		B

<p>Responses No Yes</p>		
<p>Do you take part in sport teams or clubs outside of school time (before/after school or in the weekend)?</p> <p>Responses No Yes, less than once a week Yes, 1-2 times a week Yes, 3-4 times a week Yes, 5 or more times a week</p>	3	B
<p>Why aren't you involved in any sports teams or clubs?</p> <p>It costs too much I'm not good enough at sport I'm not interested It takes too much time None of my friends are in sports The sports I'm interested in aren't available Can't get there I would feel shy, nervous or embarrassed I have other responsibilities My parents wouldn't let me Other I don't know There are no sports facilities in my area</p> <p>Responses No Yes</p>	3	B
<p>How much time do you spend doing these activities each day?</p> <p>Homework Read for fun (not for school or work) Do music, arts, dance or drama Watch TV</p>	3	B

<p>Do chores or help your mum, dad or others in the family</p> <p>Texting (sending messages by cellphone)</p> <p>Hang out at home not doing much</p> <p>Hang out with friends</p> <p>Look after younger family members (babysitting)</p> <p>Play computer games, or electronic games like Xbox, hand-helds, or PlayStation</p> <p>Playtoys(physically interactive computer games like Wii)</p> <p>Go on the Internet</p> <p>Responses</p> <p>None</p> <p>Less than 1 hour</p> <p>1 to 2 hours</p> <p>3 to 4 hours</p> <p>5 hours or more</p>		
<p>What do you do on the internet?</p> <p>Chat or talk to others</p> <p>School work</p> <p>Find out about music, sport or hobbies or interests</p> <p>Look at things to buy or sell</p> <p>Play games by myself</p> <p>Play games with others on the internet</p> <p>Look at porn or sex sites</p> <p>Gamble or bet money</p> <p>Do my own website or blog</p> <p>Look up health, dieting or physical fitness information</p> <p>Look up about a health topic that's hard to talk about like drug use, sexual health, or depression</p> <p>Responses</p> <p>No</p> <p>Yes</p>	3	B
<p>Do you access the internet in private?</p> <p>Responses</p>	3	B

Yes No		
Are you worried by how much you use the Internet? Responses Yes No	3	B
Does your family have rules around internet use? Responses Yes No	3	B
Do you use a cell phone? Responses Yes No	3	B
About how many text messages would you send and receive from friends each day? Responses None 1 to 5 6 to 10 11 to 20 21 to 30 31 to 40 More than 40	3	B

EMPLOYMENT/FRIENDS NEIGHBOURHOOD		
Over the last 12 months (during the school term only) have you worked for money or had a paid job? (i.e. paper run) Yes, Yes, I worked during the school holidays Yes, I sometimes worked during the school term No, I didn't work for pay in the last year Responses No Yes	3	C
How good are you at making and keeping friends? Responses Not so good Okay Very good	4	C
How much do you feel your friends care about you? Responses Not at all Some	4	C

A lot I don't know		
Do you belong to a group, club, or team which is not run by your school? A church group A sports team or group A cultural group An environment organisation (e.g. Greenpeace) A volunteer group who help people with disabilities or in hospital A volunteer group involved with young people, e.g. Youthline Another type of group or club None Responses No Yes	3	B
Do you feel safe in your neighbourhood? Responses All the time Sometimes Not often Never	3	C
What things are there to do in the area where you live that you can walk to from home? A park A youth centre The movies A skateboard ramp A basketball court or hoop A sports field A swimming pool or place to go swimming A gym A bike track A place to play video games Other There is nothing to do around where I live Responses No Yes	3	C

Study questions and objectives

Appendix E: Participant forms study two/three (Chapters 6 & 7).

Participant Information Sheet



Kia ora, Kia orana, Ia orana, fakalofalahi atu, malo e lelei, namaste, bula, kam na mauri, talofa lava, warm Pacific greetings, hello

Adolescent copy/family – Study two

Date Information Sheet Produced: 26/8/11

Project Title

Pacific adolescent girls with a physical disability: Health and wellbeing through physical activity.

An Invitation

My name is Caroline Dickson and I am working toward a Doctor of Philosophy (PhD) at AUT University.

This is an invitation for you and your family to consider to taking part in a research project looking at how physically disabled adolescents experience physical disability, and how it may affect their health and wellbeing. We also we would like to hear the voices/views of the family.

The reason we are giving you and your family an information sheet is to allow you to find out what the research project involves and also allows you to decide if you would like to be part of it. We thank you in advance for thinking about joining in this research project and encourage you to read the following information carefully to make sure you and your family want to be involved. For you to take part you must meet all of the following requirements:

1. Be Pacific, female and aged between 13-24 years and be able or willing to be interviewed with your Pacific family or caregivers.
2. New Zealand born.
3. Have a neuromuscular physical disability. It must not include a sensory or intellectual disability.

What is the purpose of this research?

We are interested in finding out the experience of physical activity for you and hope to identify the factors/issues that affect participation or non participation. We also want to talk to you and your family to hear how they feel about this issue too.

How was I identified and why am I being invited to participate in this research?

We have asked people at your school, and they suggested you and your family may like to take part in this project and for you to take the information sheets home to your parents or care givers to read and send back signed, if they agree to you participating.

What will happen in this research?

We will ask you and your family to get back to us with any questions you may have and if you feel comfortable with this research project, and we will ask you and your family to return the consent form. If you are happy to, we will then be asking you to be part of a group where we ask questions relating to how you feel about physical activity. The time and place will be determined after we find out a suitable time and place that is convenient to you and your family. You and your family will attend the group together. Also, if you are happy to and your parents are ok with it, we will be offering you some extra time on your own for up to 30 minutes to talk to us and suggest you have an Aunt or brother or sister with you.

What are the discomforts and risks?

We do not expect any discomfort or risks. You and your family may withdraw from the research at any time.

What are the benefits?

The information gathered from this research will be used to inform researchers and other health professionals on levels of participation in physical activity and health. The information we gather may also be used for planning an intervention programme for Pacific adolescents with a physical disability.

What compensation is available for injury or negligence?

In the unlikely event of a physical injury as a result of your participation in this study, rehabilitation and compensation for injury by accident may be available from the Accident Compensation Corporation, providing the incident details satisfy the requirements of the law and the Corporation's regulations.

How will my privacy be protected?

All personal information, questions, answers, and results from this study will be treated as private or confidential and will be handled in accordance with the principles of the Privacy Act 1993. The identity of all the adolescents is protected, kept private, and kept in a locked cabinet. Any information stored on a computer is also kept private or confidential.

What are the requirements of the school?

If you agree to take part, you will be provided with information sheets and consent/assent forms to take home. We will also be have a meeting that you may want to attend if you wish to further explain the study and answer any questions you may have. Families will have a two week opportunity to look over the information packs and get back to the researcher at their convenience if they meet the entry criteria.

What are the costs of participating in this research?

There are no monetary costs to you or your parents or family in this research. It is expected that the interviews will take 60-90 minutes.

What opportunity do I have to consider this invitation?

We will please ask to think about this invitation and get back to us within two weeks.

How do I agree to participate in this research?

If you or your family consent, you then need to sign the form we have attached. If you are under 16 years of age, then your parents or care givers will also be asked to sign a form.

Will I receive feedback on the results of this research?

Your parents or giver givers will receive a short report within six weeks and at the end of the study a full report.

What do I do if I have concerns or need any further information about this research?

Any concerns regarding the nature of this project should be notified in the first instance to Caroline Dickson, cdickson@aut.ac.nz, 09 9219999 ext. 7754.

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Madeline Banda, madeline.banda@aut.ac.nz, 921 9999 ext. 8044.

. Principal Investigator Contact Details:

Caroline Dickson
Faculty of Health & Environmental Sciences
AUT University, North Shore Campus
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Supervisor:

Peggy Fairbairn-Dunlop
Professor of Pacific Studies
pfairbai@aut.ac.nz

Erica Hinckson
Head of Research
School of Sport & Recreation
Erica.hinckson@aut.ac.nz

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, AUTEK Reference number 11/172.

Parent/Guardian Consent Form

For use in conjunction with either an appropriate Assent Form when legal minors (people under 16 years) are participants in the research or a Consent Form when involving participants aged 16-20 years whose age makes them vulnerable as concerns consent.



Project title: Pacific Island adolescent girls with a physical disability: Health wellbeing through physical activity.

Project Supervisor: Dr Erica Hinckson
Researcher: Caroline Dickson

- I have read and understood the information provided about this research project in the Information Sheet dated 26/8/11.
- I have had an opportunity to ask questions and to have them answered.
- I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed. I also understand that the adolescent girls will have the option to speak on her own for up to thirty minutes in the company of an aunt or sister/brother.
- I understand that I may withdraw my child/children and/or myself or any information that we have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If my child/children and/or I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I agree to my child/children taking part in this research.
- I wish to receive a copy of the report from the research (please tick one):
Yes No

Child/children's name/s :

Parent/Guardian's signature:

Parent/Guardian's name:

Parent/Guardian's Contact Details (if appropriate):
.....
.....
.....
.....

Date:

Approved by the Auckland University of Technology Ethics Committee on *type the date on which the final approval was granted* AUTEK Reference number 11/172. Note: The Participant should retain a copy of this form.



