

NNZ Junior Development 6v6 Programme Technical Report

'Fast, Involved, Engaged and Fun'

September 2016
Dr. Kirsten Spencer & Sophie Wolf



SPORTS PERFORMANCE
RESEARCH INSTITUTE, NEW ZEALAND
AN INSTITUTE OF AUT UNIVERSITY

HEADLINE FINDINGS AND RECOMMENDATIONS FOR THE 6V6 ROLL-OUT	3
PERFORMANCE ANALYSIS DATA	7
PARTICIPANTS	7
SPACE	9
PLAYER DENSITY AND POTENTIAL INTERACTIONS	9
FAST	9
TRANSITIONS	9
INVOLVEMENT	11
PASSING	11
SHOOTING	13
CHANGE	14
TEAM PERFORMANCE ASSESSMENT PROCEDURE	14
FOCUS	19
ENGAGEMENT & DISTRACTION	19
QUALITATIVE DATA	21
MOTIVATION	21
PLAYER PERCEPTION - AUTONOMY, COMPETENCE AND RELATEDNESS	21
PHYSICAL LITERACY, PARENT AND COACH PERSPECTIVES	24
SURVEY QUESTIONS AND RESPONSES	26
<i>DO THE PARENTS AND COACHES THINK THE 6V6 PLAYERS WERE ENJOYING THEMSELVES?</i>	26
<i>WHAT DID THE COACHES AND PARENTS PERCEIVE THE PLAYERS ENJOYED MOST ABOUT THE 6V6?</i>	27
<i>WHAT DID COACHES AND PARENTS PERCEIVE THE PLAYERS ENJOYED LEAST ABOUT THE 6V6?</i>	28
<i>HOW LIKELY DID THE COACHES AND PARENTS PERCEIVE THE PLAYERS WOULD PARTICIPATE IN 6V6 NEXT YEAR?</i>	30
<i>WHAT DID THE COACHES AND PARENTS LIKE MOST ABOUT 6V6?</i>	31
<i>HOW DID THE COACHES AND PARENTS THINK 6V6 BE IMPROVED?</i>	32
<i>WHAT RULE MODIFICATIONS DID THE COACHES AND PARENTS THINK WERE BENEFICIAL?</i>	33
<i>HOW IMPORTANT IS IT THAT THE 6V6 FORMAT MEETS THE PLAYERS' NEEDS?</i>	37
<i>HOW LIKELY IS IT THAT THE 6V6 FORMAT MET YOUR PLAYERS' NEEDS?</i>	38
<i>HOW LIKELY ARE YOU TO RECOMMEND 6V6 TO OTHERS?</i>	39
THE FOCUS GROUPS	40
CONCLUSIONS	41
APPENDICES	42
PARTICIPATING TEAMS	42
TRAINING DAYS	43
PARTICIPANT INFORMATION SHEET	44
CONSENT AND ASSENT FORMS	45
FOCUS GROUP GUIDING QUESTIONS	47
THE FOCUS GROUPS	47
CHILDREN'S ENJOYMENT AND INVOLVEMENT IN THE GAME	48
LIKE AND DISLIKES OF THE 6 V 6 PILOT GAME?	48
THE DELIVERY MODEL – DOES IT WORK?	48
REFERENCES	49

HEADLINE FINDINGS AND RECOMMENDATIONS FOR THE 6V6 ROLL-OUT

Performance Analysis (game analysis of players)

SPACE

6v6 constitutes a more pressurized game than 7v7 with greater potential interactions

FAST

There are more transitions in 6v6 than 7v7

The whistle stoppages are significantly less in 6v6 than 7v7

INVOLVEMENT

Relative to the number of players (12 compared to 14) on the court 6v6 has more pass completions

Defending players in 6v6 have significantly more pass completions than 7v7 defending players

Mid court 7v7 players have significantly more pass completions than 6v6 mid court players

The percentage of successful shots and missed shots is the same in 6v6 and 7v7

CHANGE

6v6 is more 'efficient' than 7v7

6v6 has greater performance than 7v7

6v6 has a higher volume of play index than 7v7

FOCUS

6v6 players (all positions) are more engaged in the game than 7v7 players

Questionnaire (completed by players)

MOTIVATION

6v6 players score high on the scales of autonomy, competence and relatedness i.e. are intrinsically motivated.

Survey (completed by coaches and parents)

ENJOYMENT

Coaches and parents think player level of perceived enjoyment is high in 6v6 due to high level of involvement and being involved 'most of the time'. Involvement is the most liked aspect of 6v6.

CONFUSION

Coaches and parents think player level of perceived confusion is with the 2nd centre positioning

STAYING IN THE GAME

Coaches and parents think players will be 'extremely likely to play again next year'

IMPROVEMENTS

Coaches and parents think more consistent refereeing and resolving the 2nd centre issue at each centre pass.

MODIFICATIONS

Year 5 Coaches and parents think 'relaxing the rules' was most important. Year 6 parents are 'uncertain'

Coaches and parents think 'rotations' were extremely important

RECOMMEND 6v6

Coaches are extremely likely to recommend 6v6. Parents are most likely to recommend 6v6

Focus Group (completed by coaches, administration and parents)

PHYSICAL LITERACY

Coaches and parents think it is 'extremely likely' and 'most important' that 6v6 meets player needs

PHYSICAL NEED

6v6 focus groups liked that 6v6 gave more opportunity to be involved; more touches and more court time

COGNITIVE NEED

Focus groups liked the 'learning all positions'; focus on skill learning, opportunity for players to make decisions and that it transitions well from 5v5.

SOCIAL NEED

The focus groups thought that rotations gave the children confidence; the players would stay in the game longer; more team encouragement.

SPIRITUAL NEED

The 6v6 game has more emphasis on fun.

RECOMMENDATIONS

Results and feedback from the performance analysis, focus groups and survey data would suggest the following recommendations to the 6v6 programme:

1. Coach workshops are made compulsory (with refresher workshops to 'sweep' up non-attendees and give more opportunity to all coaches)
2. Umpires require up-skilling/training to create more consistency
3. The issue of the '2nd Centre' at centre pass needs greater clarification.
4. Inform the parents of the benefits of 6v6 to try to increase support/buy-in.
5. Address the discrepancy between the current schools 7v7 competitions and the **ANZ futureFERNs**.

Context

Netball in New Zealand has been rightly identified as a game of national and cultural importance [1]. At international level New Zealand Netball continues as a major world force despite demographic limitations that see it pitched against nations many times larger than it.

The key to this success rests in part with a large participation base that sees three out of four young women participate in Netball at some level of other [2] and one in twenty continuing participation into adulthood [3]. This success is set against two particular challenges; global declines in physical activity worldwide [3, 4] and the increasing quality demanded of players at the highest levels [5]. Consequently Netball New Zealand (NNZ) confronts the need reconcile the sometimes conflicting demands of performance, development and motivation in young players.

Netball is classified as a high strategy sport (Abernathy et al., 1993), and 'high-strategy' beginners base their success on their understanding of the 'game situation' more than an assessment of the 'competency of their motor skills' (Bock – Jonathan, Venter and Bressan, 2007). Young players are required to develop a large repertoire of combined skills (technical proficiency) and need to understand 'when' and 'where' to apply these skills in game situations (tactical knowledge) (Thomas, 1994). So the design of the games they play during their development are important to aid the players to apply their skills and make better decisions during the game. By its nature Netball demands particular positional skills and attributes from players at an early age. For example taller players tend to be goal shooters and shorter ones wing attack. Zone rules reinforce particular skills and characteristics as they confine players to specialist roles around the court. Consequently a commonly seen tactic in youth games is to cluster tall players around the goal hoop. Unfortunately the taller twelve year old may not be the tallest adult. Precocity and non-linear development interact to in effect "force players out of position" as they grow. Similar problems arise for physically more mature and therefore faster players given mid-court roles earlier in their careers. Problems relating to precocity, age-effects and selection are being seen throughout sport and reflect an increasing demand for early specialisation [6]. Early specialisation has been argued to inhibit the potential development of the young players, as they may lack the cognitive and fundamental movement skills required for a different position once growth has slowed [5, 7]. Conflict rests then between winning games within a thriving, motivating league program and playing players out of logical position at early ages in order that they develop requisite skills for mature involvement. Mitigating these potential conflicts and related problems is the challenge of planning for skill, performance and motivation. Part of the answer to the problem of developing skilled players rather than rewarding physically more mature ones may be found in the use of modified games in coaching. Modified games can be used by coaches to manipulate learning context so that desired skills may be developed [8]. When compared to drills or repetitive training in particular, modified games have been associated with greater fitness [9, 10], better decision-making [11] improved skill [10] and greater motivation [12]. On the basis of evidence it seems likely that, modified games would be of benefit in helping to develop the next generation of netball players. New Zealand is fortunate in that modified netball games are being implemented by NNZ with established, competition and support. Six v Six is a

modified version of netball, which has reduced team size (6 instead of 7) and modified rules (rotations, less restricted movement, increased opportunities to score, substitutions). The aim of these modifications is that each player will receive more individual time on varied tasks in a game and more opportunities to explore skills. A legitimate question that needs to be addressed here is whether modified games are in effect simplified games of limited long-term benefit to players. With a view to addressing this issue this report was undertaken in conjunction with NNZ. In order to better understand potential benefits of disadvantages associated with playing modified games this research seeks to specifically compare key skill opportunities and game experiences for players exposed to 6v6 via performance analysis and questionnaires.

Key skill opportunities identified in conjunction with NNZ were:

- Space (player density and potential interactions)
- Speed (faster game/transitions)
- Involvement (passing and shooting)
- Team Performance Assessment Procedure (gaining possession and dispossession of the ball)
- Player Focus (engagement & distracted)
- Player motivation
- Physical literacy (parent and coach perspectives)

Junior Netball represents approximately fifty-percent of Netball membership in New Zealand. In acknowledgement in the important of this area, Netball New Zealand (NNZ) undertook a comprehensive review of Junior Netball in 2012. As a result of the review, a number of changes to the Junior Netball Model were trialed in 2013, and implemented from 2014. These changes included the modification of Year 1 to 4 Netball with the players progressing from 4 v 4 to 5 v 5. Junior Netball's focus is on meeting the social, cognitive and physical needs of children. All of the available research supports that children have more fun and learn more playing small sided games with modified rules. Small sided games provide more opportunities for children to develop their skills, experience more success i.e. scoring goals, successfully passing to a teammate and are engaged in the game for longer periods of time. Adult Netball can be a complex game for children but by modifying it we can offer a game that children can easily understand and enjoy.

Previously Netball had only been available to players from Year 6 in a large number of Netball Centres for various reasons. After the successful roll-out of the Year 1 to 4 programme, the focus turned to establishing which game best suits and meets the needs of the Year 5 & 6 players to complete the Junior Netball Model.

The Current Situation

Since the 2012 Junior Netball Review, work has continued in the background trying to work out which game would best meet the needs of the Year 5 & 6 players.

Twenty-eight Netball Centres volunteered to be part of the 6 v 6 pilot for Year 5 (& 6) players in 2016. A robust evaluation plan was designed to include qualitative and quantitative analysis.

Performance Analysis Data

Participants

The participants (n=246) were from six centres across the North and South Island and competed in 17.5 matches (equated to 70 clips in total – 35 for each format) of the Year 5 and 6 pilot study throughout 2016.

A five-minute period of play (n=70) was analysed from each quarter of a game. The data is presented as a total for each format (6v6 and 7v7), each centre (Auckland, Howick, Invercargill, Christchurch, North Harbour and Pukekohe), and each island on for 6v6 (north and south).

Each quarter was shortened from 8 minutes to 5 minutes for coding purposes and to be in line with previous years research. Each participant was from Year 5 or year 6 and from teams within the 6 centres. Each team consisted of 6 players on the court (for 6v6) and 7 players (for 7v7) at any one time, with extras for rolling substitutes. Consent was given by the parents of each player for the filming of the matches, and assent was given by the players, which came through NNZ. Ethical approval was also certified through NNZ (table 1)

Table 1. Participating centers and competition type

Island	Format	Centre	Matches Coded	Video time (s)	Clips/Videos Coded
North	6v6	Auckland	2	2400	8
		Howick	5.25	6300	21
	7v7	North Harbour	5.75	6900	23
		Pukekohe	3	3600	12
South	6v6	Invercargill	0.75	900	3
		Christchurch	0.75	900	3
Total All			17.5	21000	70
Total 7v7				10500	35
Total 6v6				10500	35

The frequency of each key performance indicator was coded (Sportscore Elite™, HUDL, USA) for 'attack', 'mid court' and 'defence'. For the 7v7 format, GS and GA = attack, WA, C and WD = mid court, and GD and GK = defence.

"Few players in any sport are technically perfect and many who are fail to make any real impact at the top level - because pressure not only erodes technique but great technique can be undone by poor decision-making under duress."

(Richardson, NZ Herald, 27 March 2013)

At the simplest level decision-making is about making game appropriate choices in good time. For attacking players this means knowing where and when to arrive in order to collect the ball and passing into players in emerging spaces. Defending players confront a similar problem with the goal of occupying or blocking spaces and making potential interceptions. Better players gain and make time through greater game-related anticipation and knowledge reading the game. It is now understood that this ability to read the game emerges from practice that allows players to pick up on multiple interacting cues around them [13]. At the highest level this process requires little or no reflection and is robust under pressure. Perhaps counter to intuition, good decision making is driven by what surrounds the player and their ability to act on changes without thinking [13, 14]. Decision making skill emerges from learning contexts that include essential elements of the game, such as opposition, movement and real choices with real consequences [15]. Game like practice with repeated exposure to appropriately contingent choice underpins the development of expert decision makers.

Suitably game-like play may be seen in terms of player density and likely interactions. Player density not only reflects real options but to some extent the likely pressure players will experience. Each additional player on a court increases the potential interactions available and equates greater tactical possibilities; reduction in player numbers also amounts to a reduction in available options and a potential speeding up of the game. Greater player density would equate with increased pressure and less time on the ball hence a further speeding up of the game. Experts have already developed the complex situation skills required to perform well in these scenarios, yet inexperienced developing youth players have not [16] therefore games that optimise challenges to player ability are most likely to get results. The key variable at this level is the number of respective choices made which may be indexed by the number of passes, contacts and transitions in an opposed game. Greater contact with the ball will also have an impact on involvement. The feeling of 'being involved' is highly motivating to any player in any sport. Research has shown that increasing the number of ball contacts should be an aim of youth sport development [17] as it leads to a positive feeling of participation and involvement and increased opportunity for player and team skill development [18]

So a fast game such as 6v6, if it can be characterised as possessing a high number of individual ball contacts, high frequency of ball transitions from end to end with an appropriate level task complexity could be of great benefit to the skill development of youth netballers.

To determine whether the game actually fulfills this belief 6v6 was analysed and compared with 7v7 for the performance indicators of:

- Player density and potential interactions
- Game Flow: Frequency of transition (complete ball movement from defensive circle to shooting circle) and frequency of game stopped (whistle)
- Number of ball contacts per sport and player position

Space

Player density and potential interactions

The 6v6 format is played on the same court size as the 7v7 (table 2.) with a player density of 19.39m² in the end zone and 12.91 m² in the mid zone. Compared to the 7v7, the 6v6 player has less space per player in the mid zone et has more potential interactions.

Table 2. Player density and potential interactions by game format

Format	Total Court Size (m ²)	Max Player Distribution (GC-DT-CT-AT)	Max Player Density (DT-CT-AT) (m ²)	Potential Interactions (total: GC-DT-CT-AT)
7v7	465	4 - 8 - 10 - 8	19 - 16 - 19	226: 12 - 56 - 90 - 56 - 12
6v6	465	4 - 8 - 12 - 8	19 - 13 - 19	256: 12 - 56 - 120 - 56 - 12

Tactical possibilities increase with the number of interactions as does task complexity.

Player distribution (max number in each third) is greater in the centre third in the 6v6 game, each 6v6 player having a maximum of 13m², with a total 256 potential interactions (56 in each end third and 120 in the centre third) (table 2)

Findings:

- While reducing player numbers may appear to simplify games significantly, a reduction in 'space per player' and increasing available options for respective players actually increases pressure and task difficulty.
- In this light 6v6 constitutes a more pressured game with greater interaction and as such is more likely to develop higher order decision-making skills.

Fast

Transitions

The flow of the game can be influenced by the frequency that the whistle is blown to stop play and the frequency of the ball moving the whole length of the court i.e. a transition.

