

# Participation of boys with Developmental Coordination Disorder in gymnastics

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## Abstract

Gymnastics has been identified as an accessible occupation for children with Developmental Coordination Disorder (DCD). The goal of this qualitative study was to classify the features that make it accessible to children with DCD. Three boys with DCD, their parents and two coaches participated. The first author also acted as a coach. Data collection included videotaping each session, field notes, and interviews. The findings show that gymnastics has an individualised, graded approach to skill attainment that enables successful progression for gymnasts with wide ranging abilities. Successful participation was facilitated by aspects of the specific club, and the particular gymnastics group.

## Key words

Qualitative research, Developmental Coordination Disorder, gymnastics, participation.

## Reference

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Children with Developmental Coordination Disorder (DCD) have coordination difficulties that significantly interfere with academic achievement, activities of daily living (American Psychiatric Association, 2000), and leisure activities (Dunford, Missiuna, Street, & Sibert, 2005). Engaging in meaningful occupations such as schooling, self care, and leisure, promotes health and well-being (Wilcock, 2006). Therefore the reduced ability and opportunities children with DCD have to participate in social occupations have been found to result in psychosocial problems (Chu, 1998; Poulsen, Ziviani, Cuskelly, & Smith, 2007) and increased sedentary behaviour (Poulsen, Ziviani, & Cuskelly, 2008; Schott, Aloff, Hultsch, & Meermann, 2007). Indeed, children with DCD themselves have voiced concern over their ability to participate in leisure activities (Dunford, et al.).

In response to these concerns participation in accessible occupations, including gymnastics, is encouraged as “children with DCD tend to have more success with individual sports ...some examples of these types of individual sporting activities include... gymnastics” (Rivard, & Missiuna, 2004, p. 3). The features that facilitate participation in gymnastics have not been closely investigated. However, two key factors have been suggested as possible influences. One, the attitude of gymnastics coaches (Fennick & Royle, 2003) and two, the individuality of the performance (Rivard & Missiuna, 2004). How these features exert an influence on accessibility may be best understood within the social model of disability. This model states that “disability is not something individuals have... Disability is the process which happens when one group of people create barriers by designing

a world only for their way of living, taking no account of the impairments other people have” (Ministry of Health, 2001, p. 1).

In the same way, external influences (i.e. the attitude or presence of others) are considered key elements of the World Health Organization’s International Classification of Functioning, Disability and Health (World Health Organization (WHO), 2001). This classification system asserts that the actual participation outcomes of having a health condition (such as DCD) and the barriers and facilitators encountered in physical and social environments interact to influence function, disability and health. This small-scale study was designed to explore this interplay and provide a detailed description of why gymnastics is accessible to children with DCD.

Little is known about the influence of environmental factors on the participation of children with DCD. Curious as to the factors

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that would make gymnastics accessible to children with DCD, the study was undertaken to explore the question: What is the culture of a community gymnastics group in which children with DCD participate? In other words, we wanted to find out whether children with DCD could effectively participate in a community gymnastics group and what internal and external factors influence successful participation.

## Literature review

Much of the literature regarding DCD has been directed at the level of body structure and function, with a multitude of therapeutic approaches and techniques being developed to improve children's movement abilities (Peters & Wright, 1999; Schoemaker, Hijlkema, & Kalverboer, 1994). Outcome studies, however, report mixed findings with a review of the literature concluding "empirical data do not convincingly support their effectiveness" (Mandich, Polatajko, Macnab, & Miller, 2001, p. 65). More recently, the Cognitive Orientation to Daily Occupational Performance approach, designed to develop children's use of cognitive strategies has had success (Polatajko, Mandich, Miller, & Macnab, 2001). This approach involves using strategies while participating in an actual occupation and, when compared with the literature on treating the disorder, has greater potential to enhance understandings of the relationship between DCD and participation in occupation (Mandich, Polatajko, & Rodger, 2003). Concerns have also been raised regarding the fitness levels of children with DCD (Schott et al., 2007).