Assent Form

For completion by legal minors (people aged under 16 years).
This must be accompanied by a Consent Form. When pre-schoolers are involved, please use the special Children's Information Sheet in the Ethics Knowledge Base.



Project title: Pacific Island adolescent girls with a physical disability: Health wellbeing through physical activity.

Project Supervisor: Dr Erica Hinckson

Researcher: Caroline Dickson

- I have read and understood the sheet telling me what will happen in this study and why it is important.
- I have been able to ask questions and to have them answered.
- I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed. I also understand that I will have the option to speak on my own for up to thirty minutes in the company of an aunt or sister/brother.
- I understand that while the information is being collected, I can stop being part of this study whenever I want and that it is perfectly ok for me to do this.
- If I stop being part of the study, I understand that all information about me, including the recordings or any part of them that include me, will be destroyed.
- I agree to take part in this research.

Participant's signature:

.....

Participant's name:

.....

Participant Contact Details (if appropriate):

.....
.....
.....
.....

Date:

Approved by the Auckland University of Technology Ethics Committee on *type the date on which the final approval was granted* AUTEK Reference number 11/172. Note: The Participant should retain a copy of this form.

Appendix F: Interview guides Study two and three (Chapter 6 & 7).

INTERVIEW SCHEDULE (Family interviews) STUDY TWO

Personal introduction

Purpose statement

Statement on confidentiality (Any further questions around information sheets, forms signed)

Request permission to tape

Explanation of why participant invited and procedure of interview and can stop at any time etc.

Family

Size, place of girl, other

1 FAMILY PERCEPTIONS

1. Of value of sports (prob first ...)

How much time does your family attempt to get to ... become involved in..

Does your family enjoy..

2. physical disability -

3. having a physical disability and engaging in physical activity

How do you think ... having a disability effects participation...

4. Did you see the Special Olympics. What did you think of those ...

2 SPORTS PARTICIPATION

1. What PA/ sports activity to all family members engage in
2. What are your perceptions of pa
3. As a child did your family encourage you to participate
4. Does xx join you in these (never, sometimes, and always)
5. General view of physical activity/sports (Pacific and etc)

Participant

1. Tell me about the last time you participated in physical activity or sport
What PA/sports do you like best? (reasons for answer)

What PA/sports do you like least? (reasons)

Who do you mainly mix with (at home, neighbourhood, school)

2. Participation

How many times a week are you involved in PA/sports and what do you do?

Do you have any training with..... and how often?

What about last month?/year?

How does Make you feel?

Physically stronger due to participation...

How do you get to and from school..

Tell me about what you do for relaxation or when you are not involved in PA/sports

How much of the time do you watch TV or play on the computer?

Have you tried dancing/swimming

4. SPORTS SPECIFIC

1. Do you like doing sports with others or individual sports (reasons for answer)

2. Were these 'mainstream' or 'special specific' sports

3. How did you find about it?

Have you ever joined mainstream? (Get another word for mainstream)

If so why, if not why not

4. What specific activities do they engage in

Who ran these and where, how did you get there etc., did you go with family or did they

How did you find out about them?

How did you hear about these activities?

Did you have to go out yourself and try to see what was available?

5. Tell me about your best sporting moment?

6. Would you do more if you could?

4 PACIFIC FOR PACIFIC OR MAINSTREAM?

Do you know about any of these ...? Tell me...

Which ones do you know about?

Do your church/ club run any?

Tell me about [REDACTED] and their activities

5 FACTORS INFLUENCING PARTICIPATION

Personal/family

What factors influence your daughter/ you (give me three?)

Tell me about...

Facilities/Expense/Access/Time-

Would you like to do more? Which, when?

2 Culture specific

Are there any cultural factors that influence your daughter/ you doing sports

3 Home country

If you were back in the home country etc ... would it be easier to you to take your daughter to sports etc

Why

Why not (attitudes

INTERVIEW SCHEDULE PROVIDERS (Study three)
PACIFIC ADOLESCENTS WITH A PHYSICAL DISABILITY

PROVIDER QUESTIONS (Relative to Pacific adolescents)

Organisation specific

1. Type of services organisation provides to users
2. Staff – number
3. Provide to a) which ethnic groups c) ages d) types of disability
4. Area they service
5. Length of time they have provided services to the community
6. Structure of the organisation
7. Where they get their funding from

Types of services

8. The services they provide to service users- General disability? Physical Activity?
9. How do users gain access to services and who refers them
10. Service used primarily by service users
11. How/why was this developed
12. Retention/drop out of service users
13. If/or where do you refer them to if necessary
14. Future plans

Possible challenges providers experience

15. Do you feel more services or service providers are needed
16. If yes, why
17. What type of training do service providers receive
18. Do the service providers receive enough support/resources
19. Is there enough awareness of your organisation in our community
20. Where are your services advertised
21. Your views on the awareness of service providers from the users and the community
22. Do you feel they are delivered comprehensively
23. Are you able to co-ordinate your services with other providers

Services your organisation offers

1. What services do you find are the most and least liked by the users
2. Which particular services do the users find the most beneficial
3. How does your organisation decide on which specific services to offer
4. What are their parents saying in terms of access to services
5. Give me three positive/negative aspects about providing a service in this organisation

PACIFIC SERVICE USERS PERSPECTIVES (FROM ORGANISATION'S VIEW)

Quality/Influencing factors

1. Their view on quality/quantity of services
2. Their experience of services
3. Factors influencing access from the users' view
 - Time
 - . Financial
 - Transport
 - Cultural
 - Family
 - Other

Access to services

1. Users' knowledge of services available for their disability
2. Their view on barriers to access
3. Their view on facilitators or enablers to access
4. How do they access your service and how do they get referred
5. How often do they access the service
6. What is the process once they contact you
7. What is the timeframe once they have contacted you
8. If they should experience difficulties in access, what is the procedure they need to adhere to resolve the difficulty
9. Is it your understanding that the users of your services, are benefiting from your services
10. Do you think the services provided, are making an impact on improving their lives
11. Are you able to provide specific examples

Physical activity specific

Participation

1. What type of physical activities are there available for physical disabled adolescent
2. How often are these activities run
3. Are there support services in place specially to allow them to access physical activity ie transport/financial (uniform)/support at facility
4. What type of training do people facilitating physical activity for physically disabled adolescents require
5. Why are there not more facilities such as wheelchair basketball available to users all around Auckland
6. Are there activities specific to gender/cultural
7. How do service users access or find out about the physical activity services
8. Your perception of barriers/facilitators to physically disabled adolescents participating in physical activity services

Funding

1. I have heard that some users of services may have to attend an initial session to qualify for subsequent training sessions, is this your understanding too
2. Is there a lack of funding/financial support for physical activity services
3. How is the funding for physical activity allocated, and is this specific on the disability
4. Who is responsible for allocating the funding

Appendix G: Summary of Qualitative findings Study two and three (Chapter 6 & 7)

Study two (Pacific adolescent girls with a physical disability/mothers)		
Physical activity theme/ classification	Description of classification	Example of quote from script relating to classification and theme
<i>PA Participation Enablers</i>		
Emotion of fun or enjoyment	Fun or enjoyment was a primary motivator to engagement in physical activity.	<ul style="list-style-type: none"> • I need something that’s really fun and exciting and, something different because that’s how I get motivated in my sports.
Emotion of feeling good	Having a sense of feeling good while participating in PA.	<ul style="list-style-type: none"> • Wheelchair basketball makes her feel “good”.
Variety of PA available at school	A variety of PA available at school to participate in.	<ul style="list-style-type: none"> • There are lots and lots of sports... bocce, soccer; bowling... you does some kind of sports everyday don’t you.
Dancing	Participating in and having Island dancing available.	<ul style="list-style-type: none"> • I like island dancing other than that I don’t like other dancing.
Physiotherapist encouraging swimming	The physiotherapist encouraged the adolescent girl to participate in swimming to for the purpose of strengthening her muscular system.	<ul style="list-style-type: none"> • I told my physio, and he told me to tell my parents that I should try swimming and that’s when I started doing swimming.
Watching Para-Olympic sport	Watching perceived role models encourages participation in PA.	<ul style="list-style-type: none"> • I was watching the para Olympics they do like weightlifting and stuff, it’s just something interesting and new.
Access to participation	Others can assist with access to participation.	<ul style="list-style-type: none"> • A volunteer would come from XXX would come and pick us up every Tuesday to go do wheelchair basketball.
<i>Inhibitors</i>		
Limitations due to disability	Appointments such as the spinal unit compete with physical activity participation.	<ul style="list-style-type: none"> • “She can’t play this week as we have to work out at the spinal unit.
Physical activities not available	Not able to access physical activity, or continue to play in sports due to unavailability.	<ul style="list-style-type: none"> • Yeah, so that would be good if they had activities like soccer and things, yeah, if I could find a place to play them.
Physical activity is weather dependant	If the weather is not conducive, walking with a physical disability is problematic.	<ul style="list-style-type: none"> • “It depends on the weather.