A way to understand the 'flow' of the game is to determine the frequencies of these actions e.g. In 6v6 we found that (on average) a transition occurred every 152s – this is more frequently occurring than in the 7v7 game where a transition occurs every 228s (table 3).

Table 3. Time interval between each action (transitions and whistle blowing) in seconds

Format		Transition [#]	Whistle [*]
6v6		152	128
7v7		228	63
Centre			
6v6	Auckland	120	240
	Howick	185	111
	Invercargill	113	129
	Christchurch	129	113
7v7	North Harbour	246	50
	Pukekohe	120	116

the lower the number the more fluid the game

* the higher the number the more fluid the game

The Modified 6v6 game results in more frequent transitions and less frequent 'whistle stoppages' than the 7v7 (table 4)

Table 4: Total frequency (count) of action by format and centre

Format		Transition [#]	Whistle [*]
6v6		69	82
7v7		46	168
Centre			
6v6	Auckland	20	10
	Howick	34	57
	Invercargill	8	7
	Christchurch	7	8
7v7	North Harbour	28	137
	Pukekohe	18	31

the lower the number the more fluid the game

* the higher the number the more fluid the game

The benefit of the 6v6 game is these reduced stoppage enable the players to create more fluidity in their movements in relation to each others actions. This flow is more representative of the adult game.

Statistical analysis:

As expected there was a significant negative relationship between the whistle blowing ($n = 70$, $M = 3.6 \pm 2.33$) and the number of transitions ($n = 64$, $M = 1.56 \pm 1.43$) ($r = -.247$ $p = 0.49$) i.e. as the number of whistle stoppages increased so the number of transitions decreased.

There was a difference between the number of transitions and game type 6v6 ($M = 1.86 \pm 1.46$) and 7v7 ($M = 1.31 \pm 1.39$) and yet a t-test found that it was not significant $p = 0.13$, $t(62) = -1.53$. The magnitude of the differences in the means (mean differences = $-.55$, 95% CI; -1.26 to 0.69) was small (eta squared = $.04$)

An independent samples t-test was conducted to compare the 'whistle stoppages' for 6v6 and 7v7. There was a significant difference in stoppages for 6v6 ($M = 2.3 \pm 1.33$) and 7v7 ($M = 4.86 \pm 2.46$; $t(54) = 5.25$, $p = .001$, two tailed). The magnitude of the differences in the means (mean differences = 2.5, 95% CI; 1.57 to 3.52) was moderate (eta squared = .07)

Findings:

- **6v6 flows more than 7v7**
- *There are more transitions in 6v6 compared to 7v7 (not statistically significant)*
- *The whistle stops the game less in 6v6; this is significantly less than in the 7v7 game*

Involvement

Passing

Involvement is examined through analysis of the coded passing and shooting variables.

The tendency to lose focus on the game at hand and succumb to other distractions occurs in games when players feel they have periods where they are not able to have an influence on the game i.e. long periods of inactivity when the ball is outside their playing zone. 6v6, has been described as 'faster' which means that players do not have so many situations where they are 'waiting' for an opportunity to 'get involved'. Table 5 shows the absolute frequency of all passing variables by game format.

Table 5. Frequency of player passing involvement

Ball Contacts (frequency)					
Game format	Pass complete	Pass intercepted	Pass to nowhere	Pass high/wide	Pass to opposition
6v6	1395	330	2	113	3
7v7	1484	332	4	85	3
Game format					
Auckland (6v6)	338	70	0	33	2
Howick (6v6)	784	208	1	65	1
Invercargill (6v6)	109	19	1	9	0
Christchurch (6v6)	164	33	0	6	0
North Harbour (7v7)	953	227	3	60	3
Pukekohe (7v7)	531	105	1	27	0

The relative frequency of passing completions (i.e. pass completion total/team size) indicates that the players in 6v6 had more involvement than the players in 7v7 i.e. if we account for the 12 or 14 players on the court then the relative pass completions is 166 and 106 respectively for 6v6 and 7v7. This gives each 6v6 participant an increased opportunity to learn and have more ball contacts and opportunities in an opposed environment. The

skill of being able to use the appropriate ball contact for the specific situation is known to be an important part of developing the young netballer

Pass Completion and Position

An independent samples t-test was conducted to compare the 'number of pass completions' for position between the 6v6 and 7v7.

Attack: There was no significant difference in pass completions for 6v6 ($M = 11.48 \pm 4.54$) and 7v7 ($M = 10.17 \pm 3.89$; $t(62) = -1.24$, $p = .22$, two tailed). The magnitude of the differences in the means (mean differences = -1.31, 95% CI; -3.42 to .79) was small (eta squared = .02)

Mid court: There were significantly more less pass completions for 6v6 ($M = 15.03 \pm 4.40$) and 7v7 ($M = 22.14 \pm 4.22$; $t(62) = -1.24$, $p = .01$, two tailed). The magnitude of the differences in the means (mean differences = 7.11, 95% CI; 4.95 to 9.26) was large (eta squared = .4)

Defence: There was significant difference in pass completions for 6v6 ($M = 12.17 \pm 4.25$) and 7v7 ($M = 10.09 \pm 4.31$; $t(62) = -1.93$, $p = .025$, one tailed). The magnitude of the differences in the means (mean differences = -2.09, 95% CI; -4.23 to .06) was small (eta squared = .02)

Findings:

- *There are relatively more 'completed passes' in 6v6 than in 7v7.*
- *The Mid court players in the 7v7 game have significantly more passing completions than the 6v6 game*
- *The defending players in the 6v6 game have significantly more pass completions than the 7v7 game*

Shooting

The percentage of 'missed shots' to 'successful shots' is higher in all levels (i.e. game format/centre).

Table 6. Frequency of shooting involvement

Shooting (frequency)				
Game format	Successful shots	Missed shots	Missed shot - possession kept	Missed shot - possession lost
6v6	74	141	60	81
7v7	91	174	99	75
Centres				
Auckland (6v6)	21	44	18	26
Howick (6v6)	46	80	38	42
Invercargill (6v6)	5	11	2	9
Christchurch(6v6)	7	6	2	4
North Harbour (7v7)	65	108	63	45
Pukekohe (7v7)	26	73	43	30

The game format comparison for shooting is very similar, except that 7v7 has a higher percentage of missed shots -possession kept to missed shots -possession lost (table 6&8).

Table 7. Time interval between each action (shooting) in seconds

Time interval between each action for overall game format				
Format	Successful shot	Missed shot	Missed shot possession kept	Missed shot possession lost
6v6	142	74	175	130
7v7	115	60	106	140

Table 8. shooting percentages by format and centre

Shooting Ratios					
Game Format	Total Shots	% Successful Shots	% Missed Shots	% MS Possession Kept	% MS Possession Lost
6v6	215	35%	65%	43%	57%
7v7	265	35%	65%	56%	43%
Centre					
Auckland (6v6)	65	32%	68%	41%	59%
Howick (6v6)	126	36%	64%	47%	53%
Invercargill (6v6)	16	31%	69%	18%	82%
Christchurch(6v6)	13	53%	47%	33%	67%
North Harbour (7v7)	173	37%	63%	61%	39%
Pukekohe (7v7)	99	26%	74%	59%	41%

Findings:

- Same % of successful shots in each format
- Same % of missed shots in each format
- Greater time between each shot (successful and unsuccessful) in 6v6 possibly due to the greater number of transitions.
- The % of shots (successful and unsuccessful) is greater in the South Island than the North

Change

Team Performance Assessment Procedure

The Team Performance Assessment Procedure (TPAP; Gréhaigne, Godbout and Bouthir, 1999) is designed to provide a *formative* tool to evaluate the motor and tactical skills of players specifically in the game context. It aims to account for the various facets (interaction of strategy efficiency, tactical efficiency, and specific perceptual and motor skills) that occur in the team sport environment i.e. it measures, (a) 'how a player gains possession of the ball (two variables) and (b) 'how a player disposes of the ball' (four variables) thereby accounting for the player integration in the game (table 9). From these measures two performance indexes and a final performance score are calculated.

Table 9. TPAP by game format

		TPAP (frequency)					
Game format	Seconds (total)	CB	RB	LB	NB	OB	SS
6v6	10500	358	1396	408	11	1390	74
7v7	10500	340	1478	380	23	1507	91
		TPAP (frequency)					
Centre	Seconds	CB	RB	LB	NB	OB	SS
Auckland (6v6)	2400	83	340	100	7	338	21
Howick (6v6)	6300	224	783	244	4	778	41
Invercargill (6v6)	900	19	112	27	0	113	5
Christchurch(6 v6)	900	32	161	37	0	161	7
North Harbour (7v7)	6900	235	950	265	22	970	65
Pukekohe (7v7)	3600	105	528	115	1	537	26

Key:

- **Conquered Balls (CB):** Information related to the defensive capacities. A player is considered having conquered the ball if he/she intercepted it, stole it from an opponent, or recaptured it after an unsuccessful shot on goal or near loss from the other team
- **Received Balls (RB):** Involvement in the team's play (availability, accessibility to receive a pass). The player receives the ball from a partner and does not immediately lose control of it.
- **Lost Ball (LB):** A small number reflects a good adaptation to the game A player is considered having lost the ball when he/she loses control of it without having scored a goal or having completed a pass to a partner.
- **Neutral Ball (NB):** A routine pass to a partner, which does not truly put pressure on the other team.
- **Offensive Balls (OB):** capacity to make significant passes to his or her partners (offensive capacities). An offensive ball is a pass to a partner that contributes to the displacement of the ball towards the opposing team's goal.
- **Successful shots (SS):** Information related to offensive capacities. A shot is considered successful when it scores or the team retains possession of the ball.

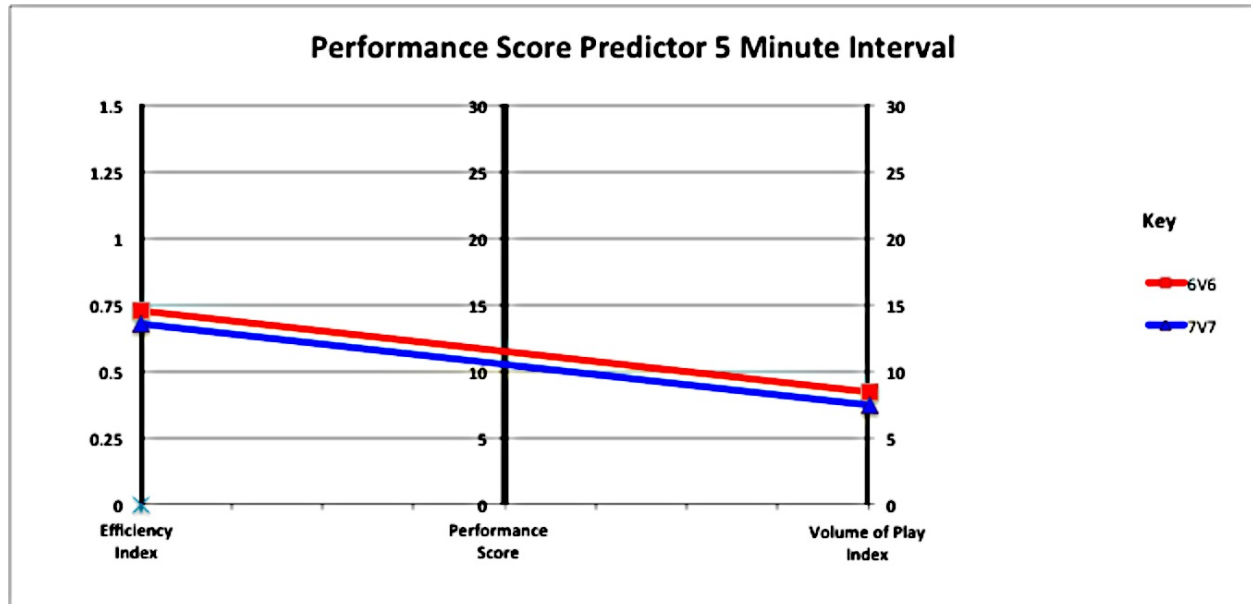
Nomographs:

The computation of performance indexes and performance score:

- **Efficiency Index** - $(CB + OB + SS)/(10 + LB)$
 - Higher number = more efficient
- **Volume of play** - $CB + RB$
 - Higher number = greater involvement in play
- **Performance Score** = $\text{volume of play}/2 + (\text{efficiency index} \times 10)$
 - Higher number = better performance

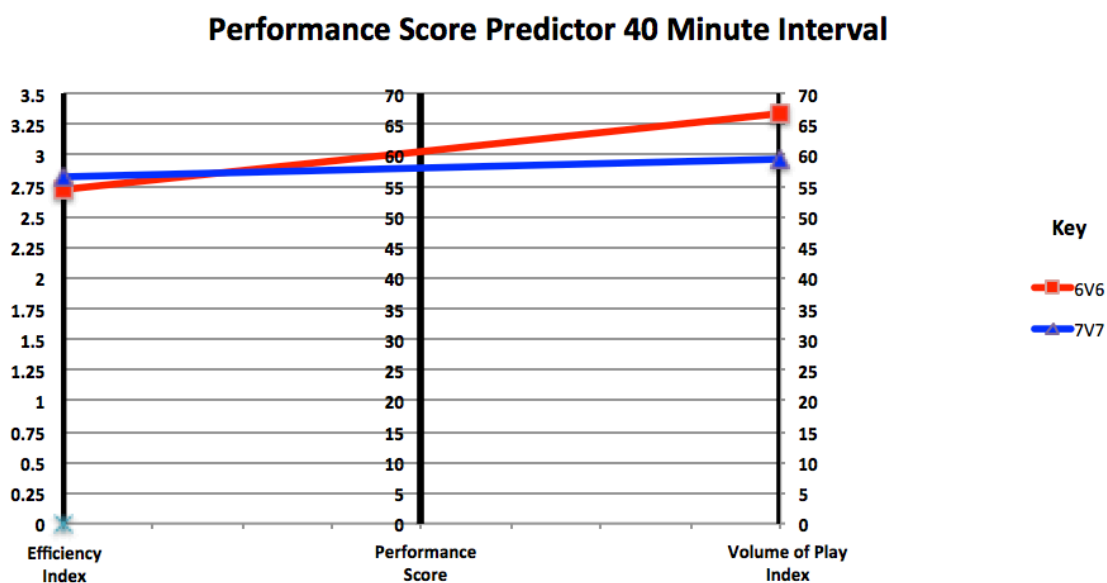
Game format – 5 mins from our subject groups

Overall the 6v6 players have greater involvement due to having higher number in all three of the measures. The 6v6 format created more opportunity to practice passing, this can be noted from the high number of turnovers and having a pass completed every 8 seconds. The 7v7 format has less efficiency, volume of play and performance than the 6v6, this difference may be explained by the fewer 'conquered balls'.



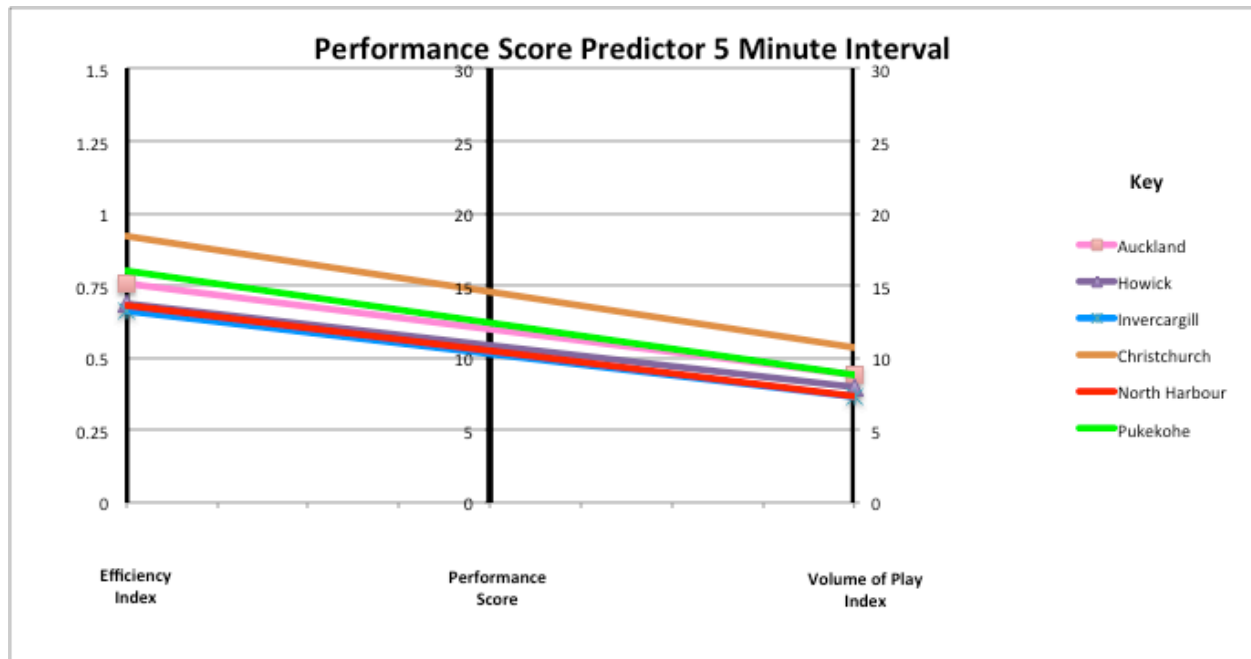
Game format – TPAP if extended to 40 mins

If projected over a full game of 40 mins, 6v6 would have a lower efficiency index, this may be due to the fact that they have a higher number of lost balls compared to 7v7. However, 6v6 does have a higher performance score and volume of play this is because they have more involvement in the game.



