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Defining tactical competency during turnovers in Netball: Using the Delphi method to capture expert coach knowledge

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ABSTRACT

Traditional methods for understanding change of possession (turnovers) in team-based invasion sports have not accounted for how the dynamic, interactive actions of multiple players contribute to turnovers. One approach is to access the expertise of highly skilled coaches to determine the important tactical behaviours that create turnovers. In this study, we synthesised expert opinion from 12 experienced netball coaches with a consensus-based method (the Delphi method). The expert group undertook one-on-one interviews which were coded using thematic analysis to identify and code any tactical constructs. From this analysis, a preliminary list of tactical behaviour definitions were created and used for the subsequent rounds of data collection and analysis. Two rounds of questionnaire followed the initial interviews to validate the list of tactical behaviour definitions. As a result, the tactical principles guideline (TPG) was developed which included (nine attacking tactical behaviours and nine defensive tactical behaviours). The tactical behaviours can be grouped thematically into four overarching tactical principles, including; space and movement, timing, support and reading play. Each of the four tactical principles is derived from interactions between multiple players highlighting that, in high level netball, turnovers typically result from the team dynamics rather than from individual player behaviours (i.e., a poorly executed pass). Therefore, when using game statistics to assess performance it is important to acknowledge that errors and successes are the result of the interactions of multiple players on court, and not solely a reflection of individual players' tactical ability. The TPG has been incorporated into a Netball NZ player profiling tool as it is seen to be the first step in enhancing the effectiveness of coach and player communication, tactical behaviour assessment, as well as informing selection processes.

1. Introduction

The evaluation of tactical behaviour in team sports is a growing research area (Gonzalez-Villora, Serra-Olivares, Pastor-Vicedo, & da Costa, 2015). Given the inherently agonistic relationship that exists between opposition teams, the tactical behaviours which emerge can provide coaches, players and performance analysts with meaningful information about the tactical demands of the sport (Silva, Garganta, Araújo, Davids, & Aguiar, 2013). Notational analysis methods are often used in team sports to identify the performance indicators that describe successful or unsuccessful performance (Correia, Araujo, Vilar, & Davids, 2013). For example, statistics such as turnovers won or lost, passing frequencies, and penalties given, are collected and then used to discriminate between winning and losing teams, in order to describe the quality of a performance (Garcia, Ibanez, De Santos, Leite, & Sampaio, 2013; Hughes & Bartlett, 2002). In recent literature, a variety of performance variables have been shown to be related to match outcome. For example, In rugby 7's successful teams have been shown to win more lineouts from an opposition's throw (Higham, Hopkins, Pyne, & Anson, 2014); in basketball, winning teams gain more defensive rebounds (Garcia et al., 2013); and in handball, winning teams have a lower number of red card offenses (Saavedra, Porgeirsson, Chang, Kristjánsdóttir, & García-Hermoso, 2018). However, within the performance analysis literature it is acknowledged that recording these descriptive measures in isolation does little to provide an

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appropriate level of explanation for the complex inter and intra team dynamics that occur on the sports field (Mclean et al., 2019).

In order to extend our knowledge of tactical behaviour from simple description to an informative explanation, it is important to first define what a tactical behaviour is. In general terms, a 'tactic' is a means to achieve a specific objective, like to gain advantage over an opposition (Garganta, 2009). In team sports, successful tactical behaviour is typically associated with successful skill execution, as any decision only becomes valid once it is translated into action (Grehaigne, Godbout, & Bouthier, 2001). While many team sports are suitable to explore tactical behaviours, this study will focus on Netball. Netball is a 7 v 7 court-based invasion sport, played mostly by women in commonwealth countries (Croft, Willcox, & Lamb, 2018).

In netball, like other invasion sports, the overall objective is to outscore an opposition team, however, netball has many unique rules that dictate how the game can be played (Croft et al., 2018). For example, the player in possession of the ball cannot take more than one step and must pass the ball within three seconds of receiving it (Pulling, Eldridge, & Lomax, 2016). These rules mean that the player in possession of the ball (the 'passer') is heavily reliant on their teammates to create passing options for them to avoid losing possession of the ball. In addition, as netball is defined as a 'non-contact' sport, there are rules that restrict how defenders can regain possession (INF, 2016). The 'obstruction' rule states that a defender cannot defend within 0.9m of a player in possession of the ball, therefore, in order to legally gain possession, defensive players must force errors (e.g. force the attacking team to throw the ball out of court, hold the ball too long or take an extra step), or they can attempt to gain possession when the ball is in flight; by intercepting the ball (INF, 2016).