Time constraints	Busy with other activities including working.	<ul style="list-style-type: none"> I've actually joined the gym...But the thing is I haven't been there for a couple of months because I've been so busy with work.
Unable to find a coach	Wanting to join the Paralympics but there is no coach available to the participant.	<ul style="list-style-type: none"> Um, because I'm trying to make it to the para Olympics in 2016 so...Um I'm looking for a coach.
Needing assistance to assist swimming	Other students or support people are needed to assist with swimming.	<ul style="list-style-type: none"> Two yeah year 6 students would always have to swim with me but I'm just not an independent swimmer.
Difficulty with playing basketball	Enduring difficulties with balls bouncing around with girls while they are in a wheel chair and or/ mixed gender teams with unequal capabilities.	<ul style="list-style-type: none"> I tried basketball but I was scared of the ball, so I stopped going...I hate throwing balls but the stink thing was it was all just men. It was men and there were only 2 girls on it yeah and so that's why I didn't play because I was scared of the men.
Social/friends <i>Enablers</i> Companionship while participating	Preference is for friends to participate in physical activity due to companionship.	<ul style="list-style-type: none"> What I've noticed with the girls is they like to do things together.
Fun with friends	Participant in physical activity is fun with friends.	<ul style="list-style-type: none"> She's had fun, you know with the other kids.
Comfortable participating with friends/meeting new friends	More comfortable participating in physical activity with friends/physical activity provides an opportunity to make new friends.	<ul style="list-style-type: none"> "I'm more comfortable with my friends. It helps people make new friends and socialising.
Confidence	Participating with friends help to build confidence.	<ul style="list-style-type: none"> I'd be more confident if I knew there was someone else I knew who played netball in the same team".
Friends provide transport	Friends are able to provide transport.	<ul style="list-style-type: none"> My friends and they take me because they are mobile.
<i>Inhibitors</i> Inability to find friends	Finding other Pacific adolescent girls with a physical disability to participate with.	<ul style="list-style-type: none"> It's a pity that we haven't come across any other teenage Pacific Island kids.

Parents <i>Enablers</i> Family perceptions of physical activity	Adolescents are more likely to participate in physical activity if their parents perceive it as the family norm or they too, had participated at same period.	<ul style="list-style-type: none"> My family is sporty so I've come to love each sport.
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Parents attitudes	Parents attitudes, perceived value or commitment to encouraging their daughters to participate.	<ul style="list-style-type: none"> It's important for the parents to support them.
<i>Inhibitors</i> Parents attitudes	Parents deleterious attitudes to their daughters participating.	<ul style="list-style-type: none"> When I was little and they played basketball, my parents wouldn't take me coz they just thought I was an object.
Parental pressure to other commitments	Parents' expectations that their daughters need to commit to other responsibly not leaving time for physical activity.	<ul style="list-style-type: none"> I'm only one person and there's only 24 hours in a day and you want me to do all of this. Yeah, so you just have to balance them to keep them happy so they don't drive you nuts all day. So all good, if I had the time I would try dancing.
Parents too protective	Parents are not permitting their daughters to participate in activities as they feel a necessity to protect them.	<ul style="list-style-type: none"> I'd love to go and do more things but it's just my mum. It's always my mum. She'll be like; no you can't do this you know, you can't do that. She's real protective...she thinks I can't do anything.
Not allowing their daughters to participate in mainstream sports due to their daughters seen as a hindrance.	Protecting their daughters by not allowing them to participate in team sports with able-bodied adolescents as they may be seen as a hindrance.	<ul style="list-style-type: none"> I don't want her to be saying that she's holding everybody back...I am kind of protective.
Transport <i>Enabler</i> Parents driving their daughters to physical activities	Parents are able to transport their daughters to physical activities and can manage other family commitments.	<ul style="list-style-type: none"> I drive her there...My husband and I; we take turns.
<i>Inhibitors</i> Parents not transporting their daughters	The daughters perceiving their parents are not driving them to physical activities.	<ul style="list-style-type: none"> And my mum has no excuses of oh we drive you around too much when they don't!

<p>Benefits to physical activity <i>Enablers</i> Perceived benefits</p>	<p>The adolescent girls with a physical disability have a sense that participating in physical activity is beneficial for their psychological and physiological wellbeing.</p>	<ul style="list-style-type: none"> • It's good for relaxation and gets the stress out of my system t kind of relieves my anger sometimes, my frustration... Its help build confidence... It's helped, I think it helps mentally as well like um especially when I have one of those days where I'm just like yeah I'm frustrated and want to get out • Good for her fitness stamina and her balance. • My legs feel stronger, relaxes my muscles.
<p>Disability <i>Enabler</i> Perception physical activity benefits their disability</p>	<p>The participants having a sense that partaking in physical activity specifically alleviates their disability.</p>	<ul style="list-style-type: none"> • They said I had to be active in everything that I do so my muscles in my legs don't shrink or that's what they said. So, every Friday with no fail, I go swimming at my local swimming, yeah... I'm okay swimming.
<p>Parents attitude to their daughter's disability</p>	<p>Parents motivating their daughters and having a sense that their disability should not prevent them from participating in activities.</p>	<ul style="list-style-type: none"> • It's just motivating the kids; letting them know that just coz your disability, shouldn't limit you.
<p><i>Inhibitors</i> Partaking in physical activity with a physical disability</p>	<p>Due to the physical demands of physical activity participation, the participants explicated some of the difficulties included how they tire easily, have problems standing, having a sense they will injure themselves, their muscular system will not cope or they cannot gain access due to inability of people to assist them due to their disability. Difficulty changing in to swimming attire, using their disability as an excuse or their parent's attitude to their disability, all influenced participation.</p>	<ul style="list-style-type: none"> • You get tired after the 2 or 3 hours. • It becomes a problem with the standing. • I could break something... I mean, if I accidentally fall on my bottom it's fine but if I'm doing a sport and it's very active and I'm going all over the place. • Since my muscles have stopped working, I can't properly do that now. • Just when somebody wants to do something, that's disabled, they should be supplying caregivers. • since I got my spinal operation I haven't been swimming in ages. • There's more to running so,...most of my activity we had to drive from our legs and my legs are quite weak so". • I can't be bothered getting changed afterwards so sometimes I don't bother swimming. • Um I use it as an excuse at times. • "I think it's may be the parents' attitude; like, you know, you're disabled; you can't really do anything.

Cultural and perceptions due to their disability <i>Inhibitor</i> Attitude	Some people view the Pacific adolescent girls as a burden due to their disability.	<ul style="list-style-type: none"> • The child is seen more as a burden, yeah (sigh) which is yuck. • In Samoa, if you are disabled you're not allowed to go out; it's kind of an embarrassment. Yeah it's kind of like they think it's a curse, like God cursed them.
Perceptions of disability competing with time and finances	Families struggle to accommodate their daughter who experiences a physical disability as this places stress on family time and finances.	<ul style="list-style-type: none"> • Coz with my family, they didn't exactly, you know, when they found out I had a disability, they thought it would be a straight burden on their financial side. And so pretty much they just saw me as a, what do you call those people that, not dumb but, what do you call those people that you look at them and they just look blank? One of those people, yeah. • Yeah, it just about finding that time, it becomes your whole world and a kinda resigned me to be it anyway. You know when you have to you cannot try make lemonade out of your lemon. If your forever fighting it and feeling that is a burden then there is no motivation.
Policy <i>Enablers</i> New programmes	New programmes encourage participants to participate.	<ul style="list-style-type: none"> • So we go to the North Shore because it is relatively new and we are trying to see what they are doing and how they are doing it.
Financial	Assistance with financial costs enables participation.	<ul style="list-style-type: none"> • In wheelchair basketball, it doesn't cost us anything because XXXX have given a grant to pay for the court and stuff until the end of the year. • Yes I've got a disability card and also in the XXXX society has helped me out a lot financially, so yeah so.
<i>Inhibitors</i> Financial – funding	Funding differs depending on the disability and if it was congenital or acquired and their age.	<ul style="list-style-type: none"> • "It's really, unfair don't know. It is just a difference a disabled who acquired the disability to those who were born with it. • My daughter she's ah 17 now but I never got any money now. There's the money go to the different people that's why we are not happy about it. • if the accident happened and she was probably about, a little bit, quite older, she wouldn't be eligible.
Funding is available but you need to find it	While funding for the participants is available they do not know where to go to access it.	<ul style="list-style-type: none"> • He's very supportive. If he comes across funding that he thinks XXXX would be eligible for, he'll flick me an email straightaway. There is funding... The thing is, you've got to look it up.