Centres – 5 Mins

From watching the games we suggest that a high TPAP score indicates a team makes decisions quickly (who to pass to and when to pass).

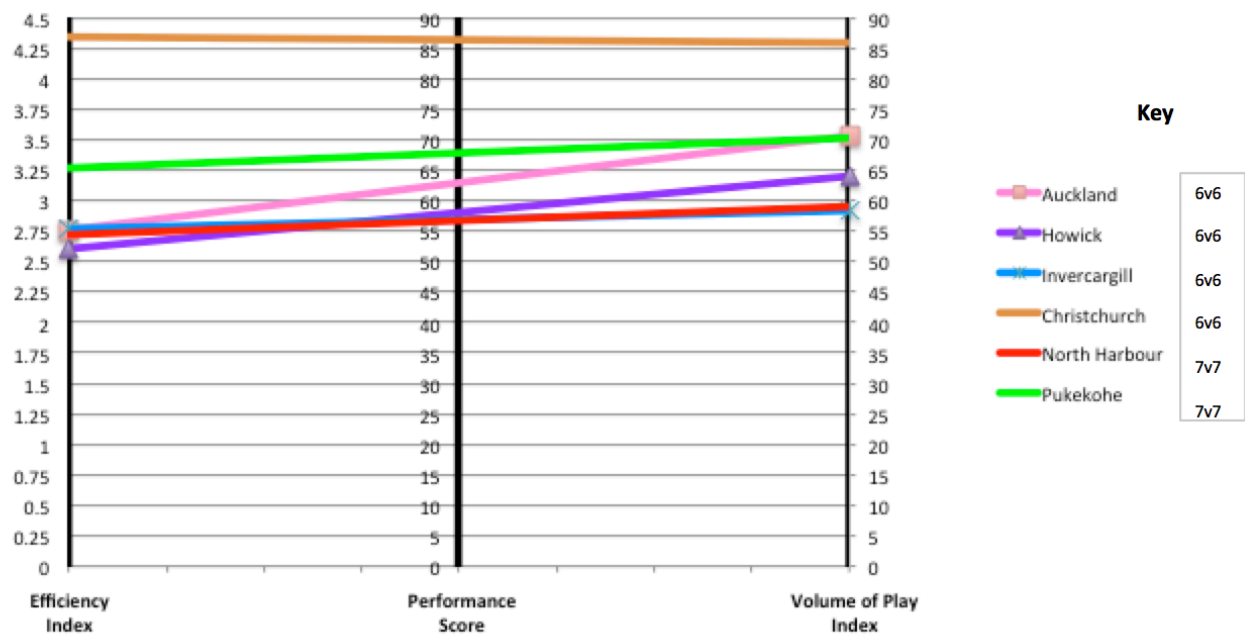


In possession they make space very effectively and quickly which allows their 'chain of passes' to flow better.

Centres – 40 mins

The TPAP scores show that the centres vary in their efficiency, performance and volume of play.

Performance Score Predictor 40 Minute Interval



Findings:

- 6v6 has a greater efficiency score than 7v7
- 6v6 has a greater performance index than 7v7
- 6v6 has a greater volume of play than 7v7

Focus

Engagement & Distraction

Defining the variables

Engaged - watching the ball or other players

Distracted - watching parents, other games, swinging on the post, playing with own hair

Effective learning is related to two factors; appropriate focus of attention [27, 28] and resulting mental effort [29]. Broadly speaking this implies that watching and thinking about the game at all stages of play will enhance skill development. In broad terms this fits with the deliberate practice model of Ericson in that expertise is the product of many hours of deliberate, task appropriate practice [30], which may be facilitated by watching as well as doing [27]. A general term for this is engagement, which at the most basic can be assessed in terms of time spent actually watching play. Interestingly engagement may also be seen as an index of task related motivation, in so far as attention is only directed to those activities that are of interest and therefore motivating. Ultimately the player who spends more time watching a game will develop more quickly and is probably more motivated.

Better player development will be underpinned by games where youths are involved with netball activity that maximises their duration of engagement. The tendency to lose focus on the game at hand and succumb to other distractions (e.g. swinging on the post) occurs when players feel that there are periods of play that do not involve them i.e. there may be long periods of inactivity when the ball is outside their playing zone.

Engagement (mean time) is greater in the 6v6 format than the 7v7 format (table 10).
Distraction (mean time) is less in the 6v6 format than 7v7.

Table 10. Mean focus time(s) by position and format

		Mean time (s)		
		D (GK,GD)	L (WD, C, WA)	A (GA,GS)
Engaged	6v6	1772	1800	1758
	7v7	1573	1721	1544
Distracted	6v6	28	0	43
	7v7	227	79	256

In the 6v6 format each player position has a similar engaged time. However in 7v7 the circle positions tend to be less engaged than the mid court position. This may be due to the movement restrictions associated with the positions in 7v7.

The distraction time in 6v6 is greatest in attack positions, with the centre position being totally involved with no distraction

In the 7v7 format the GK, GA and GS are the positions whereby they are distracted the most, again this may be due to the movement restrictions (table 11).. If the ball is not in their third and is being played up the other end of the court they lose focus on the play itself and start to look at other matches, play with their hair, do cartwheels or talk to their opposing play and don't pay any attention to the ball or flow of play.

Table 11. Total Time (s) engaged by position and format

Engaged	Total Time	D	L	A				
6v6	10659	3544	3600	3515				
Engaged	Total Time	GK	GD	WD	C	WA	GA	GS
7v7	11398	1469	1678	1682	1800	1682	1614	1474
Distracted	Total Time	D	L	A				
6v6	141	56	0	85				
Distracted	Total Time	GK	GD	WD	C	WA	GA	GS
7v7	1202	332	122	118	0	118	186	326

Elite netball is strategic in nature and players need to be able to understand and apply tactical formations in a varied, dynamic environment. It is important that player attention is allocated to both the ball and the diverse movements of the opposition. So coaches who are developing players who wish to become 'expert', require their players to engage with the on court action even when the ball is in a different zone. Expert players are described as being more proficient at making decisions, more able to predict events and outcomes, more accurate in decision-making and more accurate at anticipating opponents' intentions [16].

The 6v6 players had a greater duration of engagement so the game has a positive effect on player development as it enhances opportunities to develop these elite decision-making and anticipatory characteristics, i.e. movement and decision actions relate to anticipating what will evolve in the game and planning their own appropriate movements in response to their team mates actions as the ball approaches.

The use of 6v6 in the junior programme means the coaches can create an environment where their players will more quickly learn what information is relevant and irrelevant to the task. Players may also be able to prioritise the effectiveness of the various movement patterns inherent in the game as they are exposed to these patterns more frequently than by playing netball alone. A greater level of engagement

is more likely to make the developing player more effective and less likely to commit fundamental errors. With more engagement comes more motivation and faster learning (Kornikova, The Listener, 2013, p18).

Findings:

- *6v6 players are more engaged and less distracted than 7v7.*
- *Mid court players (L & C) are more engaged than end players (in each format)*

QUALITATIVE DATA

Motivation

Player Perception - Autonomy, competence and relatedness

At the most basic level motivation can be classified as either extrinsic or intrinsic: Extrinsic motivation comes from outside the individual in the form of coaches, parents, prizes and punishments for example. Extrinsic motivation though effective, is viewed as unsustainable in that when the motivation is removed resulting activity declines or ceases. An example of this is the player who only works hard when she/he feels the coach is watching. Intrinsic motivation is captured in personally valued goals, ownership and persistence. This form of motivation is seen as sustainable in that effort is internally controlled and therefore results in spontaneous activity. An example of this is the player who will seek out every and any opportunity to practice or play [19, 31]. Intrinsic motivation is underpinned by the satisfaction of three personal needs: Autonomy – choice, Competence – achievement and Relatedness – support [32, 33]. Access to these needs can be optimised at a moment to moment level coaching but also a contextual game-driven level [19]. Motivation far from being a trait is something that can be coached at several levels.

Context

Six-a-side is a game designed to increase decision making, contact, engagement and involvement. It is also a less formal game which has meaningful influence on coach behaviour [34-36]. Increased decision making should reflect greater choice and therefore autonomy. More appropriate decisions and contact may enhance competence. Informality and coach support should result in greater relatedness. Consequently more intrinsic motivation may arise as a consequence of playing 6v6. However it needs to be acknowledged that the positional changes and team instability may not be to the liking of all players. Player's views were elicited via questionnaires with a view to examining their motivational needs.

Intrinsic motivation is understood to be underpinned by the satisfaction of three personal needs: Autonomy – choice, Competence – achievement and Relatedness – support [32, 33]. Access to these needs can be optimised at a moment-to-moment level coaching but also a contextual game-driven level [19]. Motivation far from being a trait is something that can be coached at several levels.

To give you an indication on what a score means once you have completed the full questionnaire, you can see a high score on each scale (Autonomy > 39, Competence > 34, Relatedness > 45) as an indication of fulfilment of the three basic psychological needs, a lower score on each scale indicates thwarting of these needs.

Players in 2016 experienced a high level of autonomy (>39). This level was greater than that expressed by both formats in 2015 (NNZ & AUT report, 2015) (table 12)

Table 12. Level of Autonomy in 6v6 – 2016 and 2015

Autonomy (2016) 6v6			Autonomy (2015)		
	Mean	SD		Mean	SD
Total (N=27)	42	8	6v6 (N=228)	33	6
CHC (n=15)	43	9	7v7 (N=222)	32	7
INV (n=12)	42	7			

The 2016 players showed a very high level of competence (table 13) playing the 6v6 game (> 34). The players at INV felt more competence/achievement than those in CHC. This level was greater than that expressed by both formats in 2015 (NNZ & AUT report, 2015).

Table 13. Level of Competence in 6v6 – 2016 and 2015

Competence (2016) 6v6			Competence (2015)		
	Mean	SD		Mean	SD
Total (N=27)	53	8	6v6 (N=228)	33	6
CHC (n=15)	51	10	7v7 (N=222)	32	7
INV (n=12)	55	5			

The 2016 players showed a very high level of relatedness (table 14) playing the 6v6 game (> 45). This level was greater than that expressed by both formats in 2015 (NNZ & AUT report, 2015).

Table 14. Level of Relatedness in 6v6 – 2016 and 2015

Relatedness (2016)			Relatedness (2015)		
	Mean	SD		Mean	SD
Total (N=27)	55	7	6v6 (N=228)	46	8
CHC (n=15)	57	6	7v7 (N=222)	46	9
INV (n=12)	53	9			

Findings:

- *The players in 2016 felt more motivated to play 6v6 than the players in the 2015 study.*
- *The 2016 levels for each facet of motivation are at a high level compared to the normative values.*
- *Players from both centres expressed similar levels of autonomy.*

Physical Literacy, Parent and Coach Perspectives

Survey and focus group

To gain more depth of understanding the coaches and parents were asked to complete an online survey. The aim of the survey was to establish their perceptions of the effectiveness of the 6v6 format.

At the end of the programme each centre was invited to create a focus group of parents, coaches, administrators and RSO members to help determine further detail about how the 6v6 format enhances physical literacy and how it could be improved.

What is Physical Literacy?

“the motivation, confidence, physical competence, knowledge and understanding required by participants that allows them to value and take responsibility for engaging in physical activity and sport for life”.

Margaret Whitehead, 2013

Physical Literacy and Sport NZ

The Sport NZ Physical Literacy (PL) Approach takes a holistic view of the participant that considers their physical; social and emotional; cognitive; and spiritual needs. By understanding that these dimensions influence the needs of every participant, within their specific environments, SNZ aim to provide physical activity and sport experiences that inspire ongoing participation.

Sport NZ Guidance for Children (primary/intermediate):

This life stage encompasses the middle and pre-teen years where we become more involved in a range of environments, experiencing primary and intermediate schools, club activities and many community opportunities. These environments and experiences will influence our ongoing choices to engage in physical activity and sport. Variety, enjoyment and skill development are crucial, along with a positive, supportive, empathetic, environment that enables us to learn and be challenged at our own, individual pace.

Netball New Zealand Junior Development Programme and Physical Literacy:

The NNZ Junior Development Programme, as a provider of sport opportunities, shares the SNZ understanding of the holistic needs approach. The 6v6 programme has been designed to respond to the needs of each player as they change throughout life and considers how it can add value to each players' physical activity and the sporting opportunities provided.

The Year 5 and Year 6 netball players are at the 'Primary/intermediate Children' stage of their development. Their needs, as defined in the SNZ PL document (2015), are outlined below:

Physical Literacy SNZ

Primary/Intermediate Children - Needs and Consideration:

Physical

- Varied and modified activities to match their ability and encourage maximum participation
- Experiences that consider enjoyment and impact on long term involvement

- Opportunity to develop skills and attributes that can be used in a range of sports and physical activities of their choosing.

Cognitive

- To be creative, imaginative and curious so they can explore and solve problems for themselves
- The opportunity to make up their own games, rules, and to learn about negotiation, teamwork and how to accept and learn from both winning and losing
- Develop confidence, self-awareness and understand when they can take risks

Social & emotional

- Encouragement and positive reinforcement as they learn from knowledgeable, motivating, responsive people
- Time to socialise with others as well as time to be independent
- Opportunities that help them to become accepting of others and their physical, social and cultural differences.

Spiritual

- An environment that fosters them to question and form their own beliefs, attitudes and values
- Support to enable them to participate in the spiritual and cultural customs of their whā-nau, family and community that are a part of sport and physical activity
- Support to affirm their spiritual and cultural foundation and feel confident to express this if required.

The 6v6 Survey (parents and coaches)

The 6v6 survey was circulated via Zone Community Netball Managers to participating Netball Centres who then circulated to parents, coaches and administrators.

The survey attracted 347 responses (151 from parents, 196 from coaches, parent/coach) from across the country with over 1200 comments coded.