Various performance indicators in netball, such as successful and unsuccessful passes, goal scoring variables, turnovers, offensive and defensive rebounds, and penalties received have previously been reported (Croft et al., 2018; Mclean et al., 2019; O'Donoghue, Mayes, Edwards, & Garland, 2008; Pulling et al., 2016). For example, a sample of 59 British National Super League netball games from 2005-2008 were analysed to identify the key performance indicators that differentiate between top of the table and bottom of the table teams (O'Donoghue et al., 2008). The results indicate that across the 2005-2008 seasons, top of the table teams score from 53.4% of their centre passes, and bottom of the table teams score from 38.9% of their centre passes (referred to as the 'centre pass to score' or CP to score statistic) (O'Donoghue et al., 2008). In addition, top of the table teams gain more intercepts, defensive rebounds, and turnovers and score from more of those turnovers (referred to as the 'turnover to score' or T/O to score statistic) (O'Donoghue et al., 2008). This suggests that when a team is able to effectively score from their own centre pass, and score from the 'bonus' turnovers they create, they will be more successful (Pulling et al., 2016). However, from these statistics we are unable to determine the specific behaviours that are used to create these successful patterns of play, or help us understand *why* turnovers occur in netball.

As with research in other invasion sports, these performance indicators are often measured without context and without considering the team interdependencies that produce successful or unsuccessful behaviour (Mclean et al., 2019). A study conducted by Bruce, Farrow, Raynor, and May (2009), attempted to identify the contextual factors influencing pass decision making in netball, using concepts such as decisional complexity; measured through the number of passing options available for a passer. Decisional complexity was shown to be related to an increase in passing errors compared to when only one passing option was available, irrespective of the players skill level (Bruce et al., 2009). While these findings are noteworthy, the authors did not specify what constitutes an 'available option', (i.e. is 'availability' defined as a player who is completely unmarked?). This is important because, in netball, different styles of defence dictate the proximity of the defender to the attacker, and although a player may appear marked or unmarked, they can still be perceived as a good option depending on their movement and positioning. If there is any ambiguity or indecisiveness in a players movements, this will create more decisional complexity for the passer. Therefore, rather than stating that the quantity of options results in errors as shown in Bruce et al. (2009), it may also be important to note the wider contextual variables that indicate the quality of those options.

In recent research, Mclean et al. (2019), identified the need for a more holistic, systematic approach for understanding team behaviour in netball that moves beyond the reductionist notational methods currently being adopted. Using 'subject matter experts', Mclean et al. (2019) conducted a workshop to develop a model of netball to highlight the multiple interacting factors that influence match performance. Turnovers were identified as an important measure, however, rather than simply measuring the frequency of turnovers, the model includes 'purpose related functions' to guide a higher level of analysis to explain *how* teams maintain or gain possession of the ball (prevent or gain turnovers). For example, *maintaining unit structures, creating unpredictability for your opponents* and *controlling momentum* were identified as key aspects of match performance in netball (Mclean et al., 2019). These 'purpose related functions' form a foundation for understanding turnovers in netball, however, further clarification of the mechanisms or specific behaviours the contribute to turnovers are needed, i.e. *how* do players control momentum, what does it look like when players control momentum?

The use of 'subjects matter experts' in the above research emphasises the need to incorporate the unique knowledge of experts into applied sports science research (McLean, Salmon, Gorman, Read, & Solomon, 2017). The Delphi method, is another method used to solicit knowledge from experts, and to collate and synthesise their opinions in order to create group consensus across multiple rounds of questionnaires (Hsu & Sandford, 2007; Mullen, 2003). While the Delphi method has been used extensively in health and social science research there are fewer sports science studies that have used this method to capture expert knowledge (Morley, Morgan, McKenna, & Nicholls, 2014). One exception was completed by Cupples and O'Connor (2011), who sought to identify the performance indicators of junior rugby league players to create a practical guide for identifying, selecting, and retaining athletic potential. Unlike many studies that have a heavy focus on the physical attributes of performance, Cupples and O'Connor (2011) described many cognitive, psychological and game skill factors as key indicators of importance for higher performing athletes. Similarly, using the Delphi method, Morley et al. (2014) looked at the developmental features that encompass elite junior academy footballers. In both the aforementioned studies, it was recognised that using expert coach knowledge to develop

guidelines or frameworks for player development pathways can maximise the engagement and respect for the tool.

