**Centre Passes in the UK Netball Super League**

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**Abstract**

***The aim of this study was to analyse the direction of turn when players received a centre pass in netball and the subsequent possession sequence. A total of 500 centre passes were analysed from seven UK Netball Super League matches. Variables that were explored included: turning direction when receiving a centre pass; court areas in which centre passes were received; pass successfulness following a centre pass and the amount of passes following a centre pass that led to a shooting opportunity. There was no significant difference between the type of turn when receiving a centre pass and the success of the following pass (ᵡ²2 = 1.469, p = 0.480). However, there were a number of significant differences between the types of turn used in different areas of the court when receiving the ball from a centre pass. This suggests that players are more likely to use a particular turn in certain areas of the court when receiving a centre pass. Future research should explore defensive tactics and the movement of the attacking players from centre passes.***

***Key words:*** netball, centre passes, notational analysis.

**1. Introduction**

Netball is an invasion game where goals are scored when a ball is shot through a ring situated 3.05m high on a post (Wakefield and Smith, 2009; Cormack, Smith, Mooney, Young and O’Brien, 2014). Netball teams consist of seven players; these are split into three units: goal attackers, centre court and goal defenders (Makgae, Motlokoa, Mashita and Monyeki, 2006). The rules of the game state that a player is only allowed to take two steps with the ball, a player must pass the ball within three seconds of gaining possession and the players are only allowed to make contact when contesting for the ball (Treagus, 2005; Cormack et al., 2014). Netball requires decision-making and tactical knowledge whilst performing technical movements (Abernethy, Thomas and Thomas, 1993; McNanus, Stevenson and Finch, 2006; Bock-Johnson, Venter and Bressan, 2007).

Netball courts are split into three equal thirds (Galsworthy, 1996). There are different positional responsibilities in designated areas of the court (e.g. Goal Attack (GA) and Goal Shooter (GS) are the only players allowed to shoot in the shooting circle) and the Centre (C) starts the game with the ball in the centre of the court (Figure.1).

Direction of attack

WD

GA

GK

GS

C

WA

GD

Figure 1. Netball court markings and player starting positions.

A centre pass is taken following a goal being scored and is therefore a vital aspect of the game (Navin, 2012). An umpire whistles to mark the start of each centre pass, and following this whistle, players can enter the middle third and contest for the first pass (Winton and White, 1992). There are four possible passing options: Goal Defence (GD), Wing Defence (WD), Goal Attack (GA) and Wing Attack (WA) (Bruce, Farrow and Raynor, 2012). Centre passes are taken from stationary balls and using the centre pass effectively is crucial for winning a game of netball (Ceccomori, 2003). Teams alternate centre passes throughout the match, giving both teams an equal number of chances to start with possession (Navin, 2008). Teams that can consistently move the ball forwards smoothly from a centre pass give the shooters the best chances to set up and score (Woodlands, 2006). At a centre pass it is traditionally taught that the defensive players stand on the inside of their opponent along the third lines (Shakespeare and Caldow, 2009). This forces the attacking team to attempt high trajectory diagonal passes (Navin, 2008). The GD, WD and C will also attempt to block attacking runs or alter the attackers path for a pass to be received (Sheryn and Sheryn, 2012).

Steele and Chad (1991) found that GA and WA players received a considerably higher amount of centre passes compared to WD and GD players. The WA received the most centre passes from the games analysed (47.3%). O’Donoghue, Mayes, Edwards and Garlands (2008) found that across three UK National Super League seasons from 2005-2008; the percentage of centre passes that led to a successful goal for the top four placed teams was 53.45%, whilst for the lowest placed four teams it was 38.95%. This suggests that utilising centre passes effectively could be very important for successful performance in netball.

Centre passes often involve the WA or GA receiving the ball facing the defensive half (Steele and Chad, 1991). This will usually occur when the WA or GA do not perform a turn as they are about to receive the ball. However, these players could perform a turn out, which means they turn away from the centre of the court or they could turn in and towards the centre of the court. This turning action will help the player to attempt the following pass in the direction of the attack (Hewit, Cronin and Hume, 2012).