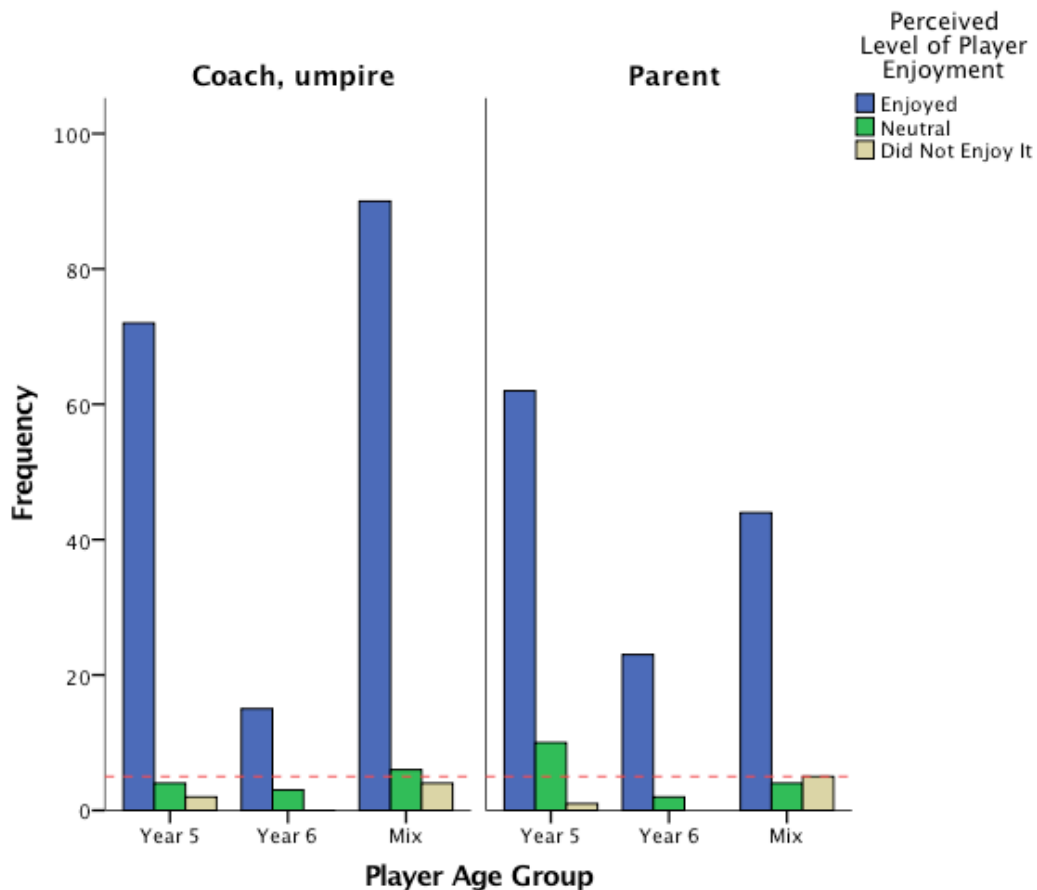
Table 15. Survey respondents (2016)

		Player Age Group		
		Year 5	Year 6	Mix Yr 5 & 6
Role	Coach, umpire	78	18	100
	Parent	73	25	53

The results of the survey are shown from the respondent perspective of the 'coach of a team' and the 'parent of a player' (table 15). The respondents indicated whether they were responsible for a Year 5, Year 6 or mix of Year 5&6 child/children. The 'findings box' summarises the most frequent response from each participant group.

Survey Questions and Responses

Do the parents and coaches think the 6v6 players were enjoying themselves?



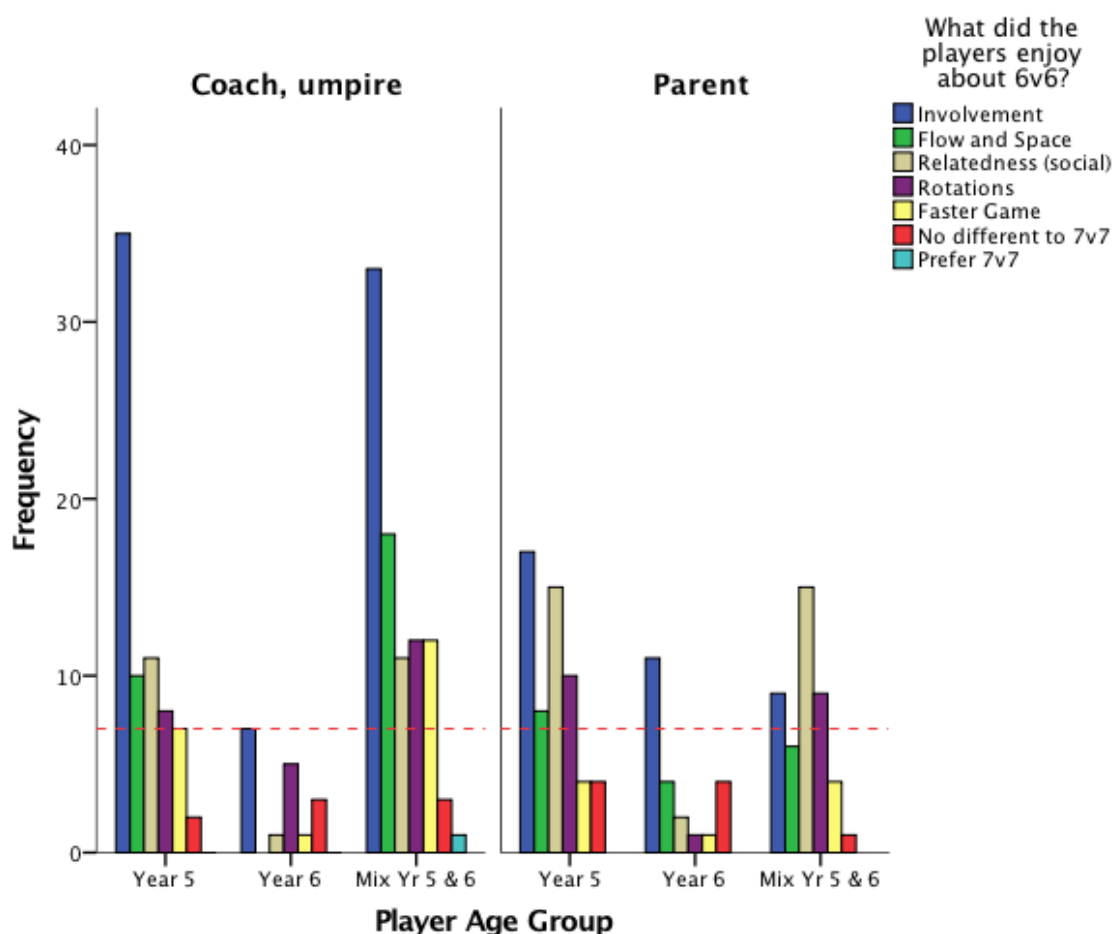
Findings:

- The parents and coaches perceived that the majority of the players enjoyed the 6v6 format
- The coaches of year 5 and mixed ages perceived greater frequency of enjoyment than the parents of these age groups.
- The parents of year 6 perceived greater frequency of enjoyment than the coaches

Physical Literacy Need Met:

- Physical

What did the coaches and parents perceive the players enjoyed most about the 6v6?



Quotes from the survey:

They enjoyed the fact that they could play all the positions and it didn't matter if they were perfect at it. Respondent from Marlborough

They get to move around more on the court. They don't have set positions they get to all have a go at the different positions Respondent from Selwyn

I believe the girls would enjoy the game of netball irrespective of whether 6 or 7 aside - they just have a passion for the game Respondent from Selwyn

Because they had a lot of game time, had opportunities to play and get familiar with every position Respondent from Auckland

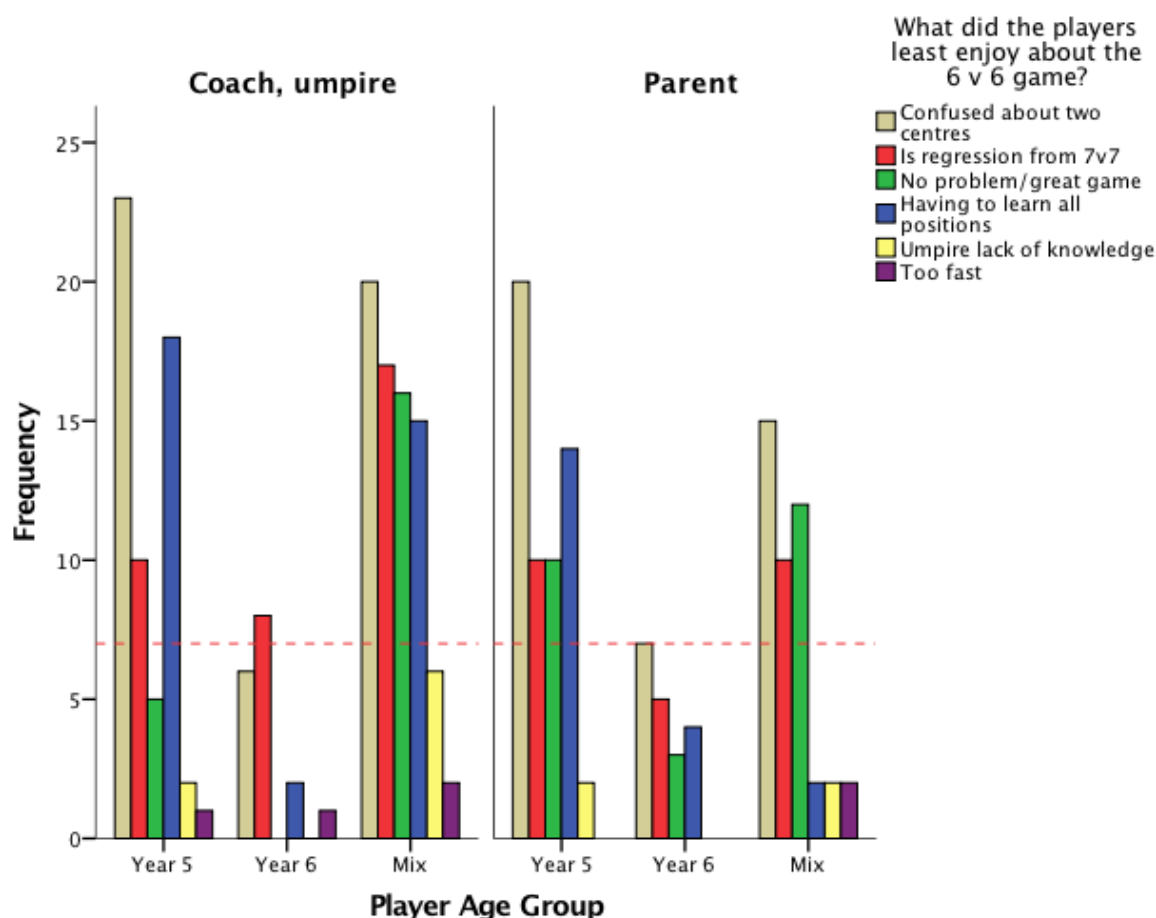
Findings:

- The coaches perceived that the players most enjoyed the greater involvement
- The parents that the players most enjoyed the involvement, the social and the rotations.

Physical Literacy Needs Met:

- Physical
- Social and emotional

What did coaches and parents perceive the players enjoyed least about the 6v6?



Cross section of comments to this question:

I asked the girls this about a million times today, thinking they would think of something. But no, their answers were always: "No, nothing." All thumbs up from the players. The parents which I was spoken to have commented about how great it looks, and how every player is able to get the ball. They have had nothing bad to say about the new 6aside rules, except a few that were a little closed minded to the idea at the start of the season. As a Coach, I cannot stress how effective this new game has been regarding my girls being able to learn new skills throughout the season. If they are happy with the game, I am. Having only the three positions has really made me able to really focus on the netball skills I can teach the girls this year to get them ready for the step up to next year. Respondent from South Otago

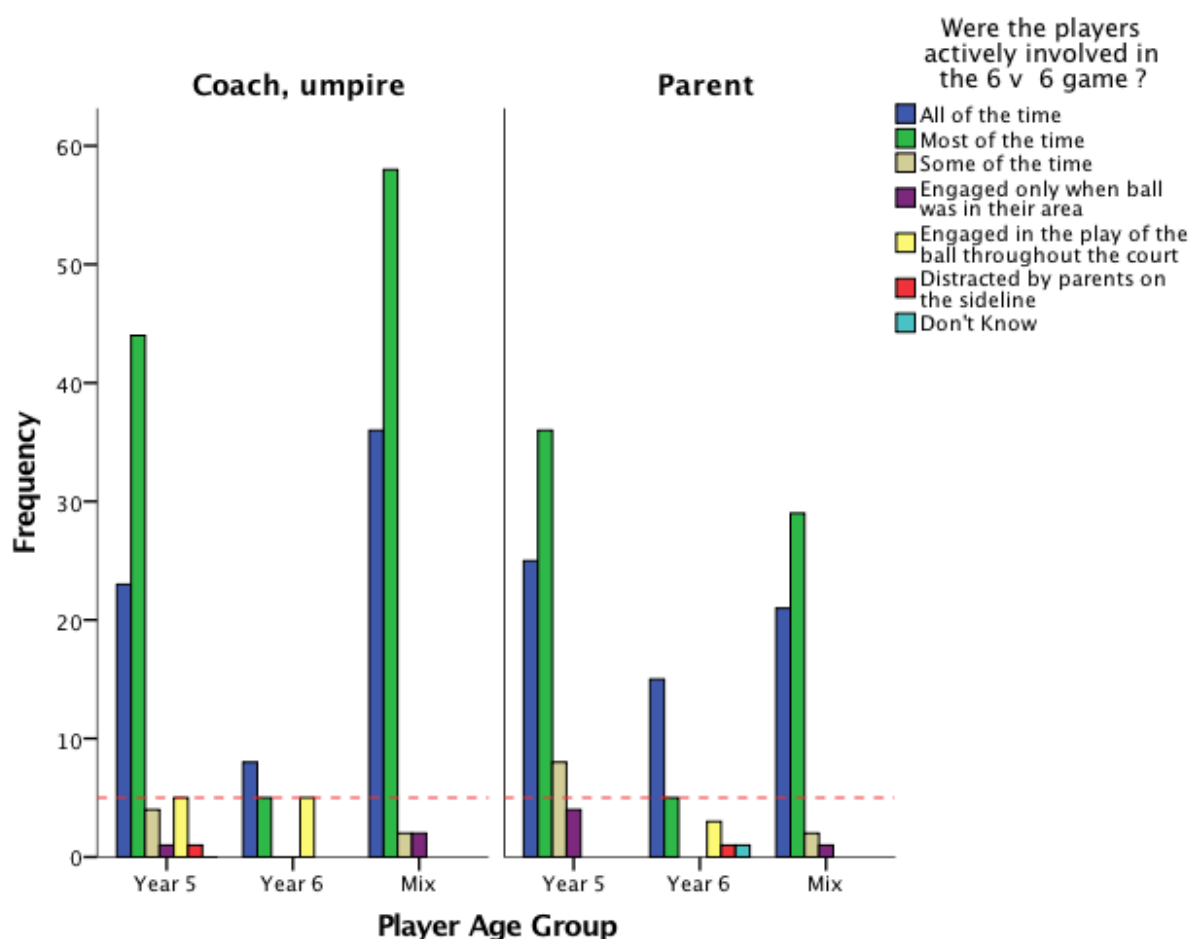
My daughter has enjoyed playing the 6v6 a whole lot more than the traditional netball. No negatives from us. Respondent from Kaipara

Playing 6 v 6 and having 4 centres. Also not having the proper names that they see every day when watching netball. Respondent from Invercargill

Findings:

- The coaches perceived that the players least enjoyed the confusion about the two centres positioning and having to learn all the positions.
- The parents perceived that the players least enjoyed confusion about the two centres positioning and having to learn all the positions.

Did coaches and parents perceive the players were actively involved?