The aim of the current study was to identify and clearly define the tactical behaviours that contribute to turnovers in netball. Through gathering expert opinion with a consensus-based method (the Delphi method), a practical framework for defining tactical behaviour will be created with multiple applications for coach and player development. The expected outcome of this research will be a list of tactical behaviour definitions, called the tactical behaviours guideline (TPG). This data is intended to be used to identify, assess and develop tactical competency in players; by drawing attention to the specific tactical behaviours that can create and prevent turnovers in netball.

2. Methods

2.1. Participants

A sample of netball experts were invited to participate in this research. Criteria for participation included having over 10 years of coaching experience. A total of 12 experts agreed to be involved in this study. Nine of the experts were head or assistant coaches in elite competitions (domestic and international), two experts were former Silver Ferns coaches, and one expert had coached at representative age group level, and had over 50 Silver Ferns test caps as a player. Although this expert had no experience coaching at the elite level, she has been involved at the elite level as a player for many years and thus had valuable knowledge to add. This group of experts are highly regarded in New Zealand Netball, with over 550 Silver Ferns test caps between them as either coaches or players, as well as extensive experience coaching and playing at the elite domestic level both in NZ and overseas. The attrition rate was low overall, with only two experts withdrawing after round one, and one expert withdrawing after round two. No explanations were offered for these withdrawals. The data gathered from these participants was still used regardless of their withdrawal.

Ethical approval was attained through AUTEC (16/436) on the 14 of September 2017.

3. Procedure

The Delphi method was selected to collect and distil the opinions and knowledge of the expert participants to create a list of tactical behaviour definitions. The Delphi method consisted of three rounds of data collection interspersed with analysis and feedback (the specific steps are outlined in Figure 1).

Traditionally, the Delphi method consists of multiple rounds of questionnaire that produce quantitative data, and a common modification is the use of one-on-one, semi-structured interviews in the first round of data collection (Keeny, Hasson, & McKenna, 2011). This modification has been used in previous research (Cupples & O'Connor, 2011; Paul & Donna, 2017) to allow for more open-ended, explorative questions to be used to produce multifaceted answers to the research question. Subsequent Delphi rounds then consist of online questionnaires. The details of each rounds of interview and questionnaire are explained below.

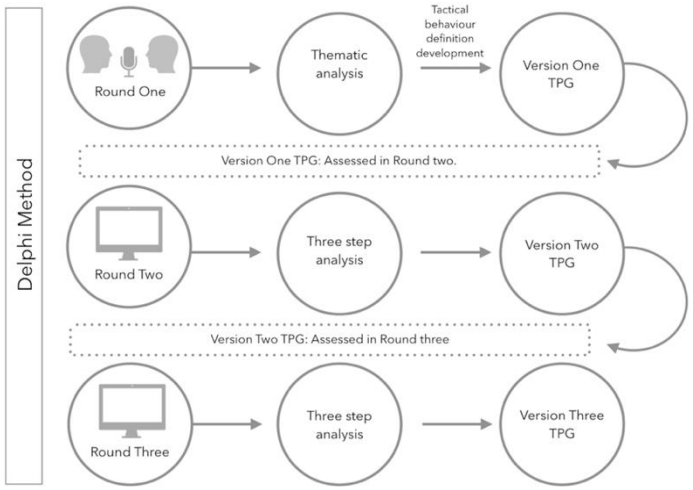

Figure 1: Outline of the Delphi research procedure.

Round 1: Each expert was interviewed in person by the first author with one interview conducted via Skype. The experts were guided by the broad question; "how do turnovers come about?" and were prompted to discuss and describe the key tactical behaviours used to create or prevent turnovers. Specifically, two questions; "what is done well on defence to create turnover opportunities" and "what is done well one attack to prevent turnovers, i.e. transfer the ball through the court" were written on a large sheet of paper, which the coaches had the opportunity to write down key areas to discuss. Probing questions were used to guide the conversation, such as; "can you explain what it looks like", "can you provide an example" were used until the expert could not provide any new information. Following the interviews, the research team analysed the expert responses to create a list of tactical behaviour definitions. These definitions were categorised into defensive and attacking behaviours and were used to create version one of the TPG (details in the data analysis section below).

Round 2: Using the tactical behaviour definitions developed in round one, an online questionnaire was created to enable the experts to rate their agreement to each of the definitions using a 4-point Likert scale; 4: strongly agree, no changes needed, 3: agree, minor changes needed, 2: disagree, major changes needed, 1: strongly disagree, should be excluded. If the definition was rated a three, two, or a one; the experts were given the opportunity to write amendments to the definition. If the tactical behaviour was rated as a one, the expert did not agree with the definition *and* believed the tactical behaviour should be excluded from the TPG, i.e. the tactical behaviour was not relevant.