Taxi	The taxi services was previously available to the participants who allowed them access to physical activities, however, there is confusion around this service.	<ul style="list-style-type: none"> • I get the taxi vouchers from the XXX but without my TM card, yeah, it's expensive. • Well, because they tried, I think it was through funding to get, you know, taxis. The funding, like, sort of once a year or something like that, I don't know how the funding side works but all they told us was a taxi was going to come and pick us up once a week to take us to XXX. But that fell through. • They've got no funding for kids' taxi... Yeah, he was running a programme at xx on the North Shore I think for physical activity things... before they go there but now the taxis, they stopped, no funding for the taxis or something. • Yeah, I want to do more activities... Yeah... but because of the taxi problems... Well, before they always go for nothing, they're free to go, but now they have to pay the taxi. They said they have no funding. That's all they said.
Restrictions <i>Enablers</i> Competent in physical activity	If the participants showed aptitude in their physical activity they were more inclined to have access to funding for activities.	<ul style="list-style-type: none"> • With all the results that she was achieving, then we started getting the funding.
<i>Inhibitors</i> Transportation and access	Participants are reliant on others for transportation and petrol costs or financial resources to gain access to physical activity participation.	<ul style="list-style-type: none"> • The only reason going to the XX is because they started this one on the North Shore for the kids, and you don't want to go because it is so spread out. • "I was meant to try tennis but it's like all the way at North Shore and yeah that's like too far because my mum doesn't know how to drive there. • It costs a lot of money to get these kids to physical activity, just in petrol in the car and stuff". • Yeah they said that the open day if I was interested I would have to get my own ride to open day and I couldn't make it to open day and so I can't do it.
Access	Access due to the vast size of Auckland or due to participants experiencing accessibility in the community.	<ul style="list-style-type: none"> • In XXX it was so easy because it was so small. Um in Auckland it's so big • There's not that much accessibility for, you know, in the community for people with disabilities.

Renewing a disability card	The participants are reliant on their disability cards to gain access to daily activities including transport however, if they have no support, it is necessary for them to renew this card themselves. This is problematic due to costs associated with renewing the card, access to transport and access to the building.	<ul style="list-style-type: none"> No, it's a hassle actually because you've got to go to, you've got to go to XXX Transport, XX, you know that place?...And you've got to go see them. And the card itself, it's eight dollars but they don't, coz when I pay my stuff I go into the building myself and pay it. But these people say they don't have wheelchair access".
Other commitments and stress on finances	Participants have other expenses which compete with expenses associated with physical activity participation including bills, board and medications.	<ul style="list-style-type: none"> Well, I have a lot of medication. I have a lot of bills to pay. I have a lot of, like, board and stuff like that.
Taxi service	Participants previously had a taxi service available for them to access physical activity.	<ul style="list-style-type: none"> I think they had it at North Shore when we, when we had before the taxi. But there are lots of things that go on before. Sometimes they'd go bowling or something like that. Yeah, and so that's possibly going to affect a lot of the kids... all the things like the sports and stuff, are probably on hold because you can't get the taxi.
Time constraints on the family	The participants require someone to be available for them while they are participating which may be problematic if they have other dependant siblings.	<ul style="list-style-type: none"> There are the fact of transport, time, and yes the procedures that needs doing for the kids and XXX being the youngest it is easier for me than others whose child may not be the youngest as I have more time for her. She needs to have someone there; you have to play with her the whole time. It takes a while and you need time to do that. I have to stay with her because she trains in XXX, yeah...I guess because we've done it for so long that we already had that routine. And our kids are normally, coz they're normally at the after-school programme till about 6 o'clock when one of us can pick them up, yeah.

Financial	Participating in physical activity places financial strains on the girls and their families.	<ul style="list-style-type: none"> • But we couldn't do that on a Tuesday night, on Wednesday night basketball and Friday night, is it just too expensive...getting there is too expensive • No, I am not playing tennis or swimming at the moment because well we're having financial problems at the moment. • Everything is just so like expensive and you know...Especially meds. Like right now I'm like low on my med kind of stuff, iron. And the doctors like eat some more meat and I'm like sorry can't afford it. It's easy for you to say but I can't afford it! • A lot of us Pacific Islanders struggle with money and so, um, so like I've got a close friend who is really struggling and she want, at the time she can't come to the club because of petrol and I understand that's alright. But it's hard. It's, it's just pretty much like money and finding the time.
Attitudes to using gymnastic equipment	Not permitted to use gymnastic equipment.	<ul style="list-style-type: none"> • "Oh XXX was doing gymnastics last year... they were really stink about it and they said she was not allowed on the equipment ...XXX had just facilitated it and as it was their gym.
Instructors/ coaches attitudes		<ul style="list-style-type: none"> • The instructor did not know what she was doing. • We were with another club and unfortunately we felt like Sefina was just kind of brushed to the side.
Physical activities on a Sunday	It is the norm for Sundays to be reserved for other activities such as Church.	<ul style="list-style-type: none"> • "They have used this um, have a go rowing day and, I was like oh, a Sunday. It's not just the distance but it's the day of it. Because for Pacifica, you usually go to church on a Sunday.
Bus drivers attitudes	Bus drivers with no empathy for adolescents with a physical disability.	<ul style="list-style-type: none"> • "Because I know the bus drivers and I go, ride the bus, and some of them be so rude and go, oh, you know, a taxi would be easier for you.
Sedentary behaviours <i>Enablers</i> Low sedentary behaviour (under 2 hours per day)	This participant was too pre-occupied with training for her swimming and did not meet the sedentary guidelines.	<ul style="list-style-type: none"> • Hardly ever. She's like, home, homework, eating, trying to rest a bit and then she's off because we're stuck in traffic for about an hour. So yeah, she doesn't have that much time to watch TV.

<p><i>Inhibitors</i> Sedentary behaviour</p>	<p>Participants are spending too much time in sedentary behaviours, with the exception of one participant. Spending extended time on Facebook may be attributed to parents working and the adolescent culture. Non-engagement in physical activity may be furthermore be ascribed to boredom, and non-motivation.</p>	<ul style="list-style-type: none"> • It seems that they just come home, sit in their room, sit on Facebook and just sleep a lot, and that is terrible, it is sad... Yeah, it's hard but most kids can't even watch TV... If the parents are working, the kids would just go home and do nothing. • I just stay in my room... Oh I just go on Facebook. Yeah... Just from morning and then, til afternoon see if I've got anything planned and then go back to sleep yeah". • "But yeah, I gave it up because I just got bored with it... I did it for a couple of months but I got bored of it" . • "I'm kind of getting bored doing athletics again. • "It's quite hard to keep yourself motivated in that sport. • Yeah they need something that's really fun and exciting and, something different because that's how I get motivated in my sports.
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Study three (Providers of Services to girls with a physical disability)

Physical activity theme/classification	Description of classification	Example of quote from script relating to classification and theme
PA Participation <i>Enablers</i> Role models	If the participants had a role model, this had a positive impact on participation.	<ul style="list-style-type: none"> • So I suppose has had a bit of an impact there because she was South Auckland born and bred and stuff like that as well.
Physical activities: Swimming Basketball	Swimming is viewed as a necessity due to survival skills. GIRLS particularly enjoy basketball.	<ul style="list-style-type: none"> • Swimming; most of our activity funding goes towards swimming lessons. That seems to be one of the main things people apply for. And I think that's because, you know, it's a life survival skill, • Wheelchair basketball I think is a really big one.
<i>Inhibitor</i> No physical activity available	There is a limited amount of physical activity for GIRLS, restricting their participation.	<ul style="list-style-type: none"> • So you know, unless, if you're a young person with a disability, what are you going to do for exercise and activity? It's pretty limited.
Participate in physical activity GIRLS requires fitness and strength	Physical activity requires at least some fitness and strength which the GIRLS are deficient in.	<ul style="list-style-type: none"> • They require fitness and strength to be able to play and participate in sports and some of them don't have the actual physical ability to improve their strength a huge amount.
Access <i>Enablers</i> Schools/physiotherapists	Schools and physiotherapists, who have contact with GIRLS, may refer them to appropriate services or physical activities.	<ul style="list-style-type: none"> • So a lot of our referrals now are coming from schools because they're directly dealing with these kids on a sort of daily basis within the schools. So that's where the physios sort of get in contact with us and say, well, you know.
School encouraging participation	Schools encourage participation for the GIRLS.	<ul style="list-style-type: none"> • The schools are trying to make sure, especially you know, even in PE, they're trying to make sure the kids are inclusive. They're coming to us and trying to ask, and asking for ideas.
<i>Inhibitors</i> Schools	Schools inability to manage the GIRLS while attempting to accommodate their disability and include them with the mainstream adolescents.	<ul style="list-style-type: none"> • "Yeah, and it's a hard one. You know, it's a small base. So do you run them against the able-bodied kids and they're way behind for example or do you put them with some younger kids so that there might not be a bigger gap. Or do you make them, or do they run a race by themselves? • Again, I guess it comes down to the school environment and how they manage that culture within the school environment.