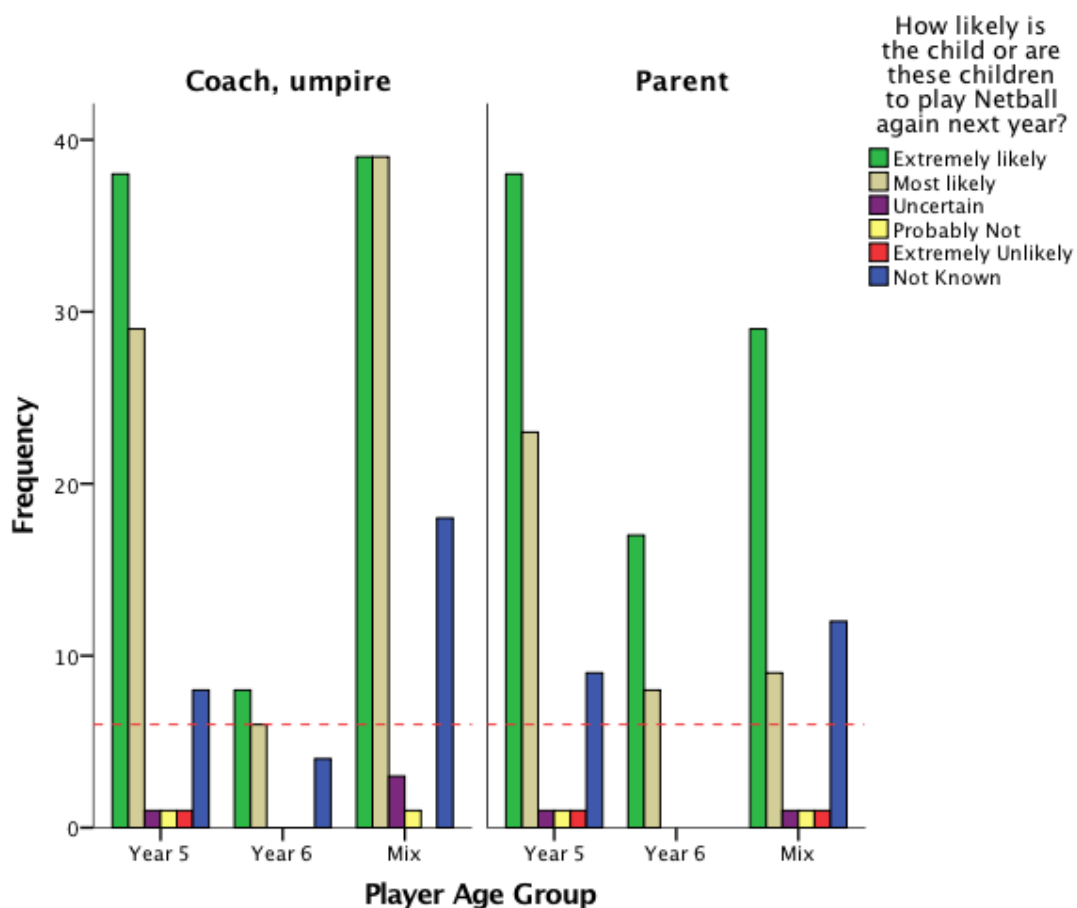
Findings:

- The parents and coaches of Year 5 and mixed years perceived that the players were actively engaged most of the time
- The parents and coaches of Year 6 perceived that the players were actively engaged all of the time

Physical Literacy Need Met:

- Physical
- Cognitive

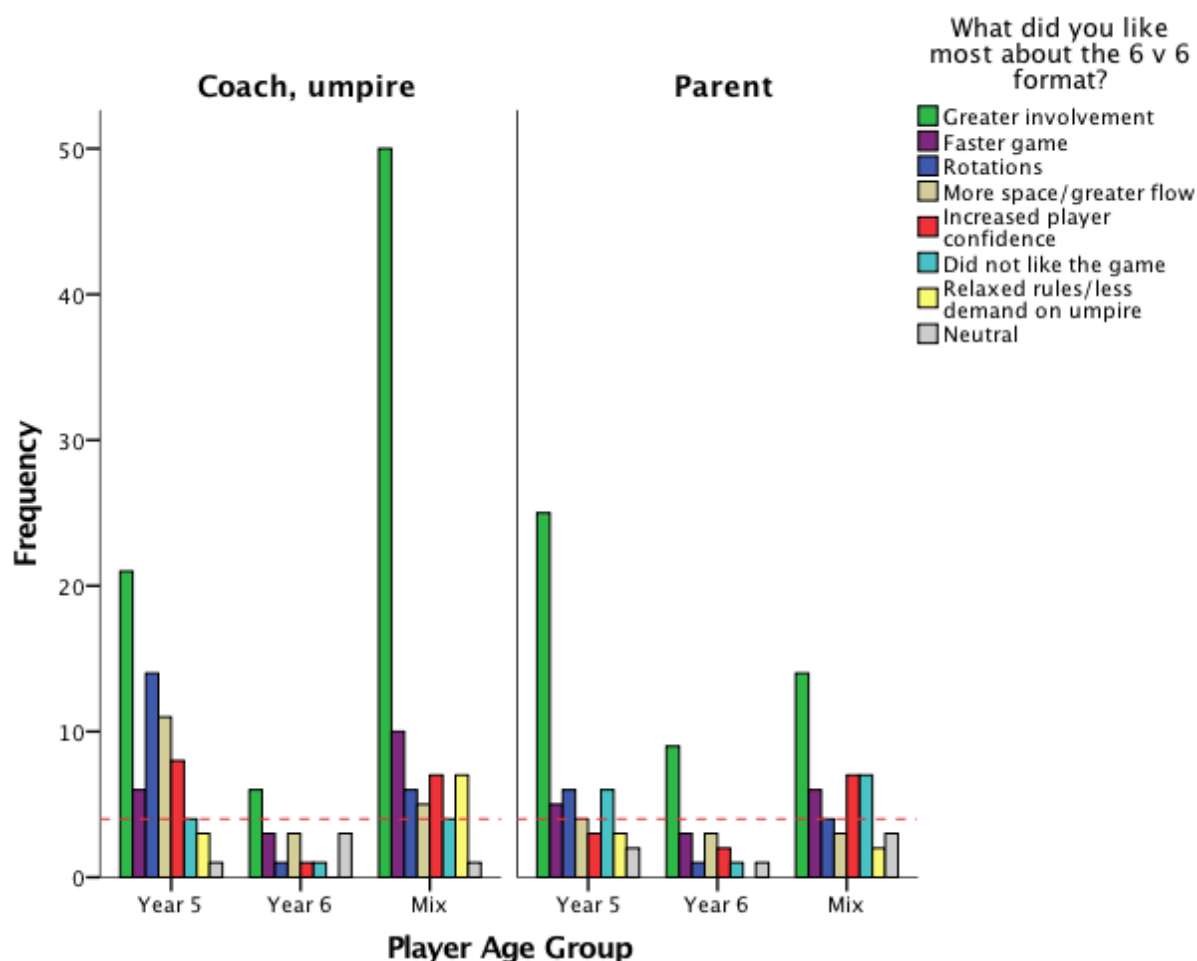
How likely did the coaches and parents perceive the players would participate in 6v6 next year?



Findings:

- The parents and coaches of all years perceived that the players were extremely likely to play again next year

What did the coaches and parents like most about 6v6?



Selection of comments:

It caters to all abilities. The child who has limited ball skills in the team is helped to improve by having to receive a pass in the team. In the past you would see these children freezing on court as play went around them. Everyone is involved, improving and having fun. Skill level is high, especially with those children who have come through 5 aside. Respondent from Central Otago

It was simpler to teach, flows better, and during breaks in the game I could spend my time coaching rather than reminding girls where they could go on court. Respondent from North Canterbury

Although different so I need to adjust from my experience from my playing days, I felt it was less complicated as not so many positions to explain. I feel it was good for rotation so all players got to play different roles. Respondent from Selwyn

All positions are active positions and having a minimum of two thirds of court to move in means they get a change to move into space to get the ball and run more. Mastering three positions is much easier than 7 and having one less person on the court means the 6 players who are there touch the ball more. I coached last year and I think with this model the skill levels have improved more quickly and kids have mastered the game more quickly. Giving the pass to the team which hasn't scored makes the games much more even and if the skill level is very different between teams its much less demoralizing and consequently more fun. Respondent from Selwyn

The things I liked about the 6x6 game was the same as the 5x5. I was not too enthused about my daughter playing a 5 aside game. I mean I started playing 7 aside a year early and had to be dispensated and it never did me any harm - I was in rep sides through to my early 20s. However, after last year coaching, I could see the benefits of only having 3 basic positions to coach. For the girls to concentrate on the core skills rather than the positioning, which will come at a later stage.

Respondent from North Canterbury

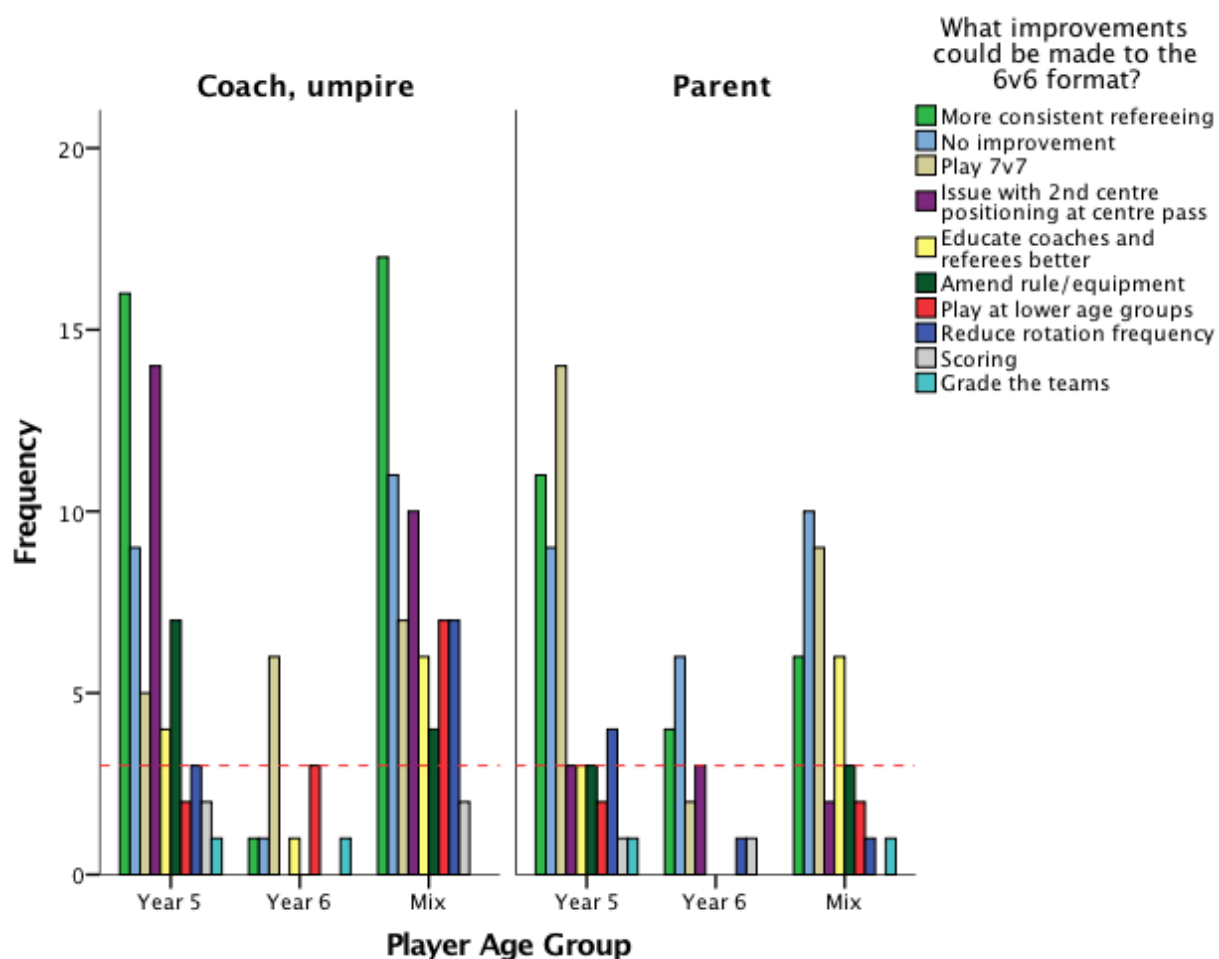
Findings:

- The parents and coaches of all years most liked the greater involvement of the players in the 6v6 format

Physical Literacy Needs Met:

- Physical
- Cognitive
- Social and emotional

How did the coaches and parents think 6v6 be improved?



An assortment of comments:

Consistency around umpiring would be great. I think they need to learn the rules, so letting them get away with stepping and contact especially doesn't help. Respondent from Selwyn

It seems to work well, but like all games the quality and consistency of the umpiring had a big influence on the game and the girls' enjoyment. There is some very rough play by teams which is not effectively managed by junior umpires. Respondent from Auckland

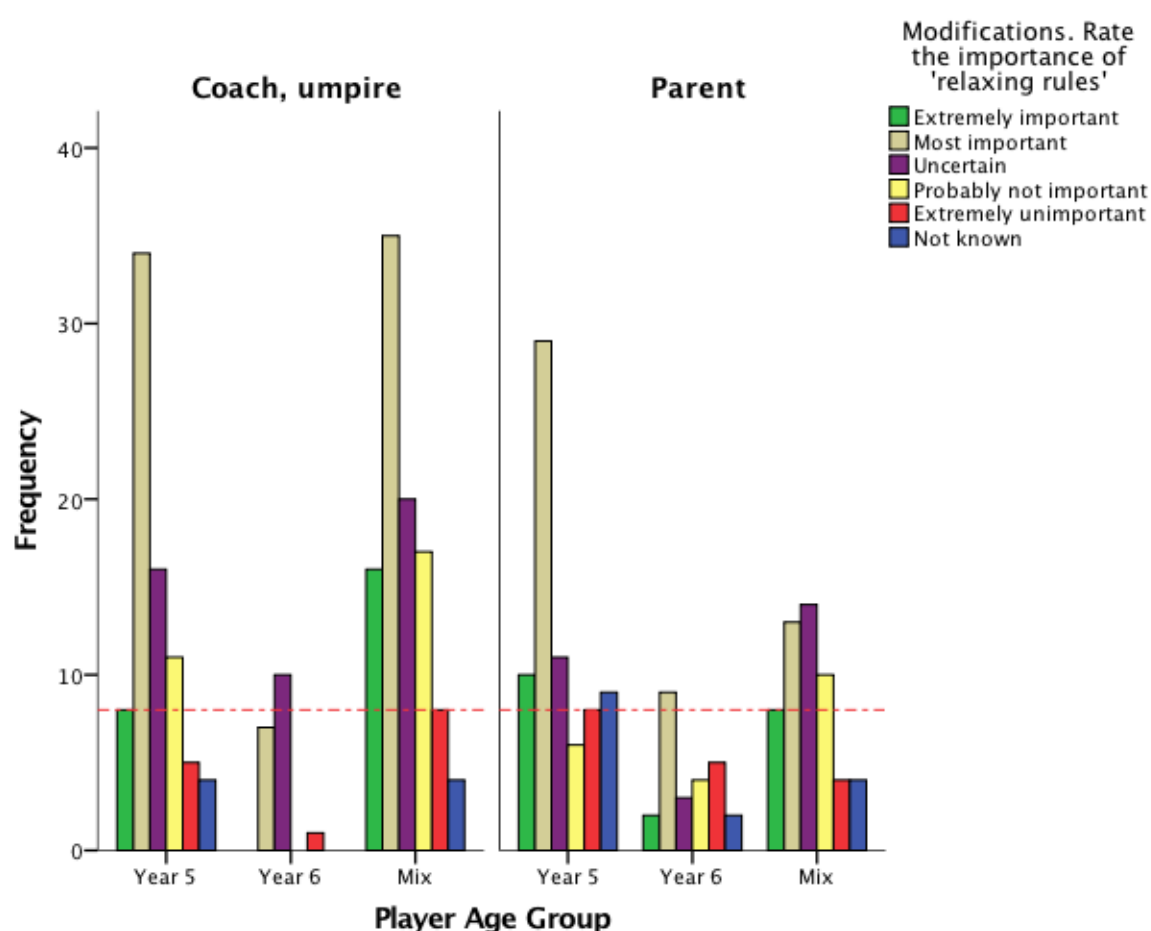
The centres should run into the goal third once the ball has been received. Running into the centre third seems to cause congestion and confusion, whereas if they ran into the goal third it would spread the players out more. At Year 5 the stepping rule should be enforced. Respondent from Howick/Pakuranga

Findings:

- The Year 5 and mixed year coaches thought addressing referee consistency would improve the game, and the issue of the 2nd centre position at the centre pass
- The year 6 coaches thought returning to the 7v7 game would be best
- The Year 5 parents thought returning to the 7v7 game would be best, then addressing referee consistency
- The Year 6 parents thought addressing referee consistency would improve the game

What rule modifications did the coaches and parents think were beneficial?