While the primary intention was to create a list of definitions that expert coaches agreed upon, we also wanted to ensure that all the tactical behaviours in the TPG were considered important. In order to establish which behaviours were important the experts were asked to rank each of the tactical behaviours for their level of importance for creating turnovers on defence, and preventing turnovers on attack. The experts classified each tactical behaviour into one of four categories including; 4: very important, 3: important, 2: somewhat important, 1: not important (delete).

Based on the level of agreement and rank score for each definition, the research team analysed the results and where necessary, re-wrote the definitions to align with the experts suggested amendments to create version two of the TPG (details are provided in data analysis section below).

Round 3: The procedure for round two was repeated and the results were analysed to inform the development of the final version of the TPG (version three).

4. Data analysis

The overall aim of the analysis was to produce a list of tactical behaviour definitions which were agreed upon by the experts. Following round one, the interview data was analysed using a thematic analysis. Thematic analysis was used as the qualitative method for round one. Thematic analysis includes six steps, i) familiarization ii) generating initial codes iii) searching for themes, iv) reviewing themes, v) defining and naming themes and vi) producing the report (Braun & Clarke, 2006). Following this six step process, the interviews were transcribed verbatim and prepared for qualitative analysis. The primary researcher became familiar with the data through listening to the audio and reading the transcripts multiple times. The coding tool, Nvivo was used to aid in the organisation of codes. Each transcript was systematically read through to identify any interesting extracts within the text. Initial codes were inclusive of any areas of interest that related to the research question; 'how do turnovers come about'. Each relevant section of text was tagged, and sorted into the appropriate code within Nvivo. This process was repeated twice through the data set to ensure that all the relevant text was categorised into the appropriate codes. Codes were then sorted into potential themes by reading the extracts and combining similar codes. The second author independently cross-coded a section of the transcripts to ensure consistency in the coding process and discussions were had until agreement was reached. Each major theme that was identified was developed into a short definition with a title to describe the tactical behaviour. A small pilot study was conducted to ensure the tactical behaviour definitions were comprehensible before presenting them back to the original experts. This required two authors (AC & SM), as well as a netball participant (a local umpire), to read though the definitions and provide feedback. Following this pilot study, some very minor changes (one or two words) were made to four of the definitions. For rounds two and three, quantitative and qualitative data were used to inform the revision of the tactical behaviour definitions that were developed in round one.

The aim of the analysis for round two and three was to strengthen the validity of the definitions between each iteration, until the required level of consensus was reached (explained in the content validity section below). A secondary aim was to decrease the larger list of tactical behaviours into a smaller, more refined list, with only the most important tactical behaviours included. The process for editing the definitions and refining the list of behaviours is explained below.

4.1. Content validity: I-CVI and S-CVI

The 'item content validity index' (I-CVI) was used for each tactical behaviour definition to determine the strength of the agreement amongst the experts. Using the expert ratings of agreement, the I-CVI score was calculated by the proportion of experts who rated the definition a three or a four (agree or strongly agree to the definition) on the four point scale (Lynn, 1985; Polit & Beck, 2006). A conservative I-CVI score of 0.80 (80% of the participants) was considered content valid for this study, as only a small number of experts were involved (Lynn, 1985). The S-CVI (scale content validity) score is the content validity of the whole scale (TPG) and was also calculated by using the average I-CVI scores for all 18 tactical behaviour definitions within the TPG.

4.2. Rank order

Means and standard deviations were calculated to determine the average rank each of the tactical behaviours were given (from very important to not important, delete).

4.3. Qualitative review

A qualitative review of a definition was conducted when the content validity (I-CVI) was below 80% or the tactical behaviour was ranked as 'somewhat important' or 'not important, delete'. The suggested amendments provided by the experts were then analysed to determine whether any changes should be made to each definition, or if it should be deleted. This process was completed on a case-by-case basis using the following steps;1) all suggested amendments were summarised and were presented to the first two authors of this paper, 2) the suggested amendments were read through to look for common themes, 3) the first two authors re-wrote the definitions using the most common suggestions.

5. Results

5.1. Results: Round One

Six overarching themes were identified in the analysis including; (i) Space and movement, (ii) Timing, (iii) Deception, (iv) Support, (v) Reading play and (vi) Team cohesion. These six themes were defined as the tactical principles of netball. Sitting within these tactical principles, 26 tactical behaviours were identified and defined, which are organised into attacking, and defensive tactical behaviours. The attacking tactical behaviours include behaviours that the attacking team use to *prevent* turnovers from occurring, and the defensive tactical behaviours include behaviours that the defensive team use to *create* turnovers. The full list of tactical behaviours is shown in Table 1 below.