Although treatment of body structure and function has been a primary focus in the DCD literature, the influence of the environment on participation in occupation is well accepted (Law et al., 1997). Occupational therapists have conceptualized the environment as comprising four domains which align with the environmental factors outlined in the ICF; physical (natural and human made, including objects in the environment), social (people and animals), institutional (services, systems and policies) and cultural (attitudes) (Townsend, 1997; WHO, 2001). While there has been relatively little comment on the influence of the physical environment on children with DCD, objects in school playgrounds (Bouffard et al., 1996) and furniture in modern classrooms have been identified as barriers to participation (Kirby, 2001). In the social environment, people's attitude towards children with a disability is known to limit participation (King et al., 2003; Law et al., 1999). More specifically, it has been reported that children with DCD are left out, teased, and bullied (Davis, 1997; Mandich et al., 2003) while clumsy children have fewer playmates and play less often with other children in school playgrounds (Bouffard et al., 1996; Smyth & Anderson, 2000). Little attention has been given to the institutional environment in the literature regarding DCD. Policies such as the New Zealand Disability Strategy (Ministry of Health, 2001) and the Americans with Disabilities Act of 1990 promote the participation of people with disabilities (Kalscheur, 1992). However, the influence these policies and lower level institutional factors (such as the policies or procedures of schools, clubs and other community facilities) have for children with DCD are unknown.

The impact of the cultural environment on the participation of children with DCD is also poorly understood. Indeed, in literature regarding disability in general, it has been proposed that "the culture of the family does not emerge as a significant factor in determining the occupation of the children" (Law et al., 1999, p. 107). Chen and Cohn (2003) proposed "cultural ...impacts on social participation... also require investigation" (p. 70). However, a key finding of Davis and Watson's (2001) ethnographic study of children with a disability was that although "there has been little attention paid to ...cultural barriers that disabled children face every day" (p. 674), notions of normality and difference strongly influence their participation by creating practices of segregation and dependency. Such notions of difference mean that barriers to participation are attributed to the children's dysfunction, as they are the ones who are 'different'. Accordingly, 'clumsy children's' paucity of playmates and engagement in play referred to above were attributed to their lack of physical skills as opposed to external barriers (Bouffard et al., 1996; Smyth & Anderson, 2000). This reflects a cultural belief in which "all too often a child's deficits are blamed for unsuccessful friendships and social interactions. Such attitudes contribute to the unsupportive environment that sets many children up for social failure" (Baker & Donnelly, 2001, p. 82).

## Gymnastics in New Zealand

While there has been little research into gymnastics in New Zealand, educational literature written for gymnastic coaches was explored to offer insight into the culture of the sport in this country. Gymnastics, or 'gym sports' as they are increasingly branded, includes competitive and non-competitive (general) artistic gymnastics, rhythmic gymnastics, trampolining and tumbling. This study took place within a general gymnastics class.

The main focus of the New Zealand gymnastics literature is the development of gymnastic skills through six Dominant or Fundamental Movement Patterns: landings, statics, locomotion, swings, rotations, and springs. Described as the "lowest common movement denominators" these movements are thought to underpin "competency with the unique pattern of movements that make up gymnastics" (Canadian Gymnastics Federation, 1986, p. 46). The movement pattern approach has been developed into several methods of gymnastics instruction including, in the preschool years, a method called 'Playgym' and later through 'Kiwi Gymfun' or merit badge/incentive awards systems.

Skill teaching is highly structured in gymnastics, with the correct progression seen as essential to competency and successful performance. The Introductory Coaching Manual states that "key skills are presented so that the 'technically correct' performance is not overlooked... The other skills that are presented are progressions to or variations of the Key Skills" (Canadian Gymnastics Federation, 1986, p. 46). Coaches focus on technical elements of achieving a skill such as how gymnasts position their hands. The process of skill development involves working on a skill repeatedly, focusing on refining and progressing. In addition to this skill focus, the general gymnastics literature

highlights the value of having fun. It is acknowledged that “if children do not enjoy a gymnastics class they will not continue voluntary participation in it” (Canadian Gymnastics Federation, 1986, p. 8).