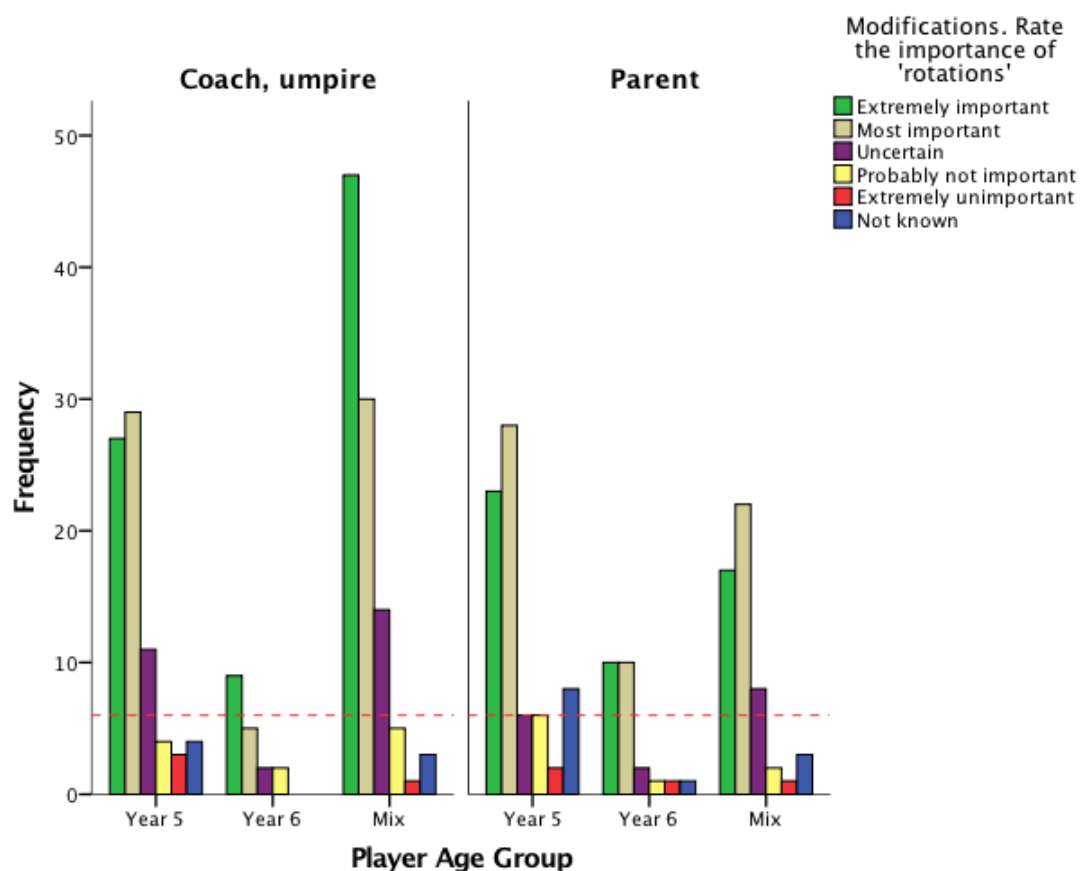
Relaxing the rules



Findings:

- The Year 5&6 parents and Year 5&mixed years coaches thought relaxing the rules was most important
- The Year 6 parents and mixed year parents were uncertain about the benefits of relaxing the rules

Rotations



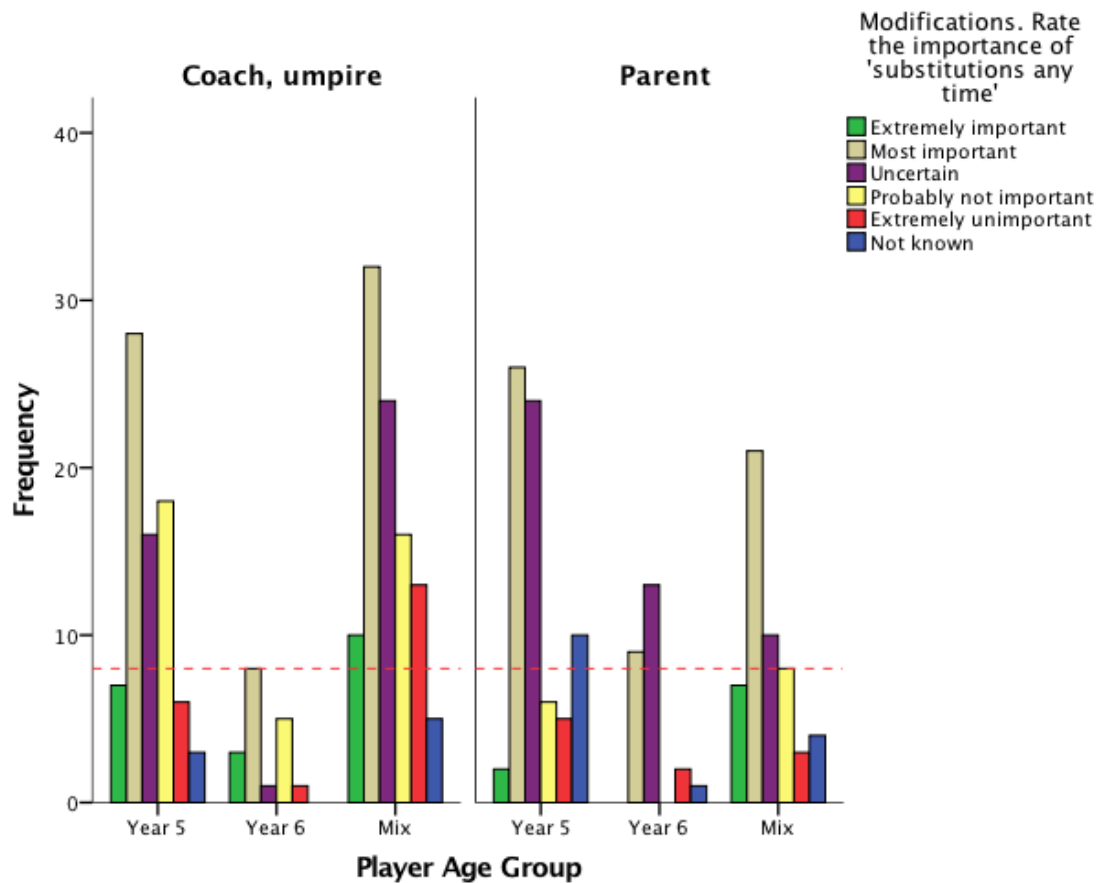
Findings:

- The parents and Year 5 coaches thought that rotations were extremely important
- The Year 6&mixed year coaches thought the rotations were most important

Physical Literacy Need Met:

- Cognitive
- Social and emotional

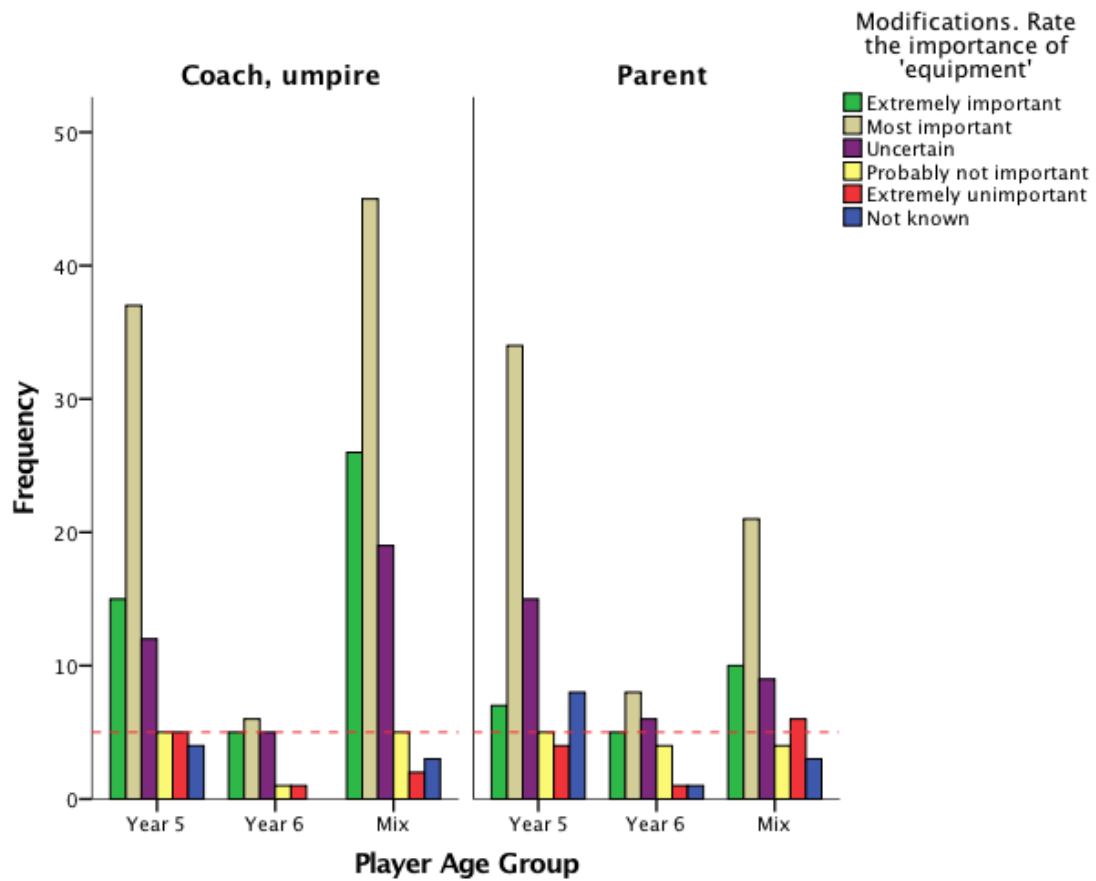
Substitutions allowed at any time



Findings:

- The coaches thought substitutions at any time were *most important*.
- The parents of Year 5 & thought substitutions at any time were most important
- The parents of Year 6 were uncertain.

Modified equipment



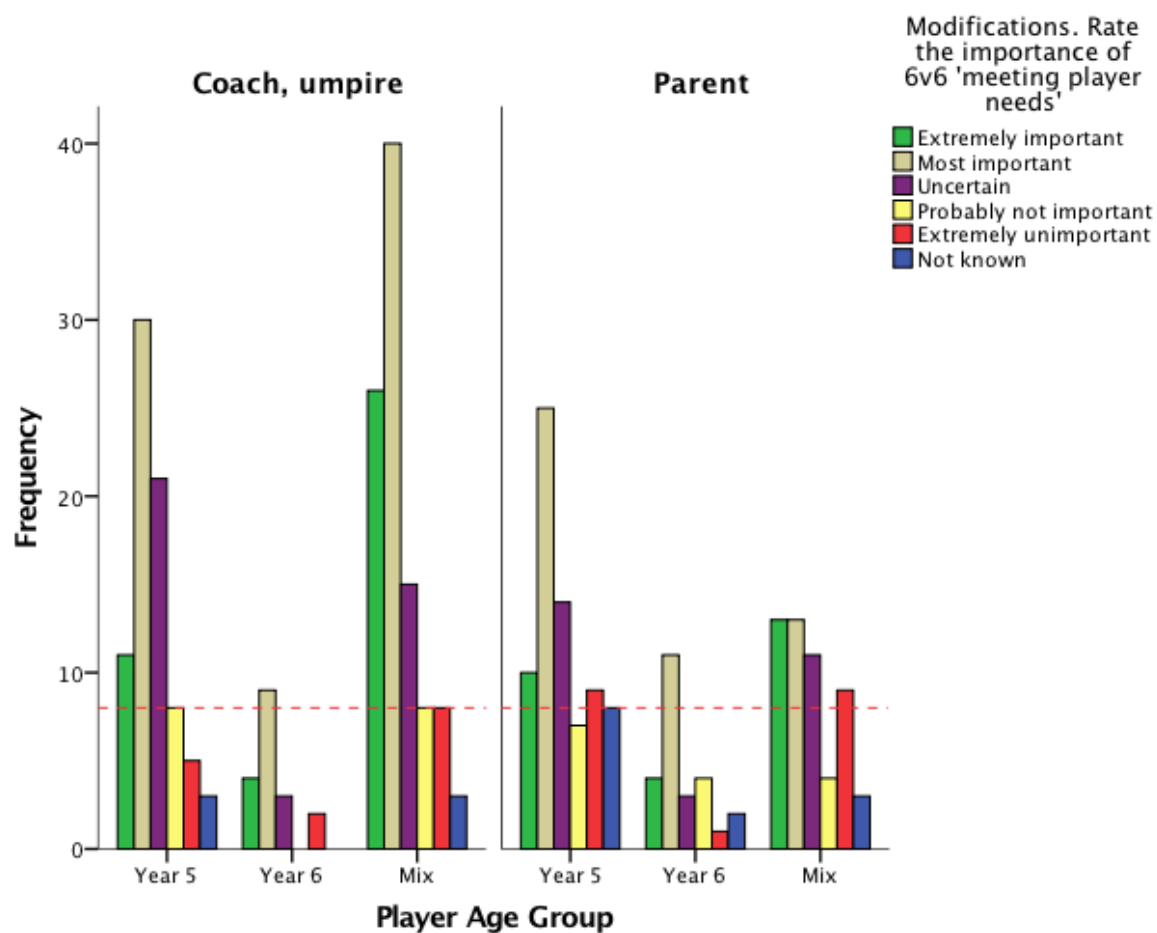
Findings:

- Parents and coaches thought that the equipment modification was most important

Physical Literacy Needs Met:

- Physical
- Cognitive

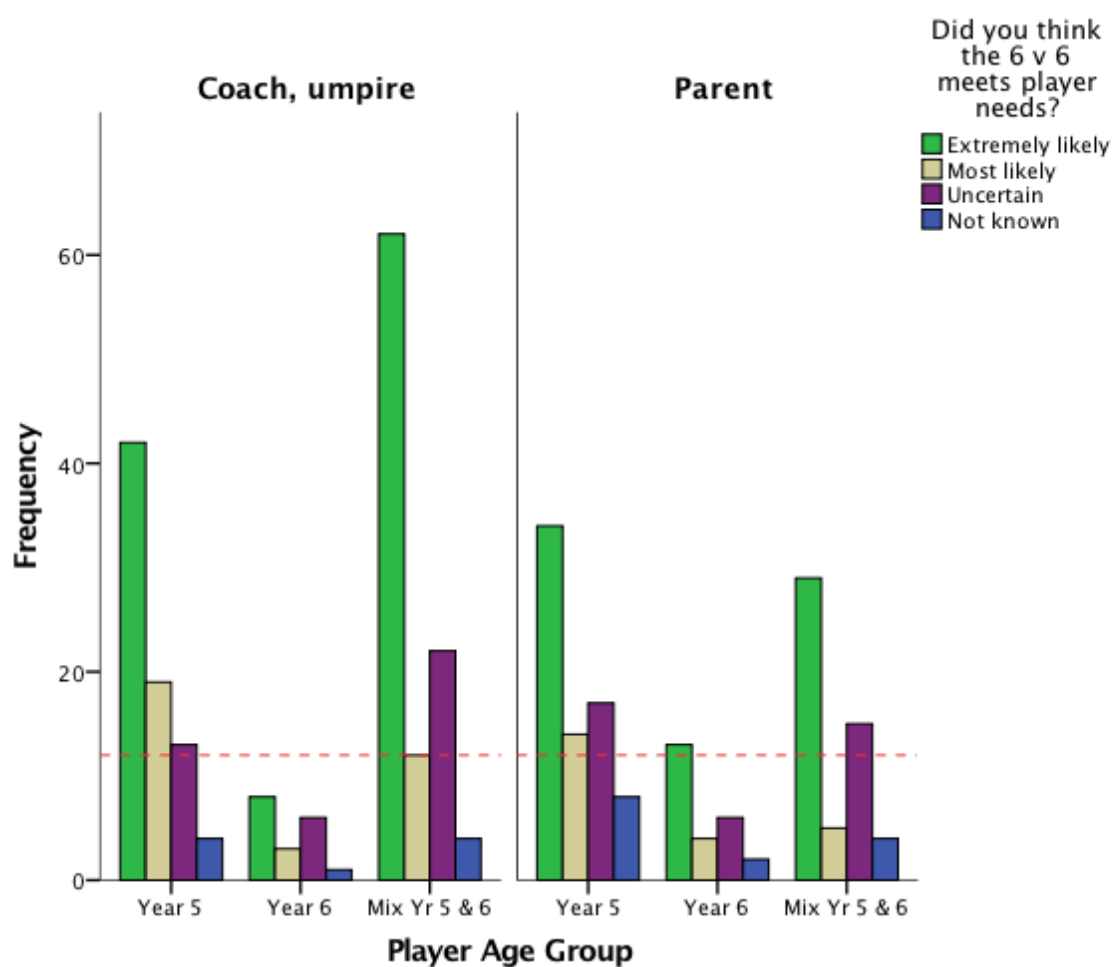
How important is it that the 6v6 format meets the players' needs?