Table 1: Version one of the tactical principle guideline (TPG)

Tactical principles	Defensive tactical behaviours	Attacking tactical behaviours
Space and Movement	Court coverage	Continuous movement
	Continuous movement	Holding
	Attack the line of the ball	Penetration
	Deny catch space	Balance
	Dictate movement	Decisive movement
Timing	Delay and disrupt ball off-load	Reset
		Ball speed
		Getting free
Support	Defensive unity	Options to the ball
	Full team defence	
Reading play	Reading patters	Option selection
	Space awareness	Space awareness
Deception	Isolate	Decoy movements/fakes
Team cohesion	Role clarity within unit	Role clarity within unit
	Communication	Communication
	Adapting to player tendencies	Adapting to player tendencies

5.2. Results: Round two and three

5.2.1. Content validity

In version one, consensus was reached (I-CVI $\geq$ 0.80) for 23 of the 26 tactical behaviour definitions, with an S-CVI/Ave score of 0.90 (90% agreement for the definitions). In version two, consensus was reached for all 18 tactical behaviour definitions with an S-CVI/Ave score of 0.98 (98% agreement for the definitions). See Table 2 above for the I-CVI scores for the individual tactical behaviours.

5.2.2. Rank order

In version one of the TPG, 12 out of 26 tactical behaviours were ranked in the 'somewhat important' (2) or the 'not important, delete' (1) categories, including seven attacking tactical behaviours; *penetration, ball speed, continuous movement, decoy movements/fake, awareness of player tendencies, reset, and holding,* and five defensive tactical behaviours; *deny catch space, delay and disrupt ball off-load, court coverage, awareness of player tendencies, isolate*. These tactical behaviours risked being deleted from the TPG. The remaining attacking and defensive tactical behaviours were all rated in the 'important' category, with *options to the ball, getting free and decisive movement* ranked as the top attacking tactical behaviours, and *dictate movement* as the top defensive tactical behaviour. In version two of the TPG all 18 tactical behaviours we ranked in the average category. See Table 2 below to see the rank given to each tactical behaviour for rounds two and three.

Table 2: I-CVI scores and rank order for the attacking and defensive tactical behaviours.

ATTACK ING TACTICAL BEHAVIOURS							
Round Two: Version One				**Round Three: Version Two**			
Tactical behaviours	I-CVI	Rank	Qualitative review	Tactical behaviours	I-CVI	Rank	Qualitative review
Continuous movement	80%	11	Deleted				
Holding	100%	15	Definition change	*Protect space*	100%	8	No change
Penetration	90%	9=	Deleted				
Balance	90%	8	No change		100%	5	*Court balance*
Decisive movement	100%	2=	Definition change.		100%	1=	No change
Reset	100%	14	Deleted				
Ball speed	90%	9=	Definition change	*Pace of the ball*	89%	6=	No change
Getting free	90%	2=	Definition change		100%	1=	No change
Decoy movements/fakes	80%	12	Definition change	*Draw or fake*	89%	9	No change
Options to the ball	100%	4	No change		100%	1=	No change
Option selection	90%	1	Definition change		89%	4	No change
Space awareness	90%	7	Definition change		89%	6=	No change
Role clarity	100%	6	Deleted				
Communication	100%	5	Deleted				
Player tendencies	90%	13	Deleted				
DEFENSIVE TACTICAL BEHAVIOURS							
Round Two: Version One				**Round Three: Version Two**			
Tactical behaviours	I-CVI	Rank	Qualitative review		I-CVI	Rank	Qualitative review
Court coverage	80%	12	Deleted				
Continuous movement	80%	8=	Definition change	*Confuse space*	100%	4=	No change
Attack the line of the ball	50%	7	Definition change		100%	2=	No change
Deny catch space	70%	10=	Definition change	*Contest catch space*	100%	4=	Definition change
Dictate movement	100%	3=	Definition change		100%	1	No change
Delay and disrupt ball off-load	90%	10=	No change		100%	7=	No change
Isolate	70%	14	Deleted				
Defensive unity	90%	1	Definition change		100%	7=	No change
Full team defence	100%	3=	Definition change		100%	2=	Definition change
Reading patterns	100%	8=	Definition change		100%	6	No change
Space awareness	100%	2	No change		100%	9	No change
Role clarity	100%	3=	Deleted				
Communication	100%	3=	Deleted				
Player tendencies	90%	13	Deleted				

5.2.3. Qualitative review

Despite the high level of consensus achieved for the 26 tactical behaviour definitions, the suggested amendments made by the experts highlighted that further refinements were needed. The research team reviewed the definitions on a case-by-case basis to look for common themes in the suggested amendments. In some cases, the experts suggested changes for the tactical behaviour title, shown in *italics* in Table 2 above. For example, 'ball speed' was changed to 'pace of the ball'. Two in-depth examples of the qualitative review process are provided in Table 3 and Table 4 below, showing both a change of definition, and a change in title.