Gymnastics is situated within a broader sports context and coaches apply knowledge from this broader perspective. For example, ‘sessions’ (the time over which a particular group have a lesson) include a warm-up to ready the body for physical activity (Coaching New Zealand, 1997) and a warm-down. The warm-up commonly entails running and stretching, and is sometimes framed as a game. At times, specific safety techniques – such as how to land from a jump – may be directly taught during the warm-up. The warm-down, which concludes the session, involves stretching and is believed to aid recovery and return the body to its resting state (Coaching New Zealand, 1997).

Sports training typically involves an element of skill training (Coaching New Zealand, 1997) however, gymnastics is exclusively skill focused (i.e. there is no ‘game’ in which all skills come together as a performance). Gymnastic sessions usually comprise small groups of gymnasts moving in sequence around ‘stations’, which are groupings of equipment. Stations are defined by the equipment located there (e.g. ‘beams’ or ‘bars’) or by a movement pattern (e.g. rotations or spring) (New Zealand Gymnastics, 1999). Activities at the station are then tailored to the skill level of the gymnasts. For example, a station set up for rotations, could include rocking, rolling sideways, spinning, or backwards and forwards rolls (New Zealand Gymnastics). The use of traditional gymnastics equipment (i.e. for competitive gymnasts) means that traditional skills (i.e. using the equipment as a competitive gymnast would) remain an aspect of the general gymnastics programme.

Situated within a broader Gym Sports environment in which general sports coaching principles apply, the fundamental movement pattern approach has shifted the emphasis of general gymnastics away from training gymnasts to perform gymnastics skills, to developing more generic movements for wider application. Although the result is ultimately the performance of skills, including traditional gymnastics skills, this focus shapes the coaches’ approach to teaching and this in turn creates the cultural environment. For the purposes of this study, ethnographic methods were employed to uncover the attitudes, values, beliefs and behaviours (i.e. the culture) of coaches, parents and participants in a gymnastics group including three boys with DCD.

## Method

Ethnography is underpinned by the belief that processes in the social world (such as the process of participation) can be interpreted and represented (Rock, 2001). It is characterised by fieldwork conducted over an extended period. Researchers are often participant observers (Emerson, Fretz, & Shaw, 2001), as was the case in this study, meaning they enter the field to observe, ask about, and participate in naturally occurring occupations to gain deeper understandings of participants’ values, beliefs and behaviours.

Once ethical approval was granted by the Auckland University of Technology Ethics Committee (29/04/2004), an advertisement was placed in local newspapers and libraries, resulting in four children with DCD and their parents volunteering to participate. Both parents and children were provided with information about the study and each signed a consent form. Inclusion criteria included:

- the children had been diagnosed with DCD (more commonly referred to as dyspraxia in New Zealand)
- aged 7 or 8
- prepared to participate in gymnastics.

One child, who had additional disabilities that would affect his participation, was excluded from the study. Additional participants (a head coach and assistant coach) were also provided with written information and completed consent forms.

## The field

Negotiating entry to the field is the first step in ethnographic studies. In this case, the managers of a gymnastics club were approached by the first author and they agreed to allow the research to be conducted on their premises, once a week for two terms (18 weeks in total). The club which was known to the author runs a wide range of classes. Situated in a large, purpose-built building the gymnasium or ‘Club’ provides classes for approximately 1,000 general and competitive gymnasts, ranging from preschoolers to adults. Club statistics reveal that over 90% of the gymnasts participate in general (non-competitive) gymnastics, with the vast majority aged 5-10 years or younger. Girls outnumber boys approximately 3:1. These figures are consistent with New Zealand national statistics of participation in gymnastics (Sport and Recreation New Zealand, 2006).

The three participant families variously self identified as New Zealanders of Chinese descent, members of Ngati Maniapoto (a Maori Tribe), or New Zealanders of European descent. The children with DCD were all boys. The sessions were run on a night of the week when there were approximately 50 other gymnasts, organised into three groups, in the gymnasium. Initially, the plan was to run a group solely for the gymnasts with DCD, to determine their ability. However, on the first night the gymnasts with DCD joined an established boy’s general gymnastics group of mixed ages (the ‘Boys’ Group’). The head coach, who was responsible for overall organisation of the group and the warm-up and warm-down activity, was happy for the gymnasts with DCD to participate. The first author, (who had 5 years experience as a paediatric occupational therapist and 10 years gymnastics coaching experience at the time of the study), acted as an assistant coach along with two and sometimes three other assistant coaches monitoring the gymnasts with DCD as they circulated the stations. Feedback from the participants during the study determined that the first author acted as a coach, rather than a therapist during the sessions. The usual fees for the sessions were waived for the participants of the research following a grant from the local gymnastics association.