Sports Organisations <i>Enabler</i> Providing resources and guidelines	Sports organisations making guidelines and resources available to enable the GIRLS to participate in physical activity.	<ul style="list-style-type: none"> A lot of the sports are writing up or are making resources that they can hand out to clubs so that, you know, if they get, for adaptations for physical disabilities so that they're being able to give them as a resource.
Access to Para-Olympics	Sports organisations can identify GIRLS who may qualify for Para-Olympic participation.	<ul style="list-style-type: none"> "It's just, it's similar to able-bodied; as they get better they get picked into representative teams and stuff like that. So there are pathways. And then XXX New Zealand has a talent identification programme. So we act like talent spotters for them as well.
<i>Inhibitors</i> Unfamiliarity with adolescents who experience a physical disability	Sports clubs do not know how to accommodate the adolescent with a physical disability and the experience intimidates them.	<ul style="list-style-type: none"> You know, it's sort of going in a little bit into the unknown for them and it's a bit scary for some of the clubs. they're getting quite a lot of referrals from, oh, a few referrals, from parents with physically disabled kids and they're not sure how to cater for them.
Access to physical activity <i>Inhibitors</i> Are not aware of any physical activities to participate in	GIRLS are not aware the specific physical activities is offered or available to them to participate in or do not have the confidence to inquire.	<ul style="list-style-type: none"> They just don't know it's available and probably are not assertive enough to ask.
Distance to access physical activity	Due to the distance required to access the physical activity, participation is restricted.	<ul style="list-style-type: none"> It certainly means that geographically if things aren't in your area it makes it a lot more difficult to get to those if they're not in your area.
It is difficult to attain sufficient numbers to justify running physical activities	The sports organisations need to be able to justify running the activity and if the numbers are low, this is problematic.	<ul style="list-style-type: none"> Yeah, we just don't have the numbers of people to get involved to set up something else elsewhere coz funding's always going to be an issue.
Involvement in physical activity <i>Inhibitors</i> Sufficient numbers to form a team	It is the GIRLS preference to participate with other GIRLS, however, this is problematic as the numbers attending do not permit this. As a consequence, if they want to participate they are required to play with others of unequal abilities.	<ul style="list-style-type: none"> I had another girl that was doing wheelchair basketball – a Pacifica girl – and she seemed okay with it but she had to play in a non-Pacifica team with guys that were a lot older than her, you know, because there's nothing there for her... There are not enough girls to form a team.
Non-inclusion in a team with able-bodied adolescents	Others may not want the GIRLS participating in their team due to their disability and possibly preventing the team from winning.	<ul style="list-style-type: none"> Because the rest of the team are not going to want her on the field. She would love to be on the field. And she would enjoy the social thing. But in terms of the competition and the adolescents... a sports team is often about winning.

Equipment <i>Inhibitors</i> Specialised equipment	The GIRLS may require specialised equipment to participate in physical activities which may need to be adapted but generally, it is not designed for GIRLS in wheelchairs and is expensive.	<ul style="list-style-type: none"> • Yeah, some may need some adaptive equipment depending on what the sport is. • The equipment in general hasn't been designed with people in wheelchairs in mind" • the best equipment is very expensive.
Dance <i>Inhibitors</i> Pacific dance	GIRLS generally, prefer to engage in Pacific dance, not mainstream dance.	<ul style="list-style-type: none"> • In my experience it hasn't been taken up all that well by Pacific disabled girls... We've created our own dance group. So we have our own Pacific dance group and the girls like that.
Coaching <i>Enabler</i> Coaches as role models	Coaches can encourage participation particularly if they experience a physical disability, providing a role model for the GIRLS.	<ul style="list-style-type: none"> • So you know, they're fantastic role models because they're at that top level and you know, they can relate because they're obviously in wheelchairs and stuff as well.
<i>Inhibitors</i> Access to a coach	It is problematic for GIRLS to access a coach.	<ul style="list-style-type: none"> • Trying to find a coach is a difficult... They've had a problem with trying to find a coach and participants in the other parts.
Gymnasium <i>Inhibitors</i> Gymnasium instructors	Gymnasium instructors have not had experience working with GIRLS and do not have the proficiency to manage them while they are participating in physical activity at the gymnasium.	<ul style="list-style-type: none"> • They are able to use certain pieces of equipment but it can be quite a struggle because for most gymnasium staff members they haven't, just haven't the experience or the expertise of working with people with disabilities.
Extra support	The GIRLS may need extra support while attempting to engage in physical activity at the gymnasium.	<ul style="list-style-type: none"> • "Yeah, and some of them when they need to go, they need one-to-one support at all times while they're there.
General <i>Enablers</i> Alleviating barriers	Participation involves educating, providing transport and making the physical activity accessible. This may differ between individuals.	<ul style="list-style-type: none"> • Physical activity just, it needs to somehow make it accessible to them doesn't it and it's quite hard to find that area that, you know... may be with education and providing the transport or, yeah – • Mm, yeah, just breaking down all those barriers; whatever they may be and they may be different for everyone so.

<p><i>Inhibitors</i> Location Access to services Information around services Education Priorities Socio-economic factors Transport Finances Medical problems Time</p>	<p>General barriers to physical activity impede participation.</p>	<ul style="list-style-type: none"> • It may be location, where they're living, access to services, information around services, education, priorities. Yeah, socio-economic factors around...I don't think it's quite different, you know, no, but again, there seems to be less participation especially in Paralympic sport. • There are a lot of barriers, like transport, finances, medical problems that have you waiting around for surgery and it's about educating the families. • The access, the transport; those of the kind of things that restrict access. • The time an issue for them as well, do you think or they've got the time.
<p>Financial/funding <i>Enabler</i> Service providers provide information on funding</p>	<p>The service providers are able to provide information on funding to enable the GIRLS to participate in physical activity.</p>	<ul style="list-style-type: none"> • We provide funding and we provide information on different clubs or sports and stuff that they can go to. It's just basically our job is, what we're doing is finding physically disabled people, finding what sports they're into and then making sure that they're being included and inclusive.
<p><i>Inhibitor</i> Costs associated with participation</p>	<p>GIRLS cannot afford to participate in physical activity. This includes joining a gymnasium.</p>	<ul style="list-style-type: none"> • Some of them just can't afford it. They just can't afford to join; there's membership and the weekly fee they have to pay.
<p>Funding</p>	<p>There is limited funding for equipment costs.</p>	<ul style="list-style-type: none"> • We don't have the funding for costs for equipment.
<p>Financial hardship</p>	<p>Pacific families may be struggling financially or may have other commitments.</p>	<ul style="list-style-type: none"> • The main issues that I'm finding with Polynesian families that I'm working with, is that obviously quite a lot of them have hardship so it's the cost of the travel and the cost of the programme and stuff like that if they want them to join a club or to get some lessons or coaching and stuff like that. • they participate in community church stuff and then at times they contribute huge amounts of money into church and when it comes home to school stuff there's a shortage there... For example, costs around medication, costs around transport or cost around day programme or activity.

Funding available but accountable	Service providers are able to access funding but they are accountable and the funding needs to be sustainable.	<ul style="list-style-type: none"> • , the whole legacy and making sure that you know, what they're doing is sustainable... They certainly make you accountable with the funding that they give. They want outcomes... So you know, so we have to report back to them on a regular basis about what's happening and in our programmes and the numbers and that sort of stuff as well.
Funding may differ which is dependent on the disability	The funding differs for a congenial disability an acquired disability.	<ul style="list-style-type: none"> • If it is congenital, which means that it's, you know, they're eligible, the funding is there. But if it is the result of an accident or if an adolescent might have an accident, what we tend to do is that we put our service on hold. Because if it is an accident then XXX will cover that until, to a certain amount of time when XXX decided they're finished the recovery/rehab, whatever you call it. Then we'll pick that up from there, yeah.
Transport <i>Enabler</i> Petrol voucher	Service providers are able to provide GIRLS with petrol/travel vouchers for transportation.	<ul style="list-style-type: none"> • But I know people, like the XXX Society, give out petrol sort of vouchers, travel vouchers and stuff like that.
<i>Inhibitor</i> No transportation	Transportation is not always available for the GIRLS to allow them to participate in activities. In addition, they are reliant on other people to transport them and if the activity is not at a convenient time, this is problematic.	<ul style="list-style-type: none"> • I remember I had one of my clients from North Shore and they wanted to participate in the basketball games at the spinal unit but the problem was no transport. • Another one is transport, or could be a big issue for Tongans. No transport; there's no one to take me in their car • It's always a problem for people, especially with disabilities; they're just relying on someone else and trying to get, it's always usually in the evenings on a weekend.
Time and effort	Alongside transportation, time and financial constraints impede participation for the GIRLS, also placing stress on the family.	<ul style="list-style-type: none"> • There's a need for a large amount of time and effort to be put into that disabled person. And it can affect the dynamics of the rest of the family. So I think that's all of the programmes.
Attitudes <i>Enabler</i> Positive attitude to ability	Focusing on what the GIRLS is capable of doing may encourage participation.	<ul style="list-style-type: none"> • You know, that's an ongoing thing that we need to keep sort of pumping out there, you know, about what these kids can do. I think sort of the stigma of, you know, making sure that you're not concentrating on what they can't do. You know, concentrating on the negative side of things. So you know, the attitudes is a big thing.