In round two, *continuous movement* was ranked eighth equal out of 14 tactical behaviours, and while the I-CVI score was sufficient (80% agreement), the suggested amendments made by the experts highlighted some minor changes that could be made. As shown in Table 3 below, experts four, six and eight, suggested a change in the title, and therefore *confuse space* was used. Expert three also suggested that there needed to be reference to the opposition player therefore, we added "movement around an attacking player". Following these changes, in round three, the new tactical behaviour *confuse space* achieved an improved I-CVI score of 1.0 (100% agreement) and was now ranked as the fourth equal (out of nine) for the most important tactical behaviours creating turnovers on defence.

Table 3: Example of suggested amendments for the continuous movement tactical behaviour

Version one definition: Continuous movement: The actions of players to create the illusion that spaces on court are covered. **Suggested amendments:**
Expert 2: "Perhaps try "creating the illusion that spaces on court are available"""
Expert 3: "The actions of players to create the illusion that spaces and or opposition players on court are covered"
Expert 4: "Continuous movement sounds frenetic, sometimes in defence I would want the illusion that there is space to pass the ball for the purpose of intercepting"
Expert 6: "Preference here would be "con to create" with definition being smart movement of players to create gains"
Expert 8: "Change continuous movement to confuse space or contest ball"
Version two definition: Confuse space: Varied movement around an attacking player to open or close the space they have available to receive a pass

In another example, the attacking tactical behaviour *holding* achieved an I-CVI score of 100% agreement in round two, however, it was ranked as the least important tactical behaviour. The expert amendments were used to re-write the definition and title. As shown in Table 4 below, many of the experts suggested adding "to receive a pass", therefore, we added "to show a clear space to receive a pass for yourself or another player". Expert six also raised concern about the title *holding* as this could be considered an illegal action in netball. A more passive title of *protect space* was put forward, which was included in the initial definition. In round two, the definition maintained an I-CVI score of 1.0 (100% agreement), and while it remained as a low ranked behaviour (8th out of nine), the authors agreed that it would remain in the TPG.

Table 4: Example of suggested amendments for the 'holding' tactical behaviour

Version one definition: Holding: The ability of the attacking player to use their body to protect space. **Suggested amendments:**
Expert 3: "To receive a pass"
Expert 4: "Protect space in which to receive a pass or protect for a team mate to receive a pass i.e. screen"
Expert 6: "The ability of an attacking player to use their body to show a clear space for passer. I am slightly concerned at this one as internationally we have been getting a lot of umpiring calls against us due to our technique of "holding"".
Expert 8: "The ability of any player to use their body to protect or create space for self or others"
Version two definition: Protect Space: Using the body to create and show a clear space to receive a pass for yourself or another player

In summary, the expert responses from the questionnaire in Delphi round two, informed many changes to version one of the TPG including; fourteen re-written tactical behaviour definitions, five title changes, and eight deleted tactical behaviours. Five of the deleted definitions included the attacking tactical behaviours, *continuous movement, penetration and reset*, and the defensive tactical behaviours were *court coverage* and *isolate.* These five tactical behaviours were ranked low (9th= place or lower) in round one, and while they could have been re-written, a decision was made to exclude them, as many of definitions remaining in the TPG already captured the concepts the behaviours were attempting to define. In addition, *role clarity*, *communication* and *player tendencies* were removed from the list of definitions. While these three behaviours were considered important, upon reflection the researchers viewed them more as foundational concepts more underpinning all tactical behaviour and were therefore removed.

In round three, three minor changes to the definitions were made, however it was agreed upon by the research team that these changes did not alter the meaning of the definition in any significant way, and it was unanimously agreed that a fourth Delphi round was not needed to confirm definition agreement.

5.2.4. Version three: The final version of the TPG

The final version of the tactical principles guideline in Figure 2 below includes 18 tactical behaviour definitions (nine attacking behaviours and nine defensive behaviours), and four overarching tactical principles including; i) Space and movement, ii) Timing, iii) Support and iv) Reading play. The reduction of six tactical principles to four was informed by the changes made to the tactical behaviour definitions. The *team cohesion* tactical principle was removed following the removal of all of the tactical behaviours it categorised including; *role clarity, communication and player tendencies*. In addition, the *deception* tactical principle was removed following the removal of the defensive tactical behaviour *isolate*. The attacking tactical principle *draw and fake* was originally categorised in the *deception* principle, but was re-organised into the *space and movement* principle. The full list of definitions is not included in this paper but will be made available upon request.