### Data collection and analysis

Data was gathered through observations and written up in the form of field notes. Accuracy of recall and additional observations were made possible by a research assistant videoing every session. These videos were then viewed immediately after the session and added to the field notes. As suggested by Mulhall (2002), notes and quotes included the physical environment, the people (behaviour, appearance), dialogue, the process of activities, special events such as the awarding of certificates, and everyday events such as moving equipment. In addition, conversational interviews were conducted before, during and after the classes and, because the instructions to the children with DCD were not audible on the video, one session was audiotaped.

On completion of the 18 gymnastics sessions, in-depth semi-structured interviews were conducted with the head coach, an assistant coach, five parents and the three gymnasts with DCD. Questions included beliefs (e.g. "what had you expected when you brought [your child] to gymnastics?") and values (e.g. "what was one of your favourite things about gym?"). One of the coaches was interviewed at the gymnasium, while the other interviews were conducted in the interviewees' homes, at their request. The gymnasts were interviewed in the presence of their parents; one of the gymnasts chose to remain throughout his parents' interview. Interviews were transcribed verbatim.

Analysis of the data began during data collection in the field. The field notes and transcripts were categorised into various beliefs, values and behaviours. Early categories which included 'demonstration', 'equipment as visual cues' and 'phrase repetition' subsequently became categories that encompassed coaching techniques. Validity was enhanced through methods of triangulation including using three sources of data to support findings (field notes, interviews and videotapes). Journaling, reflection and discussion of raw data and emerging analysis by the three authors (one an anthropologist) enhanced rigor. As with all interpretive studies it is acknowledged that the researchers' viewpoint influenced the findings.

### Findings

The findings are presented in three sections, relating to influences that came from outside the Club and that could be expected to be found in the various environments in which gymnastics occurs, aspects of the Club itself that appeared influential and which may vary from club to club, and aspects of the immediate social environment of the Boys' Group that perhaps would not have been evident in other groups even within the same club.

#### **Influential perspectives and practices from beyond the club**

The version of gymnastics that participants in this study engaged in was based on the Kiwi Gymfun programme, a highly structured approach that grades skill development from relatively basic movements (e.g. jumping) to more complex gymnastics skills (e.g. bunny hops). This structured grading promoted successful participation in two ways. Firstly, because the gymnasts' existing abilities (such as jumping) fitted within the parameters

of 'gymnastics skills', they were able to quickly experience success. Secondly, the reduction of skills to a combination of basic movements meant the gymnasts could work towards small, specific goals, thus ensuring all progress received positive feedback. Rewards included Kiwi Gymfun badges.

Consequently, the gymnasts indicated that progression of skills was important and they believed the coach assisted them with this process; "I didn't know how to do stuff and you also told us how to try to and make your body straight on the rings, which was really helpful". The adults also believed the gymnasts' progress reflected underlying development of abilities and that their participation would "improve their coordination, balance, all those sorts of things... the main impetus would be 'Let's make these guys stronger and fitter'" (Coach). One parent also stated "I've always wanted [my son] to do something like that [gymnastics] for his coordination".

#### **Variation and repetition**

The process of a gymnastics session, which involves progressing around the stations, was initially challenging for the gymnasts with DCD. They were observed lying down for short periods during the initial sessions, apparently finding it difficult to maintain a consistent level of activity for the hour. However, the frequent shifts to new stations and the range of activities performed at each station sustained their interest and provided the variety their parents believed they needed. This aspect of the sessions was perceived to enable successful participation: "It was good because they only spent a certain amount of time each time on the different activities and that's usually about [my son's] attention span" (Parent). Furthermore, as the stations require different abilities, each gymnast with DCD found something he could do proficiently. This was made evident in expressions of preference for specific equipment: "I liked the rings but I also liked trampoline". The gymnasts could return to their favourite equipment each week. In addition, the movement pattern approach meant activities were carried out on several pieces of equipment, which provided repeated opportunities to practice skills and consolidate learning.