Starting initially	If the GIRLS attempts the physical activity they may find the activity interests them to the extent they want to continue to participate in it.	<ul style="list-style-type: none"> • But then of course I think if they just, it's just not something that really interests them. But then I'm sure it would be, just trying to get people to start it because once they do it, then they can actually find this is quite good. But it's trying to get that, break that barrier and that's pretty common.
<i>Inhibitor</i> Gymnasiums	Gymnasiums do not accommodate GIRLS and therefore the girls feel uncomfortable while attending. Furthermore, they do not provide access.	<ul style="list-style-type: none"> • There are no gymnasiums currently that focus on disabled populations as such. And most gymnasiums still – the way that they're structured – would not make most people with disabilities feel very comfortable. I know that, you know...people are saying that their kids want to go to the gymnasiums but the mainstream gymnasiums don't cater for people with physical disabilities. • They don't have any access for disability. So we enter; we have to either go back or we have to lift the person up.
Gymnasiums are not accessible due to distance	Geographically, the gymnasiums are not accessible for the GIRLS.	<ul style="list-style-type: none"> • The fact that, what we know in the gymnasium industry is that geography dominates everything. So if you've got a gymnasium that is two minutes from your home you're more than likely to go there as opposed to a gymnasium that's five minutes from your home. So can you solve the problem by putting a central gymnasium for disabled people in.
Communication and Language <i>Inhibitors</i> Inability to communicate effectively	If the GIRLS or their family are not able to communicate their needs proficiently, they are disadvantaged.	<ul style="list-style-type: none"> • Yeah, there's a whole lot of things... You know the language thing... Yeah, well the main one would be the language barrier coz one of the reasons they would access our service is because they're unable to speak English properly... So if I was a kid wanting to move up to the next level and to do the XXX, you know, the communication, you'd have to probably it's who you know or, you may need assistance... To communicate well and know how to approach them; that's the other thing. Because our Pacific people, most of them, they always say yes and no, short answer, straight away, cut off.

<p>Family/parents <i>Enabler</i> Communication to the GIRLS</p>	<p>It is imperative the person communicating with the family talk to the whole family and not just the GIRLS. As a consequence of building this relationship it is more probable the GIRLS and her family will be involved.</p>	<ul style="list-style-type: none"> • I think, to make sure that those kids are engaged is, it's more about talking to the whole family rather than trying to talk through that kid. Because I suppose a lot of them are either church-based, and it's part of their culture that, you know, everyone's pretty tight-knit • In order to engage with kids we have to engage with the family.
<p>Holistic support</p>	<p>Holistic support encourages participation which includes possibly providing transport and education.</p>	<ul style="list-style-type: none"> • Our Pacific families we like to include in to make sure that they have the holistic support... A simple thing is driving them around or accessing sports, you know, leisure, recreation and all of that and education.
<p><i>Inhibitors</i> Family dynamics</p>	<p>The family dynamics and expectations of the GIRLS may impede physical participation. How the family can accommodate the GIRLS physical activity participation while managing the family needs and expectations is of importance.</p>	<ul style="list-style-type: none"> • Potentially, yeah, the family make-up. And also, yeah, so the aspirations and goals around what's expected of a male versus a female within the family social make-up. Pacific Island families have got quite big family units and it's may be the eldest member is looking after some of the youngest members. And so, just the whole sort of family make-up as well. • Can parents get kids there in the weekends or after school – and that sort of stuff, so there's different, I think there's different issues all over the place... Can still do those family stuff, that family stuff that they used to do in the past for example. The rest of the family is not restricted or limited by that person. So that's what I mean by the whole holistic. • Yeah, I suppose, I suppose that's a thing; quite often these are big families and they're just one... I had a chat with XXX the other day; he was telling me, you know, they were one of I don't know how many kids, and if someone had to miss out it would always be the first. So I think that probably is an issue; it's trying to cater for everyone in the family.
<p>Holistic family unit</p>	<p>The family itself needs to be consulted over the GIRLS participation.</p>	<ul style="list-style-type: none"> • So they still think that the whole family should be responsible for themselves... Sometimes mum and dad, so they will text and say, oh, mum and dad would like to catch up with you and just talk about this and that.

Attitudes of the family	Some of the families' perceptions around their GIRLS engaging in physical activity may need to change from their prioritising their daughters participating in physical activity to their expectations for their daughters.	<ul style="list-style-type: none"> You know, so it's a complete change of mind set for a whole family rather than just the individual... Yeah, and I suppose, I mean, I find the attitudes of the families themselves, the ones that I've been involved with, are awesome. It's probably the ones that you don't see. Sometimes families just don't have time for that and then it got cancelled or didn't turn up or play stuff. if that is sort of in the culture as well, it's quite difficult then to access... for these kids to access services if you know, if they do have that, if the family does have that cultural thing over their head as well. The expectations of those around them and often of their nearest and dearest – their parents, caregivers and things – is they shouldn't have to do too much. So you know, if they're in a walker, how can we make it easier for them? By putting them into a wheelchair, for example. Once you put them into a wheelchair, then it becomes, oh, it becomes a bit difficult for them to get around in a wheelchair so we'll put them into a power wheelchair.
Family resources	The GIRLS is dependent on their parents for resources which becomes problematic if they are limited.	<ul style="list-style-type: none"> So if you're a young person and you know, you are struggling for resources, i.e. transport and money or whatever else, and then you're very, you're very dependent upon your parents to provide some of that resource. And if they are not providing that resource then it just creates more barriers.
Parents working	The GIRLS are dependent on their parents for transport which is problematic if their parents work commitments clash with the scheduled physical activity time.	<ul style="list-style-type: none"> It just depends again on – I don't have the stats – my perception is possibly that their parents may not necessarily be working normal sort of nine-to-five office hours.
Families not aware of services available.	Some families are not aware that there are services available for their GIRLS and additionally these services do not incur a cost to the family.	<ul style="list-style-type: none"> So it's also around education around the families as well. And some families just won't budge eh. We say, no, no, it's free here, but yeah, I think educating, education to families as well.
Parents motivating their GIRLS into physical activity	Some parents may be reluctant to encourage their GIRLS to participate in physical activity as they are apprehensive.	<ul style="list-style-type: none"> I think parent sometimes with children with disabilities, they're scared to try a new experience... Normally it's the parents' motivation to get their kids involved in a sport.

Parents preferring their GIRLS to socialise with adolescents who are not disabled	Some parents prefer their GIRLS to socialise with adolescents who do not have an impairment or disability or they do not perceive their GIRLS as experiencing a disability possibly due to the having a sense of denial in regard to the disability.	<ul style="list-style-type: none"> Some parents like to have their kids socialising with other kids with impairments and others like the mixture, you know, a bit of both. And others like, well, their kid doesn't see themselves as having impairment. They want to be normal.
Cultural perceptions around access to services	Some Pacific has preferences around who should be responsible for the GIRLS in terms of their own family from their own ethnic group or another family from a differing ethnic group.	<ul style="list-style-type: none"> It's a cultural belief, I don't know, but I think it's, I believe, like, for us Tongans we prefer only our own immediate family to look after our disabled. And in some other families they don't want their own ethnic group.
Reluctant to ask for assistance	Some families appreciate the services they are already accessing and are averse to ask for further assistance.	<ul style="list-style-type: none"> With Pacific families, what they're given, they're just thankful with that and they don't want more and more... They won't ask.
Families not aware they need support.	Some families are not aware they need support or have difficulty with the New Zealand language and interpretation.	<ul style="list-style-type: none"> Some families have no idea. They need support. They need help around interpreting.
GIRLS not prioritised	The absence of commitment or priority from the family to engage the GIRLS into physical activity may be problematic.	<ul style="list-style-type: none"> But some families, it's just a commitment, the commitment that the child's needs is also a priority. Sometimes they forget about that and it's just, it's just forgotten. With the Pacific girls it's, normally there, it's their last priority. So all the other kids get dropped off to their sports, trainings; when we have time we'll drop you off. But if not, have to pay for your transport to get you here so you can be here on time. Their mum and family and they are low priority because they've got other kids too.
Socialization/self-esteem/cultural perceptions <i>Inhibitors</i> Socialisation	GIRLS may not have confidence and/or be socially inept.	<ul style="list-style-type: none"> I think just, I mean, if anything they're just a bit shyer. But they're probably, a lot of them are the most talented. That's the main area that they're lacking socialisation skills.
Self-esteem and confidence	The GIRLS do not have any Pacific counselling services available to them whereby they overcome the psychological difficulties to ensure their wellbeing and independence.	<ul style="list-style-type: none"> If they want supportive independence and they want to build up their self-confidence and self-esteem, there are no Pacific services out there to address those, they need Pacific counselling. Some of them need to do with the family counselling. You have to look at the whole person. And I think we are very, one of very few, that actually address the emotional issues of a disabled young person and try to make them feel as part of society as we possibly can.

Cultural attitudes to the GIRLS disability	<p>There are cultural perceptions around the origin of the GIRLS disability causing ignominy to the family. This may impact on their participation in physical activity.</p> <p>This concern needs to be dealt with initially prior to attempting to engage the GIRLS.</p>	<ul style="list-style-type: none"> • I think there's still that stigma around, it's a, sort of, the Polynesian community, you know, in the past, having a kid with a disability is a bit of a disgrace to the family. • I'm not sure whether it's a cultural belief or if it's a biblical sort of belief that, you know, it's a sin. There's someone in the family who's committed a sin and it could be grandparents, it could be their father and there's something wrong, you know. Your father, he must have done something wrong and the children, you know and that's why you've got a disability in the family... So families, it's a shame for them and it's, they, and because of that belief that someone, it's a curse, you know, they try and keep them at home; they keep the disabled person at home; not allowing the world to see that they've got a disabled child. So it got shut down in the room or stays there; they never be part of the community... It's still happening because I've come across a family. • I think there's a lot of stigma, there's a lot of shame; some people even think they're cursed and that's why their child has a disability • There have been various campaigns produced in terms of providing information to services. But that doesn't directly address the stigma issue. If you've got stigma you're not looking for services.
Sedentary behaviour <i>Inhibitors</i> Transport	The GIRLS needs to be transported consequently jettisoning physical activities.	<ul style="list-style-type: none"> • It's, getting exercise is really hard for our students because they're taxied to and from. They don't even walk to the bus.
Unavailability of physical activities	The GIRLS may not have any physical activities available to them and therefore their time is predominantly occupied with sedentary behaviour	<ul style="list-style-type: none"> • So, what sort of activities is there for them to do? So all they do, because there's none available to them they either they'll stay home all day all the time or they get to find something for them to do; you know, to occupy themselves with.
GIRLS vulnerable	Due to their disability the GIRLS may be vulnerable and therefore leaving them while they are participating in physical activity may be problematic.	<ul style="list-style-type: none"> • You need to be conscious of that. And they're very vulnerable I guess? It is difficult to leave them at practice when they are so vulnerable.