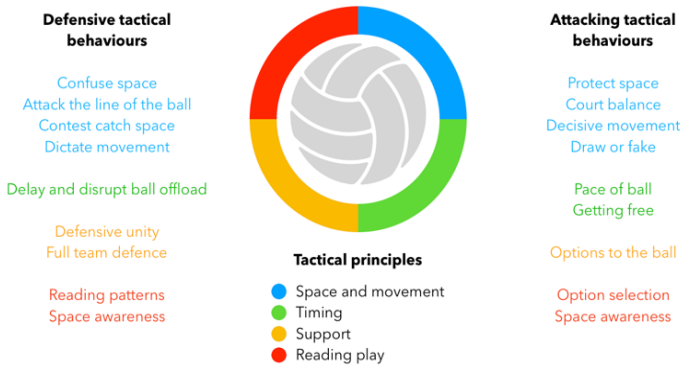

Figure 2: Final version of the tactical principles guideline (TPG).

6. Discussion

The primary aim of this study was to use expert knowledge to develop a clear understanding of the tactical behaviours that contribute to turnovers in netball. Furthermore, the study aimed to expand upon the context deficient notational measures currently being used in elite level netball (Mclean et al., 2019). Following three rounds of consultation with netball experts, four tactical principles were identified, and consensus was reached for 18 tactical behaviours which formed the tactical principles guideline (TPG). In line with current research trends in performance analysis, the tactical behaviours in the TPG adopt a holistic approach to describe *why* or *how* turnovers occur in netball, revealing a complex system of behaviour capturing a broader scope of tactical intentionality (Mclean et al., 2019).

The four tactical principles included in the TPG and the associated tactical behaviours are discussed below. This discussion will begin with *reading play* as logical start point as this principle reflects the perceptual-cognitive behaviours need to attend to environmental information. The *space and movement* and *timing* principles will be discussed next to describe how players use environment information to act (manipulating space and time), and then finally the *support* tactical principle will be explained to provide an overview for how tactical behaviours are used by teams to operate as a unit.

6.1. Reading play

The tactical principle *reading play* is closely linked to decision making as the ability to perform the right action at the right moment, requires players to 'read the game' and react with an appropriate response (Elferink-Gemser et al., 2010). The concept of *reading play* has been heavily researched in the team sport literature, where references to the perceptual-cognitive aspects of attention, pattern recall, and anticipation have been shown to be determining factors in sporting expertise (Farrow, 2010). The identification of the *reading play* principle by the experts in this current study is corroborated by the identification of a similar concept of 'spatial awareness' in the work conducted by Mclean et al. (2019). Spatial awareness was not specifically defined in the Mclean et al. (2019) research, however, in this current study the tactical behaviour *space awareness* was defined for both attack and defence. For attacking players, *space awareness*, relates to one's ability to read spaces to move into or pass to, and on defence, *space awareness* is concerned with the ability to read the spaces attacking players want to use, to stop them.

6.2. Space and movement and timing

The *space and movement* and *timing* tactical principles represent a variety of actions that players enact to solve tactical problems on court. Space and time represent two key constrains in team sports, as players must navigate different spatiotemporal barriers to maintain possession and score on attack, and prevent scoring and regain possession on defence (Grehaigne, Bouthier, & David, 1997). The tactical behaviours identified in the *space and movement* and *timing* principles define how players can create affordances for their teammates or create unpredictability for their opponents. The importance of these behaviours is reflected in the results of this current study as the experts identified the attacking tactical behaviours; *decisive movement, getting free* and *protect space* as the most important behaviours for *preventing* turnovers and *decisive movement* as the most important defensive tactical behaviour for *creating* turnovers.

The *timing* tactical principle is analogous to the concept of 'controlling momentum' identified in the study conducted by Mclean et al. (2019). In their study, *controlling momentum* was defined as "the ability to slow down or speed up play as the match situation demands" (Mclean et al., 2019, p. 9). The expert coaches in this present study, were able to expand on this concept and explain the potential mechanisms that players use to control momentum in netball. For example, the attacking tactical behaviour *pace of the ball*, explains how the varied use of timing (release of the pass on the 1st, 2nd or 3rd second) or the type of pass (a fast-flat pass compared to a slow lob pass), can create unpredictability and thus disrupt the defensive teams attempts to gain a turnover. In addition, the defensive tactical behaviour *delay and disrupt ball offload*, defines how defensive players can control momentum through disrupting the attacking players vision and slowing down the release of a pass.