Findings:

- Parents and coaches thought that the 6v6 format meeting player needs was most important

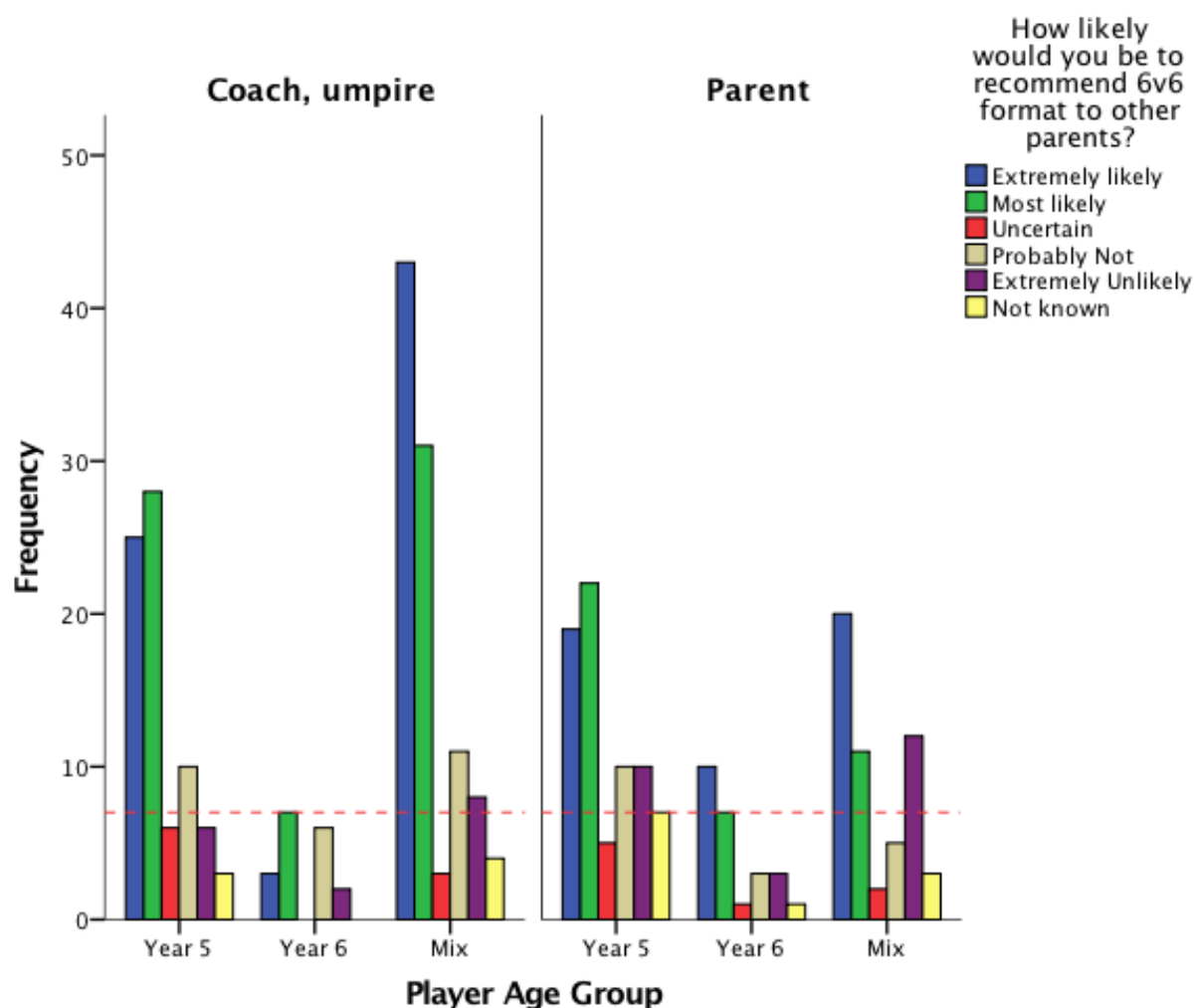
How likely is it that the 6v6 format met your players' needs?



Findings:

- The parents and coaches thought 6v6 format was extremely likely to meet the needs of their players

How likely are you to recommend 6v6 to others?



Findings:

- The parents and coaches perceived that they were extremely or most likely to recommend the 6v6 format to others.

The Focus Groups

Participating Centres organised focus groups to discuss how they felt the 6v6 format embraced the Sport New Zealand Physical Literacy (Physical Literacy) approach and to provide NNZ with feedback (table 15) on the:

1. Game's ability to meet the PL (Physical Literacy) needs of the player
2. Design of the 6v6 game
3. Application of the 6v6 game
4. Player involvement and development in 6v6
5. Player pathway and the ability of 6v6 to develop a 'lifelong love' of netball.

The following categories of questions were provided to each centre (see appendix for full list of prompting questions) and suggested as guidance for the discussion.

Note: the first section relates to questions to understand each centres thoughts on 6v6 as an opportunity to develop the PL 'needs and considerations'. Number in bracket is the frequency of that response from the focus group respondents. (n=6)

Table 15. Responses from focus groups

	Physical	Cognitive	Social emotional	Spiritual
1. Children's enjoyment and involvement in the game	<ul style="list-style-type: none"> • More court time per player (3) • More opportunity to be involved (7) • Quicker game • More touches (3) 	<ul style="list-style-type: none"> • Focus on skill learning (3) • Children not pigeon holed -learn all positions(4) • more opportunity to explore, make decisions (3) • Good Transition from 5v5 (2) 	<ul style="list-style-type: none"> • Stay longer in the game (3) • Children varied in positions gives confidence (4) • Allows all abilities to be involved • Less pressure • More team encouragement (2) 	<ul style="list-style-type: none"> • More emphasis on fun (3)
Raw Comments (number)				Themes
2. Like of the junior Netball Pilot	<ul style="list-style-type: none"> • Good for those at basic level (i.e. no knowledge) (2) • Involvement of all players (3) • Increased contribution from all players(2) • Easy to teach only 3 positions (4) • Fun (2) • About the play not the winning (2) • Creates teachable moments (2) 			<ol style="list-style-type: none"> 1. Involvement 2. Makes coaching positioning easier 3. Fun 4. Creates opportunity for 'coaching moments'
3 Dislikes of the junior Netball Pilot	<ul style="list-style-type: none"> • Bad if you have knowledge of the game • Confusion 2nd centre positioning (3) • Should be played at year 4 (5) • as cognitively demanding re spatial awareness and positioning (2) • Player skill level 'drops off' (2) • Needs grading and trophy • Cognitively demanding not being 'assigned' an opponent (2) • Uninformed coaches and umpires and parents (2) • Not consistent in way the game is played/umpired (2) • Crowding in centre third • Too short time wise 			<ol style="list-style-type: none"> 1. Play it at Year4 2. 2nd centre confusion 3. Cognitively demanding re no direct opposition 4. Player skill level drops 5. Not consistent umpiring 6. Parents /umpires/coaches uninformed

<p>4. The delivery model – does it work?</p>	<ul style="list-style-type: none"> • Resources were excellent& Courses need to be compulsory (5) • Umpire training needs to be better (3) • Great to focus on full participation and skill development & needs to focus more on game than warm-up • Created consistency amongst the content of the coaching • Reduces parents 'labelling' their child into specific position (2) • Lead to more coaches choosing to remain in coaching • Schools/parents not participating are 'negative' (2) • Transition is vital to get 'buy in' from parents and schools 	<ol style="list-style-type: none"> 1. Excellent courses – compulsory needed 2. Umpire training needed 3. Reduces player position labelling by parents 4. Schools/parents not participating are 'negative'
---	--	---

Conclusions

Combining the performance analysis data and the qualitative data the results suggest that 6v6 is a beneficial transition game to include in the Junior Coaching Programme. The modifications simplify the game but also speed it up, forcing greater engagement and creating many more opportunities for players to practice relevant cognitive, physical and team work skills in appropriate positions. The increase in speed, pressure and decision making demands appear to be consistent with desired aspects of the game at the higher level. That this can be achieved in a high level-motivating context is something of a bonus not to be overlooked.

From the performance analysis results we can determine that the benefits of 6v6 are a MORE PRESSURED game with more potential interactions for the players on the same size court as 7v7; much GREATER INVOLVEMENT from ALL players (particularly due to the rotations); a higher volume of play ie players get to DO MORE; the players are HIGHLY MOTIVATED compared to 'standard' scores and players are fully ENGAGED during in the game play.

The feedback from coaches and parents about the 6v6 game was positive and indicated that they thought the 6v6 players ENJOY playing the game; that it encourages SKILL DEVELOPMENT with INCREASED PLAYER DECISION-MAKING; gave the children CONFIDENCE through the use of rotations and had a really a POSITIVE TEAM ENVIRONMENT.

Recommendations from the focus groups and survey data would suggest the following:

1. Coach workshops are made compulsory (with refresher workshops to 'sweep' up non-attendees and give more opportunity to all coaches)
2. Umpires require up-skilling/training to create more consistency
3. The issue of the 2nd Centre at pass back needs resolving.
4. Inform the parents of the benefits of 6v6 to try to increase support/buy-in.
5. Address the discrepancy of the current schools 7v7 competitions and the **ANZ futureFERNs**.

APPENDICES

Participating Teams

Club Background Information

6v6 Teams

North Island

Howick Pakuranga

Howick is participating in 6v6 format of the game taking part in the pilot. Matches are played on Saturday's and usually commence from 9:00am. All of the teams are made up of Year 5 players, who have previously played the 4v4 and 5v5 formats in the ANZ futureFerns programme. They have only one grading match before the competition starts; it is split into Term 2 and Term 3 and finishes on the 3rd September.

Auckland

Auckland is participating in 6v6 format. Matches are played on Thursday's at 4:15pm, 5:10pm and 6:05pm. All teams are made up of Year 5 players, who have played the 4v4 and 5v5 formats previously in the **ANZ futureFerns** programme. They have three weeks of grading, and then competition commences, it finishes on the 25th August. They will be playing 4x8 minute quarters with a size 4 ball and 2.6m post on a full size court. The team will consist of 2 attacks, 2 centres and 2 defenders, and will have 10 players per team (recommend 8). There will be rolling substitutes and rotations throughout the match.

South Island

Invercargill

Invercargill is participating in the 6v6 format of the game, of which there are 35 teams taking part. Matches are played on Tuesday's 3:30pm, 4:10pm, and 4:50pm. All of the teams are made up of Year 5 players, who have previously played the 4v4 and 5v5 formats in the ANZ futureFerns programme. They're competition starts on the 10th May and finished on the 5th July. They will be playing 4x8 minute quarters using a 2.6m post on a full sized court. Players have to play half a game minimum. There will be rolling substitutes and rotations throughout.

Christchurch

Christchurch is participating in the 6v6 format of the game. Matches are played on Thursday's, Friday's and Saturday's. All of the teams are made up of Year 5 players, who have previously played the 4v4 and 5v5 formats in the ANZ futureFerns programme. They're competition starts on the 5th May and finished on the 28th August. They will be playing 4x8 minute quarters, on a full court with a size 4 ball and 2.6m post. Players have to play half a game minimum. There will be rolling substitutes and rotations throughout.

7v7 Teams

North Harbour

North Harbour is playing the traditional 7v7 format. Matches are played on a Wednesday at 4pm, 5pm and 6pm however if they need an extra round of matches the timings will be: 4pm, 4:50pm, 5:40pm and 6:30pm. All of the teams are made up of Year 5 players who have played the 4v4 and 5v5 formats previously in the ANZ futureFerns programme. They have seven weeks of grading, and seven weeks of competition which rounds up on the 7th September. Year 5's will play with a size 4 ball, 2.6m post and rotations will be made throughout using their rotation schedule.

Pukekohe

Pukekohe is playing the traditional 7v7 format and 16 teams are taking part. Matches are played on a Saturday, however timings vary each week. All teams are made up of Year 5 players who have experienced the 4v4 and 5v5 formats in the ANZ futureFerns programme. They have four weeks of grading, and competition commences on the 11th June for five weeks, the championship is then held for another four weeks, with finals on the 10th September. They play with a full sized 3.05m post, on a full sized court.

Training Days

	Howick 6v6	Auckland 6v6	Pukekohe 7v7	North Harbour 7v7
Day matches are played on	Saturday	Thursday	Saturday	Wednesday
Time matches are played	9:00am 9:50am	4:15pm 5:10pm 6:05pm	Varies (have to look at draw each week)	4pm, 5pm, 6pm Could be: 4, 4:50, 5:40 and 6:30 – If they need an extra round
How many matches are in each morning/evening?	2	3	Varies (have to look at draw each week)	3
Number of teams in club	?	?	16	?
Year of teams	Year 5	Year 5	Year 5	Year 5
Number of matches to be filmed	12	12	12	12
Previous experience	4v4, 5v5	4v4, 5v5	4v4, 5v5	4v4, 5v5
Programme start date (inc. grading and competition)	7 th MAY =grading Term 2 – 14 th MAY – 2nd JULY Term 3 – 23 rd JULY – 3rd SEPT	12 th , 19 th , 26 th MAY = grading 2 nd JUNE – 25 th AUGUST = competition NO PLAY ON 7 th , 14 th , AND 21 st JULY	7 th MAY – 28 th MAY = grading 11 th JUNE – 9 th JULY = competition 6 th AUG – 27 th AUG = championship	11 th MAY – 22 nd JUNE = grading NO GAME ON 8 th JUNE (QUEENS BIRTHDAY) 27 th JULY – 7 th SEPT = competition
Programme end date	3rd SEPTEMBER	25 th AUGUST	3 rd SEPT = semi finals 10 th SEPT = finals	7 th SEPTEMBER
Club contact (name, telephone and email)	HPNC Office Hours 9-3pm 09 534 7571 info@hpnc.org.nz	Annalise Klay – games@aucklandnetball.co.nz 09 972 3539 or 09 570 0030	pukekohe.netball@extra.co.nz 09 238 9057 Maree - 0274909259	Office – 09 481 0022 Primary and Intermediate – teresa@netballnorthharbour.co.nz 09 481 0951
Game rules/equipment	Emailed 2 nd May	4x8 minute quarters Size 4 ball 2.6m post Full size court 2 attacks, 2 centres, 2 defence 10 players per team (recommend 8) Rolling substitutes Rotations throughout	Emailed 2 nd May	Size 4 ball 2.6m post Rotations
Directions to club (address)	Lloyd Esplanade Park, Cpt 451 Pakuranga Rd & Sir Lloyd Drive	Auckland Netball Centre, 7 Allison Ferguson Drive, St Johns	Situated in Bledisloe Park, Queen Street, Pukekohe, 2120	AMI Netball Centre, 44 Northcote Road, Northcote , 061

	Christchurch 6v6	Invercargill 6v6	Hawkes Bay 6v6
Day matches are played on	Friday/Saturday	Tuesday	Saturday
Time matches are played	Friday – 4pm – 20 teams Saturday – 8:30am – 18 teams	After school	8:15 8:40 (occasionally)
Programme start date (inc. grading and competition)	6 th /7 th MAY	11 th MAY – runs for whole of Term 2 and have extended it to Term 3 for those who want to carry on	7 th MAY
Programme end date	8 th /9 th JULY		27 th AUGUST
Club contact (name, telephone and email)	03 379 4486 netballchch@extra.co.nz	Courtney Brown 03 219 9361 justine@invercargillnetball.co.nz	06 650 4044 busadmin@hbnnetball.co.nz
Directions to club (address)	455 Hagley Avenue, Christchurch Central, 8011	Invercargill Netball Centre, Stadium Southland, Surrey Park Road,	Swenson Road, CHB College Courts, Wainipukurau

Participant Information Sheet

Project Title

Comparison of physical activity and skill development in modified 6-a-side vs 7-a-side Netball for Netball New Zealand.

An Explanation

Hello, my name is Kirsten Spencer. I am a researcher of children's sport at the Auckland University of Technology, working with Netball New Zealand. I am very keen to understand the benefits of the modified Netball that are being trialled as part of a pilot and aim to help player decision-making and skill development. As a member of a team participating in the Netball New Zealand 6 v 6 pilot, your child will be potentially participating in the research project. We will be video recording some games, but you, your child's, club or coaches will not be identified and will remain anonymous. Your child may withdraw at any time prior to the completion of data collection. We will destroy the DVD where he or she is recorded 6 years after the study takes place.

What is the purpose of this research?