Holiday breaks	GIRLS are not inclined to keep up their physical activities during the holidays impeding on their physical fitness.	<ul style="list-style-type: none"> • In the first term of each year people turning up who have been with us previously whose fitness levels have decreased significantly over the school holiday time because the expectations are they don't have to move as much when they're at home.
Health problems <i>Enabler</i> Education	Re-educating the GIRLS on their nutritional needs and physical activity in relation to their physical disability.	<ul style="list-style-type: none"> • With disabilities were dying young, not from their disabilities but from secondary complications of being inactive. And so you know, diabetes and cancers and breathing issues around inactivity and muscle weakness and wasting were all seen as being issues. And similarly around, around re-educating somebody who's in a wheelchair, that their nutritional needs are not the same as somebody who's walking around, you know, the streets. • So yeah, XXX developed this programme to just address the issue of fitness for disabled people and help them to realise that you don't have to go to a fancy gymnasium and try to use equipment that's not made for you. They definitely want to be healthier and I think a lot of them have expressed concerns about their longevity, having disabilities.
Benefits from physical activity	Improvements in physiological and psychological wellbeing attributed to engagement in physical activity.	<ul style="list-style-type: none"> • All the same benefits that are being shown now via mainstream research for physical activity, you know, it doesn't, people with disabilities aren't precluded from that. So a lot of the, a lot of the current research is on brain function and exercise. And I certainly think we see that. We see that, we see improvements in mood and things at the end of sessions versus the beginning of sessions. We've seen significant improvements in their function and their results and things. • We sort of saw may be it was hiding a bit of insecurity but we've really seen her grow to be actually confident and very grounded.
<i>Inhibitors</i> Health affecting ability to participate in physical activities	Attributed to their disability, GIRLS may endure additional health problems impacting on physical activity participation.	<ul style="list-style-type: none"> • Hard to sort of keep them going because a lot of them probably do have a lot of extra health problem. • With disabilities were dying young, not from their disabilities but from secondary complications of being inactive.

Physical activity low priority	Due to the other health problems they experience, physical activity becomes a low priority.	<ul style="list-style-type: none"> I guess they're probably dealing with all the other stuff around their disability and this is low priority.
Personal factors Motivation	It may be challenging attempting to motivate GIRLS into physical activity.	<ul style="list-style-type: none"> With the disabled population, sometimes it can be really hard work to motivate the group.
Self-conscious	The GIRLS may feel too self-conscious to participate in physical activity in view of others	<ul style="list-style-type: none"> But part of the reason, some of them can be quite self-conscious. I guess, I mean, that's across the board with all adolescents and that can really limit some people and the sports they do... You have to get out of the chair and then onto the floor and then into the boat. And someone said that some people were quite uncomfortable about being seen getting in and out. Coz people watch; they just, coz you know, they can't help it if the guys are getting in and out of a chair. And that can affect people. They don't want to be seen. They get embarrassed about their disability. Yes, particularly girls. And they're really conscious of doing it.
Attending the physical activity initially	If the GIRLS initially attempts the physical activity they feel intimidated with the unfamiliarity of the other girls.	<ul style="list-style-type: none"> It can be, yeah, they feel a bit intimidated when they come along and they see all the people who are, you know, they're there every week.
Enjoyment	The enjoyment element is a prime motivator for physical activity participation.	<ul style="list-style-type: none"> She loves it. She's having a ball. So it's just really rewarding to see. And I know the parents; the girls love the dancing... They love it.
Social	GIRLS benefit from the social benefits accredited to participating in physical activity.	<ul style="list-style-type: none"> So there are social aspects and that's in I think every sport, and I don't think that's as appreciated as much.
Friends	Friends encourage participation through normalizing the physical activity and providing companionship.	<ul style="list-style-type: none"> If you've got a friend or two friends coming along to a programme then that breaks down barriers for you. You know, that makes it a lot more normal. I think those friendships and networks make a difference.

Appendix H: Quantitative tables not included in the quantitative study one (Chapter 5)

Table 0-1: Family fun and school characteristics

		% AT	OR	95% CI	p-value
You and your family have fun/time together?	None/some	71.10	1.00	-	0.58
	A lot/often	72.83	1.09	(0.80-1.48)	
How do you feel about school?	Like it a lot	74.32	1.00	-	0.32
	A bit /its ok	70.50	0.83	(0.61-1.12)	
	Don't Like	77.17	1.17	(0.65-2.11)	
Enjoy school - Hanging out with friends	No	75.29	1.00	-	0.58
	Yes	72.22	0.85	(0.48-1.50)	
Enjoy school – Sports	No	70.72	1.00	-	0.42
	Yes	73.21	1.13	(0.84-1.53)	
Do you belong to any school sports team	Yes	70.82	1.00	-	0.21
	No	73.94	1.17	(0.92-1.50)	
Belong to any clubs/teams at school other than sports	Yes	73.07	1.00	-	0.64
	No	71.89	0.94	(0.74-1.21)	
Do you do activities to help others at school	Yes	72.79	1.00	-	0.78
	No	72.04	0.97	(0.77-1.22)	
Bullied in school	No	72.54	1.00	-	0.74
	Once/week to most days	70.45	0.90	(0.49-1.66)	
I don't know why I was bullied	No	72.89	1.00	-	0.39
	Yes	69.80	0.86	(0.61-1.21)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results

Table 0-2: Health

		% AT	OR	95% CI	p-value
Used for healthcare in the last 12 months: Alternative health	No	72.18	1.00	-	0.13
	Yes	92.86	50.0	(0.63-39.8)	
In the last 12 months how many times have you had an injury that resulted in you needing to see a doctor, nurse or physio.)	Not at all	70.60	1.00	-	0.45
	Once	75.59	1.29	(0.93-1.80)	
	2-3 times	72.50	1.10	(0.79-1.54)	
	4 or more	67.84	0.88	(0.60-1.30)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results

Table 0-3: psychological health

		% AT	OR	95% CI	p-value
Emotional symptoms /problems	Not at all	72.18	1.00	-	0.37
	Once	70.80	0.93	(0.71-1.23)	
	Two or three times	72.43	1.01	(0.72-1.43)	
	Four or more times	76.74	1.26	(0.89-1.79)	
Conduct problems	Not at all	73.56	1.00	-	0.42
	Once	68.51	0.78	(0.58-1.05)	
	Two or three times	72.93	0.97	(0.76-1.23)	
	Four or more times	74.14	1.03	(0.71-1.43)	
Hyperactivity	Not at all	74.33	1.00	-	0.59
	Once	72.43	0.91	(0.68-1.21)	
	Two or three times	70.91	0.84	(0.64-1.10)	
	Four or more times	71.00	0.85	(0.63-1.14)	

* indicates statistically significant results,

†Adjusted for school cluster and sampling weights

Table 0-4: Meeting physical activity guidelines -food

		% AT	OR	95% CI	p-value
How often do you eat - breakfast	Always	74.39	1.00	-	0.49
	Sometimes	71.37	0.86	(0.66-1.12)	
	Hardly ever	71.49	0.86	(0.62-1.20)	
How often do you eat - lunch	Always	70.85	1.00	-	0.28
	Sometimes	73.46	1.14	(0.90-1.44)	
	Hardly ever	77.64	1.43	(0.89-2.29)	
How often do you eat - dinner	Always	72.70	1.00	-	0.64
	Sometimes	71.16	0.93	(0.72-1.20)	
	Hardly ever	63.72	0.66	(0.24-1.78)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results

Table 0-5: Physical activity perceptions

		% AT	OR	95% CI	p-value
Choose PA - Its fun	No	70.70	1.00	-	0.56
	Yes	72.68	1.10	(0.80-1.53)	
Choose PA- It passes the time	No	70.92	1.00	-	0.13
	Yes	75.99	1.23	(0.93-1.82)	
Choose PA- I get to hang out with friends	No	72.20	1.00	-	0.85
	Yes	72.64	1.02	(0.81-1.23)	
Choose PA - I'm good at it	No	71.64	1.00	-	0.52
	Yes	73.33	1.09	(0.84-1.41)	
Choose PA - I like competing	No	70.44	1.00	-	0.09
	Yes	74.45	1.22	(0.97-1.54)	
Choose PA - I like winning	No	73.18	1.00	-	0.45
	Yes	71.09	0.90	(0.69-1.18)	
Choose PA - my parents or school make me	No	72.90	1.00	-	0.45
	Yes	69.77	0.86	(0.58-1.27)	
Choose PA - To keep fit	No	71.25	1.00	-	0.43
	Yes	73.00	1.09	(0.88-1.36)	
Choose PA – Other	No	72.63	1.00	-	0.61
	Yes	70.83	0.91	(0.65-1.29)	
Last 7 days did you go to a PE class)	Yes	71.57	1.00	-	0.55
	No	72.93	1.07	(0.86-1.34)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results