6.3. Support

The final tactical principle is *support* which describes how players support each another to reach performance goals, i.e. gaining turnovers and maintaining possession. The *support* principle is prevalent in all 'passing-catching' dyads in netball, as the player in possession of the ball is constrained by the rules of the game (not being able to move and having to pass the ball within three seconds). Therefore, the passer becomes reliant on their teammates to create passing affordances for them (*options to the ball)*. For the defensive team, the *support* principle identifies how players work as a cohesive unit to create turnovers. The scenario in Figure 3 below, provides an example of the support principle, and specifically the tactical behaviour; defensive unity. In image A, Figure 3 below, the scenario shows the goal keep (GK) moving away from her opposition partner, leaving the goal shoot (GS) unmarked (as shown in arrow one). As a reaction, the GD moves into the goal circle (as shown by arrow two), to defend the GS. This movement is an example of defensive unity, and explains how defensive teams maintain a unit structure, or re-stabilise balance to provide support or cover for their teammates.

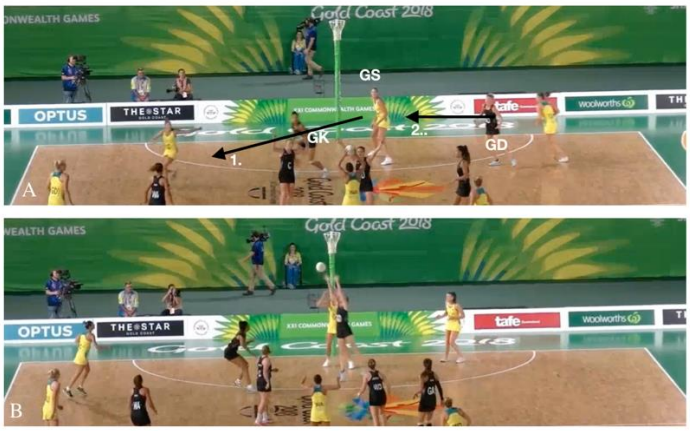

Figure 3: Example of the support tactical behaviour; defensive unity.

As shown in image B, Figure 3, the pass is released to the GS, and is subsequently intercepted by the GD. While this turnover was gained by the GD, the intercept affordance was created from the actions of the other defensive players. In addition to the movements of the GK, the ball carrier is also being guarded by two defensive players; wing defence (WD) and centre (C) who are *delaying and disrupting ball offload*, (as shown in image A, Figure 3). This tactical behaviour disrupts the passers vision and slows down the release of the pass, allowing the GD more time to read play. This example highlights that turnovers are the result of multiple interacting players, using a variety of tactical behaviours. While the GD in Figure 3 still had to use individual tactical behaviours such as *attack the line of the ball* and *contest catch space*, the opportunity to gain a turnover would not have been there, if not for the actions of the other defensive players.

7. Conclusion

The Delphi method used in this study has prioritised the expert voice, allowing for the development of clear and concise definitions for tactical competency in netball. A priority for future research is to understand the complex interactions that occur between these tactical behaviours to better understand how to create winning performances in netball (Araujo, Davids, & Hristovski, 2006). If future research is able to identify the factors that differentiate successful and unsuccessful teams, specific training for particular tactical behaviours can be prioritised and incorporated into training (Farrow, 2010).

7.1. Practical Applications

While it is important to assess individual behaviour in team sport, we recommend that tactical behaviour must be understood in the context of the team. Therefore, when using game statistics to assess performance i.e. individual statistics which show the number of passing errors or intercepts a player has, it is important to acknowledge that those errors or successes, are the result of the interactions of multiple players on court, and not solely a reflection of that players tactical ability. The tactical behaviour definitions developed from this study have been incorporated into Netball New Zealand's player profiling tool, using the four tactical principles, *space and movement, timing, support and reading play* to assess player competency. The definitions in the TPG, allow for the exchange of ideas through a shared vocabulary and therefore, can be used to increase the quality communication between coaches and players. The continued development of the TPG will create a strong foundation which to enhance tactical development and game analysis in netball. As a first step, further research is needed to determine if netball experts (coaches) are able to identify the tactical behaviours in the TPG in real game contexts, and specifically identify the complex relationships these tactical behaviours have to turnovers in netball.

Conflict of Interest

The authors declare no conflict of interests.

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