The purpose of the research is to determine which game achieves the many goals for Year 5 & 6 players. The modification of junior Netball needs to meet the players' desires, provide quality learning experiences, and develop the competencies needed for continued participation in Netball. The game developed for this age group also needs to meet the players' cognitive, physical and social needs. The results of this study will be used by Netball New Zealand to provide quantitative data to assist in the design of the best playing format for Year 5 & 6 players. This research will also inform the design of training opportunities that might advance the talent development of Netball. There is likely to be one or two articles published in both practical sports coaching magazines and research journals.

How was I identified and why am I being participating in this research?

The reason we are asking your child to participate is because he or she plays at a Netball Centre that is participating in the 6 v 6 Pilot.

What will happen in this research?

The project involves a representative from AUT or Netball New Zealand recording some games. The camera will be placed out of the way of the court and therefore be unobtrusive to the game. The recorder will simply record your game and then the researcher from AUT will code the recording.

Some players may be asked a short set of questions relating to their involvement in the game.

As parents, you will have the opportunity to provide your feedback on the 6 v 6 game via an online survey mid court. This survey mid court will be made available to you via the Netball New Zealand.

What are the discomforts and risks?

There are no risks or discomforts for your children. The video recording will occur during their games and the filming personnel will remain unobtrusive to the event. The recording will only be seen by the research assistants and researchers.

What are the benefits?

The benefits of this research will allow the national sporting organisation (Netball New Zealand) to compare possible modified Netball games to ensure the best possible game is developed to meet the needs of the Year 5 & 6 players. The research will also inform Netball coaches and developers about how players learn to make decisions and execute skill in different situations.

How will my privacy be protected?

Yours, your child's name, the club/school, coach or parents/caregivers will all be unidentifiable. We will not even ask your name or any information about you or your Netball playing. All participants will remain anonymous.

The video recordings of the team and the consent forms will be locked in SPRINZ's (Sport and Recreation in New Zealand's) storage facility.

What are the costs of participating in this research?

There are no costs to your child's participation. We are videoing your child's games, so we will only use the prescheduled times and opportunities to collect the video footage.

What opportunity do I have to consider this invitation?

We obviously appreciate you considering and accepting the opportunity to help Netball New Zealand develop the best game for Year 5 & 6 players. If you do not wish your child to participate, or to opt-out of the study at any time then please inform Netball New Zealand of this decision.

Will I receive feedback on the results of this research?

We will not provide specific feedback to your child or his or her team, as we are looking at many teams, and therefore there will be no relevance to individuals or their teams. However, once the executive report is complete it will be available from Netball New Zealand.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Kirsten Spencer, Kirsten.spencer@aut.ac.nz 09 921 9999, Extension 7239.

Any other concerns regarding the conduct of the research should be notified to the National Junior Programme Manager, Netball New Zealand, Nicola Jones, Level 1, Winsor Court, 128 Parnell Rd, Auckland 1052, NicolaJ@Netballnz.co.nz, DDI +64 (21) 995 936.

Consent and Assent Forms

Project title: Comparison of physical activity and skill development in modified 6-a-side vs 7-a-side Netball for Netball New Zealand

Researcher: Dr Kirsten Spencer and Nicola Jones

- ☐ I have read and understood the information provided about this research project designed to investigate movement in netball players in the Information Sheet dated May 2016
- ☐ I understand the time involved in the study.
- ☐ I have had an opportunity to ask questions and am happy with the answers I have received.
- ☐ I understand that taking part in the study is entirely my choice and 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.
- ☐ I permit the researcher to use the videos that are part of this project and/or any photographs from them and any other reproductions or adaptations from them, either complete or in part, alone or in conjunction with any wording and/or drawings solely and exclusively for research or educational purposes

- ☐ I understand that the videos will be used for academic purposes only and will not be published in any form outside of this project without my written permission.
- ☐ I understand that any copyright material created by the video is deemed to be owned by the researcher and that I do not own copyright of any of the video.
- ☐ If my child/children and/or I withdraw, I understand that all relevant information including photographs, video footage, or parts thereof, will be destroyed.
- ☐ I understand that any information my child/I give during this study will be confidential and my child's/my name will not be recorded on any collected data at any time.
- ☐ 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:

Note: The Participant should retain a copy of this form.



NETBALL
NEW ZEALAND

Participant Assent Form



Project title: Comparison of physical activity and skill development in modified 6-a-side vs 7-a-side Netball for Netball New Zealand

Researcher: Dr Kirsten Spencer and Nicola Jones

- ☐ I have read and understood the sheet telling me what will happen in this study about movement in netball in the Information Sheet dated May 2016.
- ☐ I understand the time involved in the study.
- ☐ I have been able to ask questions and am happy with how they have been answered.
- ☐ I understand that being part of this study is entirely my choice and 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.
- ☐ I will allow the researcher to use the videos and photographs that are part of this project exclusively for research or educational purposes

- I understand that the videos will be used for academic purposes only and will not be published in any form outside of this project without my written permission.
- I understand that any copyright material created by the video is deemed to be owned by the researcher and that I do not own copyright of any of the video.
- If I stop being part of the study, I understand that all information about me, including the photographs and video recordings or any part of them that include me, will be destroyed.
- I understand that any information I give during this study will not have my name on it and my name will not be recorded on any collected data at any time.
- I agree to take part in this research.

Participant's signature:

.....

Participant's name:

.....

Participant Contact Details (if appropriate):

.....

Date:

Note: The Participant should retain a copy of this form.

Whom do I contact for further information about this research?

Project Supervisor Contact Details:

Dr Kirsten Spencer

c/ Auckland University of Technology

School of Sport and Recreation

Private Bag 92006

Auckland, New Zealand 1142

kirsten.spencer@aut.ac.nz

09 921 9998, Ext. 7239

Approved by Netball New Zealand



NETBALL
NEW ZEALAND

Focus Group Guiding Questions

The Focus Groups

Participating Centres organised focus groups to discuss how they felt the 6v6 format embraced the Sport New Zealand Physical Literacy (Physical Literacy) approach and to provide NNZ with feedback on the:

6. Game's ability to meet the PL (Physical Literacy) needs of the player
7. Design of the 6v6 game
8. Application of the 6v6 game
9. Player involvement and development in 6v6
10. Player pathway and the ability of 6v6 to develop a 'lifelong love' of netball.

The following categories of questions were provided to each centre and suggested as guidance for the discussion

Note: the first section relates to questions to understand each centres thoughts on 6v6 as an opportunity to develop the PL 'needs and considerations' (in brackets)

Children's enjoyment and involvement in the game

- *In what way do you think the 6 v 6 game design encourages children to get involved, have fun and play Netball? **(PHYSICAL/SOCIAL & EMOTIONAL)***
- *How would this enjoyment factor help the long-term involvement of your players in Netball? **(SPIRITUAL/PHYSICAL)***
- *How well do you think the demands of the 6 v 6 game matches the players' abilities at this age? **(PHYSICAL/COGNITIVE)***
- *Does the 6 v 6 format allow for inclusivity of those with lower skill set, disabilities and cultural needs? **(SOCIAL & EMOTIONAL)***
- *Does the new format help to encourage maximum participation? If so, how? **(PHYSICAL)***
- *You may or may not be aware that there is a drop off in player numbers from Year 5 to 8. Do you think more young children will stay with Netball due to the introduction of 6 v 6? Why or why not? **(SOCIAL & EMOTIONAL/PHYSICAL/COGNITIVE)***
- *Netball involves several different positions, with each position having certain skills associated with it. What aspects of the 6 v 6 format do you think gives opportunities for your players to develop the variety of skills and attributes required for the many positions? **(COGNITIVE/PHYSICAL)***
- *How does the 6 v 6 format help players to explore and solve problems in their Netball (develop decision making skills)? **(COGNITIVE)***
- *What aspects of the 6 v 6 format do you think helps players to develop confidence, self-awareness and understand how to take risks when playing Netball? **(COGNITIVE)***

Like and dislikes of the 6 v 6 Pilot game?

- *What did you expect the 6 v 6 pilot to be like?*
- *Probe: Did it meet your expectations?*
- *What expectations of the 6 v 6 format were not met?*
- *What aspects of the 6 v 6 game were similar to 7 v 7 Netball?*
- *Is there anything you liked better in 7 v 7 than what is offered in 6 v 6?*
- *Is there any aspect of the 6 v 6 format you would like to see improved or changed?*
- *What do you like most about the 6 v 6 game?*
- *What do you like least about the 6 v 6 game?*
- *What did you notice most about the 6 v 6 game?*

The delivery model – does it work?

- *What do you think about the modified games (4 v 4, 5 v 5) NNZ has already introduced to develop our junior Netballers?*
- *What do you think about the small sided / modified games?*
- *If you attended the Year 5 & 6 coach workshop, how beneficial was this for coaching your*

team

- *Should all Junior netball coach workshops be compulsory?*
- *Having piloted the 6 v 6 game, what are people saying about the pilot? Did their views change during the season?*
- *How likely it is that you would recommend 6 v 6 to others?*

REFERENCES

1. Nauright, J. and J. Broomhall, A woman's game: the development of netball and a female sporting culture in New Zealand, 1906-70. *International Journal of the History of Sport*, 1994. 11(3): p. 387-407.
2. Potrac, P., et al., Toward an holistic understanding of the coaching process. *Quest*, 2000. 52(2): p. 186-199.
3. Zealand., S.a.R.N., Sport and Recreation Participation Levels: Findings from the 2007/08 Active NZ Survey., 2009, SPARC.: Wellington.
4. Dollman, J., K. Norton, and L. Norton, Evidence for secular trends in children's physical activity behaviour. *British journal of sports medicine*, 2005. 39(12): p. 892- 897.
5. Coble, S., et al., Annual Age-Grouping and Athlete Development A Meta-Analytical Review of Relative Age Effects in Sport. *Sports Medicine*, 2009. 39(3): p. 235-256.
6. Romann, M. and J. Fuchslocher, Influences of player nationality, playing position, and height on relative age effects at women's under-17 FIFA World Cup. *Journal of Sports Sciences*, 2013. 31(1): p. 32-40.
7. Baker, J. and A.J. Logan, Developmental contexts and sporting success: birth date and birthplace effects in national hockey league draftees 2000-2005. *British journal of sports medicine*, 2007. 41(8): p. 515-7.
8. Williams, A.M. and N.J. Hodges, Practice, instruction and skill acquisition in soccer: Challenging tradition. *Journal of Sports Sciences*, 2005. 23(6): p. 637-650.
9. Hill-Haas, S.V., et al., Physiology of Small-Sided Games Training in Football A Systematic Review. *Sports Medicine*, 2011. 41(3): p. 199-220.
10. Gabbett, T.J. and M.J. Mulvey, Time-Motion Analysis Of Small-Sided Training Games And Competition In Elite Women Soccer Players. *Journal of Strength and Conditioning Research*, 2008. 22(2): p. 543-552.
11. Tallir, I.B., et al., Learning opportunities in 3 on 3 versus 5 on 5 basketball game play: An application of nonlinear pedagogy. *International Journal of Sport Psychology*, 2012. 43(5): p. 420-437.
12. Chatzopoulos, D., H. Tsormbatzoudis, and A. Drakou, Combinations of technique and games approaches: Effects on game performance and motivation. *Journal of Human Movement Studies*, 2006. 50(3): p. 157-170
13. Davids, K., C. Button, and S. Bennett, Dynamics of skill acquisition: A constraints-led approach 2008: Human Kinetics Publishers.
14. Buszard, T., D. Farrow, and J. Kemp, Examining the influence of acute instructional approaches on the decision-making performance of experienced team field sport players. *Journal of Sports Sciences*, 2013. 31(3): p. 238-247.
15. Pinder, R.A., et al., Representative Learning Design and Functionality of Research and Practice in Sport. *Journal of Sport & Exercise Psychology*, 2011. 33(1): p. 146
16. Mann, D.T., et al., Perceptual-cognitive expertise in sport: A meta-analysis. *Journal of Sport and Exercise Psychology*, 2007. 29(4): p. 457.
17. McCormick, B.T., et al., Comparison of Physical Activity in Small-Sided Basketball Games Versus Full-Sided Games. *International Journal of Sports Science & Coaching*, 2012. 7(4): p. 689-698.
18. Arias, J.L., F.M. Argudo, and J.I. Alonso, Effect of the 3-Point Line Change on the Game Dynamics in Girls' Minibasketball. *Research quarterly for exercise and sport*, 2009. 80(3): p. 502-509.
19. Mageau, G. and R. Vallerand, The coach-athlete relationship: a motivational model. *Journal*

- of Sports Sciences, 2003. 21(11): p. 883-904.
20. Pinar, M.I., et al., Participation of Mini-Basketball Players During Small-Sided Competitions. *Revista de Psicologia del Deporte*, 2009. 18: p. 445-449.
 21. Hendry, D.T. and N.J. Hodges, Getting on the Right Track in *Routledge Handbook of Sport Performance Analysis* T McGarry, P. O'Donoghue, and J. Sampaio, Editors. 2013, Routledge: Abingdon, Oxon, UK. p. 5-20.
 22. Hodges, N.J., et al., Learning From the Experts: Gaining Insights Into Best Practice During the Acquisition of Three Novel Motor Skills. *Research Quarterly for Exercise & Sport*, 2011. 82(2): p. 178-187.
 23. Bruce, L., et al., Notation analysis of skill expertise differences in netball. *International Journal of Performance Analysis in Sport*, 2009. 9(2): p. 10-10.
 24. McMorris, T. and J. Graydon, The effect of exercise on cognitive performance in soccer-specific tests. *Journal of Sports Sciences*, 1997. 15(5): p. 459-468.
 25. Hubball, H., J. Lambert, and S. Hayes, Theory to Practice: Using the Games for Understanding Approach in the Teaching of Invasion Games. *Physical & Health Education Journal*, 2007. 73(3): p. 14-20.
 26. Aguiar, M., et al., A Review on the Effects of Soccer Small-Sided Games. *Journal of Human Kinetics*, 2012. 33: p. 103-113.
 27. Ste-Marie, D.M., S.E. Clark, and A.E. Latimer, Contributions of attention and retention processes in observational learning of a motor skill by children. *Journal of Human Movement Studies*, 2002. 42(4): p. 317-333.
 28. Wulf, G., B. Lauterbach, and T. Toole, The learning advantages of an external focus of attention in golf. *Research Quarterly for Exercise and Sport*, 1999. 70(2): p. 120- 126.
 29. Lee, T.D., S.P. Swinnen, and D.J. Serrien, Cognitive Effort and Motor Learning. *Quest*, 1994. 46(3): p. 328-344.
 30. Ericsson, K.A., Deliberate practice and the modifiability of body and mind: toward a science of the structure and acquisition of expert and elite performance. *International Journal of Sport Psychology*, 2007. 38(1): p. 4-34.
 31. Deci, E.L., et al., Effects of Performance Standards on Teaching Styles - Behavior of Controlling Teachers. *Journal of Educational Psychology*, 1982. 74(6): p. 852-859.
 32. Deci, E.L. and R.M. Ryan, The "what" and "why" of goal pursuits: Human needs and the self determination of behavior. *Psychological Inquiry*, 2000. 11(4): p. 227-268.
 33. Ryan, R.M. and E.L. Deci, The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry*, 2000. 11(4): p. 319-338.
 34. Walters, S.R., et al., The sideline behaviour of coaches at children's team sports games. *Psychology of Sport and Exercise*, 2012. 13(2): p. 208-215.
 35. Smith, R.E., F.L. Smoll, and S.P. Cumming, Effects of a motivational climate intervention for coaches on young athletes' sport performance anxiety. *Journal of Sport & Exercise Psychology*, 2007. 29(1): p. 39-59.
 36. Smith, R.E. and F.L. Smoll, Coaching the coaches: Youth sports as a scientific and applied behavioral setting. *Current Directions in Psychological Science*, 1997. 6(1): p. 16-21.
 37. Carron, A.V., H.A. Hausenblas, and D. Mack, Social influence and exercise: A metaanalysis. *Journal of Sport & Exercise Psychology*, 1996. 18(1): p. 1-16.
 38. Oslin, J.L., S.A. Mitchell, and L.L. Griffin, The Game Performance Assessment Instrument (GPAI): Development and preliminary validation. *Journal of Teaching in Physical Education*, 1998. 17(2): p. 231-243.

If you require any further details, or would like to discuss the report contents further, please contact me at:

Dr. Kirsten Spencer

Sports Performance Research Institute New Zealand
AUT Millennium
17 Antares Place, Mairangi Bay, Auckland
E: Kspencer@aut.ac.nz
T: 09 921 9999 Ext 7239