#### **An individual sport**

In addition to the sense of achievement enabled by the individualised grading of skills, participation in gymnastics was aided by its individual focus. That is, one child's performance is not viewed as compromising the success of another, as is the case in team sports: "Because he may not have been as good as the others on the team, they didn't let him play sometimes as long as the other kids. I noticed that other parents when they were subbing on and off they always took [my son] off, and let other kids on" (Parent). This is not to say that children with DCD are not able to participate successfully in team sports; one of the other gymnasts in the study reported being good at soccer, and successful participation in soccer has been identified elsewhere in the literature regarding DCD (Smyth & Anderson, 2000). However, in comparison to team sports, other gymnasts and coaches were not reliant on the rate of skill development of gymnasts with DCD, allowing them to progress at their own pace.

### **The Club context**

The Club environment influenced how the gymnastics were done and what it meant. One of the first things the participants noticed when they entered the gymnasium was that it was big: “*I didn’t think it’d be as big*” (Parent), “*[It was] a bit big*” (Gymnast). Indeed the Club is big in terms of the size of the building, the number of gymnasts it can accommodate, and the permanently set up equipment, which includes several sets of parallel and uneven bars, beams of varying heights, boxes and vaults and a 142 metre sprung floor. The size of the Club also meant that several classes can run simultaneously. On the night that the gymnasts with DCD attended, two competitive classes (girls and senior boys) were running alongside the Boys’ Group.

Parents commented on the Club facilities and other gymnasts whom they perceived to be very professional: “*Yeah, I was impressed with it*”, “*It’s a good facility*”, “*Very professional, like they’re training up Olympians*”. However, on the first night, two of the gymnasts with DCD found the environment intimidating, with one boy crying and refusing to participate, and another staying close to his mother and initially preferring to observe. Therefore, the size of the Club, both in terms of the building and the number of gymnasts was more of a barrier than facilitator to participation.

It would seem that while the parents believed the equipment demonstrated professionalism, the gymnasts responded to it as though it was for playing on. The equipment appeared to entice the gymnasts to participate: “*What bits did you like most at the start?*” (Author), “*Well, ‘cos we did the rings, I liked the rings*” (Gymnast), and although one of the gymnasts avoided the warm up for several weeks, they all engaged with the equipment from week one. The additional Playgym equipment included ladders, slides, climbing ropes, and balls of various sizes, giving the appearance of a playground. One of the coaches commented that it was not only the gymnasts with DCD who initially formed this impression; “*Obviously the first thing everyone thinks is to go and play on everything*”.

In addition to the gym floor space, a mezzanine floor is set aside for non-gymnasts (including parents, siblings, and gymnasts whose session is not presently running). Although gymnasts on the floor were able to see their parents, the separation initially proved to be a barrier for gymnasts with DCD as they looked to their parents for support. On one occasion, a gymnast with DCD became upset and did not want to participate when he could not see his mother.

Another challenge to participation was the need for gymnasts to remain within their allocated space and to avoid collisions with other gymnasts on the floor. The two younger gymnasts with DCD found it particularly difficult to remain at their station, and during one of the initial sessions one of them was warned that he would have to sit out if he continued to get in the way of other gymnasts. Eventually they were able to remain within the allocated space because as they engaged in the activities, they developed a repertoire of skills and the issue was resolved.

The high level of noise that prevails during Club sessions may have contributed to the fact that the gymnasts with DCD did not always respond to verbal instructions. The adults alleged that they had particular difficulty listening to instructions, however, as the gymnasts developed more skills, they were seen to respond more promptly to verbal instructions.

### **The Boys’ Group**

The Boys’ Group was unique within the Club in regard to two key aspects that shaped the practice and meaning of gymnastics in the study. Firstly, unlike other general gymnastics groups, the Boys’ Group is a single gender group (other general gymnastics groups in the Club are grouped by age). In addition, where gym groups normally have a narrow age range, the gymnasts in the Boys’ Group range from 5-12. These characteristics, in combination with the coaching style and variation in abilities between the gymnasts themselves, created a distinct culture that facilitated the participation of the gymnasts with DCD.