Table 0-6: Other activities

		% AT	OR	95% CI	p-value
Time spent doing each day:	Up to 2 hrs	73.36	1.00	-	
	Homework	3 hrs plus	71.27	0.90	(0.70-1.17)
Reading for fun	Up to 2 hrs	72.06	1.00	-	
	3 hrs plus	73.49	1.08	(0.74-1.56)	0.70
Texting	Up to 2 hrs	70.95	1.00	-	
	3 hrs plus	74.74	1.21	(0.96-1.52)	0.10
Watch TV	Up to 2 hrs	71.59	1.00	-	
	3 hrs plus	73.78	1.12	(0.95-1.32)	0.19
On the Internet	Up to 2 hrs	71.77	1.00	-	
	3 hrs plus	73.50	1.09	(0.80-1.50)	0.59
Do you use a cell phone	Yes	72.67	1.00	-	
	No	71.81	0.96	(0.74-1.25)	0.75
About how many text messages would you send and receive from friends each day	None	71.81	1.00	-	
	1-5	70.88	0.96	(0.46-1.98)	
	6-10	70.65	0.95	(0.62-1.44)	
	11-20	64.67	0.72	(0.41-1.26)	
	21-30	70.16	0.92	(0.51-1.69)	
	31-40	68.15	0.84	(0.55-1.29)	
	Over 40	75.19	1.19	(0.90-1.58)	0.39

†Adjusted for school cluster and sampling weights;
*statistically significant results

Table 0-7: Employment, neighbourhood

		% AT	OR	95% CI	p-value
Past 12 months during school term in paid employment	No	71.84	1.00	-	
	Yes	74.41	0.99	(0.69-1.89)	0.61
Kept a regular job; past 12 months	No	72.17	1.00	-	
	Yes	71.77	0.98	(0.69-1.39)	0.91
Past 12 months in the school holidays were in employment	No	72.74	1.00	-	
	Yes	67.27	0.77	(0.51-1.17)	0.22
Over the last 12 months; I didn't work in the last year	No	71.77	1.00	-	
	Yes	72.17	1.02	(0.72-1.45)	0.91
Not run by school - Volunteer grp	No	72.27	1.00	-	
	Yes	71.08	0.94	(0.51-1.72)	0.85
There is nothing to do where I live	No	72.30	1.00	-	
	Yes	66.47	0.76	(0.46-1.25)	0.28

†Adjusted for school cluster and sampling weights;
*statistically significant results

Table 0-8: Family fun and school characteristics

		% Low SB	OR	95% CI	p-value
You and your family have fun/time together?	None/some	22.27	1.00	-	0.780
	A lot/often	22.80	1.03	(0.82-1.30)	
How do you feel about school?	Like it a lot	25.04	1.00	-	0.16
	A bit /its ok	20.93	0.79	(0.62-1.02)	
	Don't Like	23.07	0.90	(0.50-1.56)	
Bullied in school	No	23.01	1.00	-	0.28
	Once/week to most days	17.04	0.69	(0.35-1.36)	
I don't know why I was bullied	No	17.25	1.00	-	0.79
	Yes	22.04	0.95	(0.65-1.38)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results; SB = sedentary (screen time)

Table 0-9: Health

		% Low SB	OR	95% CI	p-value
Used for healthcare in the last 12 months: Alternative health	No	22.51	1.00	-	0.07
	Yes	42.92	2.59	(0.94-7.12)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results; SB = sedentary (screen time)

Table 0-10: Meeting physical activity guidelines -food

		% Low SB	OR	95% CI	p-value
How often do you eat - breakfast	Always	25.72	1.00	-	0.11
	Sometimes	23.39	0.88	(0.68-1.14)	
	Hardly ever	18.32	0.65	(0.43-0.97)	
How often do you eat - lunch	Always	21.71	1.00	-	0.41
	Sometimes	23.29	1.01	(0.85-1.41)	
	Hardly ever	28.39	1.43	(0.84-2.55)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results; SB= sedentary (screen time)

Table 0-11: Physical activity perceptions

		% Low SB	OR	95% CI	<i>p</i> -value
Choose PA - I'm good at it	No	22.29	1.00	-	0.77
	Yes	22.96	1.04	(0.80-1.35)	
Choose PA - I like competing	No	22.69	1.00	-	0.95
	Yes	22.57	0.99	(0.78-1.26)	
Choose PA - I like winning	No	24.34	1.00	-	0.03
	Yes	19.39	0.75	(0.58-0.97)	
Choose PA - my parents or school make me	No	23.12	1.00	-	0.39
	Yes	19.64	0.81	(0.51-1.31)	
Choose PA - To keep fit	No	18.82	1.00	-	0.02
	Yes	24.20	1.38	(1.04-1.82)	
Choose PA – Other	No	23.08	1.00	-	0.08
	Yes	17.88	0.73	(0.51-1.04)	
Last 7 days did you go to a PE class)	Yes	21.90	1.00	-	0.73
	No	22.95	1.06	(0.75-1.50)	

†Adjusted for school cluster and sampling weights

* indicates statistically significant results; SB = sedentary (screen time)

Table 0-12: Other activities

		% Low SB	OR	95% CI	<i>p</i> -value
Time spent doing each day: Homework	Up to 2 hrs	20.84	1.00	-	0.11
	3 hrs plus	25.11	1.27	(0.951-1.706)	
Reading for fun	Up to 2 hrs	23.56	1.00	-	0.34
	3 hrs plus	20.42	0.83	(0.572-1.21)	

†Adjusted for school cluster and sampling weights;

*statistically significant results; SB = sedentary (screen time)

Table 0-13: Employment, neighbourhood

		% Low SB	OR	95% CI	p-value
Past 12 months during school term in paid employment	No	22.10	1.00	-	0.84
	Yes	22.64	1.03	(0.83-1.28)	
Kept a regular job; past 12 months	No	22.95	1.00	-	0.20
	Yes	18.31	0.75	(0.48-1.17)	
Past 12 months in the school holidays were in employment	No	22.19	1.00	-	0.84
	Yes	22.71	1.03	(0.78-1.37)	
Over the last 12 months; I didn't work in the last year	No	22.64	1.00	-	0.77
	Yes	22.10	0.97	(0.78-1.20)	
How good are you at making and keeping friends)	Not so good	30.79	1.00	-	0.50
	Okay	22.07	0.64	(0.29-1.40)	
	Very good	22.40	0.65	(0.32-1.34)	
- Sport team or group	No	21.13	1.00	-	0.19
	Yes	23.63	1.16	(0.93-1.44)	
Do you feel safe in your neighbourhood?	Sometimes/ never	21.10	1.00	-	0.23
	All of the time	24.01	1.18	(0.90-1.55)	
There is nothing to do where I live	No	22.71	1.00	-	0.67
	Yes	20.21	0.86	(0.44-1.70)	
Things in area you live - walk to from home- A youth centre	No	22.24	1.00	-	0.41
	Yes	24.44	1.13	(0.82-1.56)	

†Adjusted for school cluster and sampling weights;

*statistically significant results; SB = sedentary (screen time)

Appendix I: Generic table showing Pacific youth health status (Chapter 2)

Pacific Youth Health	<p>Health problems connected to obesity are visible in Pacific youth and include diabetes and cardiovascular risk factors.</p> <p>In comparison to other populations, Pacific youth have more challenges in relation to attempting to maintain health and wellbeing.</p> <p>Pacific youth are prone to risky behaviour which include smoking and alcohol consumption.</p>	MoH (2008b)
Ala Mo'ui: Pathways to Pacific Health and Wellbeing 2014-2018	<p>When compared with the New Zealand population, Pacific youth have "poorer health status leading to poor health and long-term conditions" (p. 1). Pacific people want to be healthy however, they have family commitments, community needs such as church donations, and other financial commitments which impact on their health and use of health services.</p>	MoH (2014)
Health and Pacific peoples in New Zealand	<p>Pacific youth have problems accessing health care in comparison to other youth residing in New Zealand.</p> <p>Over 25% of Pacific youth are obese.</p> <p>Pacific youth have higher rates of alcohol consumption in comparison to other youth.</p> <p>In particular amongst Pacific women, there are "significant mental health concerns" (p. 18).</p>	Statistics New Zealand and Ministry of Pacific Affairs (2011)
The health and wellbeing of secondary school students in New Zealand	<p>Pacific youth were less likely to report "good to excellent health" in comparison to other youth residing in New Zealand.</p> <p>While they eat more fruit and vegetables, they also eat more junk food, than European youth.</p>	Helu et al., (2009)