The Boys’ Group session followed a typical pattern; at the start of a session the gymnasts tended to congregate on the stairs until one of the coaches got into position to give the roll call. The boys would rush to the floor and sit in front of the coach, wrestling, talking and fidgeting through the roll call. The warm-up involved running around the floor, some skill practice, jumping and so on, or a game. In this context, the inattentiveness of the gymnasts with DCD and their inconsistency with following directions did not stand out as unusual. However, one of the gymnasts with DCD initially found the warm-up to be a barrier, and refused to participate until week 13. He was unable to articulate why he would not join in, but the chaotic and boisterous nature of the group may have made it more intimidating than a more controlled group. After watching intensely for 12 weeks, he happily participated. After the warm-up, the gymnasts returned to sitting on the floor and the head coach divided them into smaller groups for the stations.

The stations were set up in accordance with movement patterns and the gymnasts, and their allocated coach, moved in a clockwise direction around the stations when prompted by the head coach. Five minutes before the end of the session the head coach instructed the gymnasts to sit on the floor, and an assistant coach led the warm-down, which comprised of a series of stretches presented in the same order with the same instructions each time.

Since the Boys’ Group included a broad age range and was non-competitive, the abilities of the gymnasts were very varied. For example, the group was made up of gymnasts whose ability precluded them from competing, gymnasts who had the ability but were too young to compete, and capable gymnasts who did not want to compete. In this context, the gymnasts with DCD were seen in a spectrum of ‘more able’ and ‘less able’ as opposed to ‘able’ and ‘disabled’ as would be seen in a more homogenous grouping.

[In] *one of our other sessions where you’ve got a lot of quiet little kids that are very disciplined and go from group to group*

*and do exactly what they're told, I think they would have stood out far more in that sort of environment (Coach).*

Along with not appearing different, this variation created a culture of accepting and assisting attitudes amongst the gymnasts. As one parent noted:

*Most of them were really tolerant, like that day that [my son] couldn't do the game that they were playing, and one of the boys helped him ... I think the main reason they were tolerant was because there were children of all ages and all different abilities that they didn't judge people.*

In addition to helping each other, all the gymnasts assisted the coaches with moving equipment, even when their help was not required.

The mix of abilities also had an impact on the coaching. The head coach was a woman with many years coaching experience and she had recently moved to the Club from a small rural club. The assistant coaches (the first author included) were school or university students, male and female, who were former gymnasts. It was agreed that coaching the Boys' Group required a particular set of beliefs regarding behaviour.

*They're the type of kids that can't sit still and can't stand still... You've got to get used to the fact that when you are talking to the group they're not all going to be sitting there looking at you. They're going to be fidgeting... They [other members of the Club] assume the behaviour they're displaying is abnormal, and it's not, it's perfectly normal behaviour (Coach).*

The head coach also had experience of working with children with disabilities, and applied some of her knowledge gained through this work to her coaching.

*We've had...oppositional defiant disorder, which basically means 'will not do as told'. I thought it was a pretty normal disorder for most boys. I thought you could blanket them with 'will not do as told' (laughing)... We've got at least one other that's ADD.*

This acceptance meant that the gymnasts with DCD were not only included because they fitted within the spectrum of ability, but because their diagnosable disorder was considered to be part of the normal range.

A variety of coaching styles were used to manage the variation within the group. The head coach used a more aggressive approach, framed in humour, while the coach of the gymnasts with DCD utilised a 'softer' approach.

*I think that your personality was perhaps more approachable than a couple of the other coaches there in that they could be seen as a little bit scary and that certainly makes a difference... because [my son] does get anxious (Parent).*

The gymnasts responded well to this gentler style of coaching and it encouraged participation. In addition to style, the techniques used by the coaches had a significant impact on the success of the gymnasts with DCD. A combination of demonstration, verbal prompts and visual cues were used to instruct the gymnasts. The

following example is taken from the audio taped session where the first author is trying to demonstrate an activity at the vault station (pseudonyms have been used for the gymnasts):

Coach: *You have to run up, you have to, you have to jump up, jump hands and feet. Should I show you?*

James: *Yip.*

Coach: *And then do a stretch star jump and land still, okay? So it's like this [demonstration]. Can I show you? Guys? ...Richard, Richard you need to hop out the way. Tom*

Richard: *Tom!*

Coach: *Hop out the way for a second. I want to show what you have to do on this one.*

James: *Tom!*

Coach: *Alex, Richard, can you stay off the (laughs). Okay, alright, how about you guys all come down with me to this line here. Then you can see what to do.*

## Discussion

The gymnasts with DCD were successful participants in gymnastics in this study. Their participation, and their understanding of their participation, was influenced by internal and external factors. Wide ranging activities are structured and graded to facilitate each individual's progress and assist in developing underlying movement patterns or abilities. The range of equipment, the coaching style, and the measures of success are all intended to support an individual's skill acquisition. The individuality of gymnastics makes it a good choice for children with DCD. This is endorsed by Rivard and Missiuna, (2004) when they stated "performance in these activities is measured on an individual basis, which tends to promote individual progress, effort, and participation rather than competition" (p. 3).

The large environment of the club initially created some barriers to the gymnasts with DCD. They were intimidated by the number of people present, and had difficulty concentrating on the activity and staying out of the way of other gymnasts. Thus they had to overcome more than simple coordination deficits. This is confirmed by studies which suggested that children with DCD are not competent athletics (Watson & Knott, 2006). They also seem to have difficulty manoeuvring around obstacles and so they often bump into things (Rivard & Missiuna, 2004). The level of noise in the Club and the enforced separation from their parents was also a challenge, but over the 18 weeks, the gymnasts with DCD adapted and these issues did not prevent successful participation.

The Boys' Group was made up of gymnasts with widely varying abilities. The attitude of coaches, which has previously been indicated as enabling successful participation (Chen & Cohn, 2003; Fennick & Royle, 2003), was a positive aspect in that the coaches did not define gymnasts in the dichotomy of able versus disabled. Davis and Watson's (2001) ethnographic study also found that beliefs around normality and difference significantly influenced participation in schools. The use of a variety of coaching styles supported participation, with the gymnasts with DCD preferring a 'softer' style. Specific approaches to coaching, for instance demonstration, use of equipment as visual cues, and

repetition of verbal prompts also assisted the gymnasts with DCD to enhance their abilities within the group. The success of these strategies in this context supports the use of cognitive strategies proposed in the Cognitive Orientation to daily Occupational Performance intervention (Polatajko et al., 2001).

## Conclusion

Despite occupational therapy's central tenet that participation in occupation is fundamental to health and well-being, participation in occupation in ordinary environments has received only minimal attention in the literature regarding DCD. It has however been proposed that some occupations are more appropriate than others for children with DCD. This study has identified gymnastics as one such occupation. The purpose of this ethnographic study was to identify and describe the features of gymnastics that may make it accessible by exploring the culture of a community gymnastics group in which children with DCD participated. Analysis of the data revealed that influences from the environment beyond the Club informed the gymnastic culture in which gymnasts with DCD participated. In particular graded skill development, variation of activity, and individual measures of success supported their involvement. The unique culture of the Club together with the non-competitive nature of the group added layers of meaning and ways of doing that enabled gymnastics to be accessible to these boys. The use of cognitive strategies by the coaches coupled with the belief that the gymnasts with DCD were within the range of 'normal' facilitated their success.

Applying a cultural perspective to participation in occupation ensures that the occupation as it is practiced in context, and the meaning it holds in that context, can be uncovered. This study has revealed that children with DCD can successfully participate in gymnastics. In particular, it contributes to understanding of why gymnastics is an accessible activity for children with DCD by clarifying the features which facilitated a successful outcome. The authors advise caution in applying these findings beyond the experience of the three boys with DCD who participated in this study. Further investigation into the contextual influences of participation for children with DCD is needed before any reliable generalizations can be offered.

## Key points

1. An understanding of the cultural context which surrounds an occupation will assist occupational therapists to analyze and adapt occupations and the environment to promote participation.
2. Being among others with mixed abilities supported participation of boys with DCD in a gymnastics programme.
3. The individual nature of gymnastics, its skills focus, coaching approach, and equipment facilitated participation.

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