Currently there is limited research from a performance analysis perspective in netball. Previous studies have investigated: the effect of rule changes in netball (O’Donoghue, 2012), the effect of match analysis on the netball coaching process (Jenkins, Morgan and O’Donoghue, 2007), performance norms in netball (O’Donoghue, Mayes, Edwards and Garlands, 2008), decision making in netball (Bruce, Farrow, Raynor and May, 2009), and landing technique in netball (Fox, Spittle, Otago and Saunders, 2013). There is a paucity of research in relation to centre passes within netball and no previous studies have investigated the turning movement of players when receiving a centre pass. Therefore, the aim of this study was to analyse the chosen direction of turn when players received a centre pass in netball and the subsequent possession sequence.

**2. Method**

National Super League matches were recorded and analysed. A total of 500 centre passes were analysed from seven games. All the games sampled were taken from broadcast coverage provided by Sky Sports television. A pilot test was conducted on one game, in which 50 centre passes were analysed to develop the operational definitions (Hughes, 2004). The results from the pilot testing were not used in the sample for the study.

Table 1. Operational Definitions.

|  |  |
| --- | --- |
| Variable | Operational Definition |
| Successful centre passUnsuccessful centre pass | When the C makes a pass from the centre circle at the start of a game, start of a quarter or after a goal has been scored. A team member receives the ball and the attacking team maintains possession of the ball.When the C makes a pass from the centre circle at the start of a game, start of a quarter or after a goal has been scored. A team member does not receive the ball and the attacking team loses possession of the ball. |
| Turn in successfulTurn in unsuccessfulTurn out successfulTurn out unsuccessfulNo turn successfulNo turn unsuccessfulCentre pass leads to a shot | Player turns in towards the centre of the court and receives the ball from a centre pass. A team member receives the following pass.Player turns in towards the centre of the court and receives the ball from a centre pass. A team member does not receive the following pass.Player turns out towards the sideline of the court and receives the ball from a centre pass. A team member receives the following pass.Player turns out towards the sideline of the court and receives the ball from a centre pass. A team member does not receive the following pass and the attacking team loses possession of the ball.Player makes no turning movement and receives the ball from a centre pass. A team member receives the following pass.Player makes no turning movement and receives the ball from a centre pass. A team member does not receive the following pass and the attacking team loses possession of the ball.Following a successful centre pass, the attacking team is able to pass the ball into the shooting circle and the GS or GA has a shot. |
|  |

The data were recorded on a specifically designed Microsoft Office Excel spread sheet (Microsoft Corporation, Excel, 2010, Redmond, WA). Variables that were explored included; the players turning direction when receiving a centre pass, the court areas in which centre passes were received (see Figure. 2), pass successfulness following a centre pass and the amount of passes following a centre pass that led to a shooting opportunity.

Direction of attack

Wide left

Inner left

Defensive half

Centre

Inner right

Wide right

Figure 2. Centre pass areas.

**2.1. Reliability**

Inter-observer and intra-observer reliability analyses were conducted to assess the validity and reliability of the data respectively. Inter-observer reliability tests the agreement of different observers on the data collection (Mitchell and Jolley, 2013). This was conducted by an additional analyst who had four years netball coaching experience and two years analysis experience within netball. The secondary analyst assessed 25% (n=125) of centre passes from the sample data. Prior to the analysis, the secondary analyst was provided with a training session on how to observe the footage and given a visual aid outlining the operational definitions that were used in the data collection process.

Intra-observer reliability was also tested. The intra-observer reliability analysis was conducted by the initial observer, analysing 125 centre passes (25%) from the original sample. This testing was carried out six weeks after the initial analysis in an effort to reduce potential learning effects (Taylor, Mellalieu, James and Shearer, 2008). Kappa was completed to assess both inter-observer and intra-observer reliability for direction of turn (in, out or no turn) and the location where the centre pass was received (see table 2).

Table 2. Reliability tests.

|  |  |  |  |
| --- | --- | --- | --- |
| Reliability Test | Outcome | Kappa Value | Strength of Agreement (Altman, 1995) |
| Inter-observer | Direction of turn | 0.94 | Very Good |
| Inter-observer | Centre pass area | 0.90 | Very Good |
| Intra-observer | Direction of turn | 0.96 | Very Good |
| Intra-observer | Centre pass area | 0.91 | Very Good |

**2.2.** **Data Analysis**

The data are presented as absolute frequencies and some results are supported by percentage occurrence (stated in brackets). A Friedman’s ANOVA was used to explore the differences between; (1) the types of turn displayed and the successfulness of the following pass, (2) the types of turn displayed within the defensive half of the court, (3) the types of turn displayed within the wide right area of the court, (4) the types of turn displayed within the inner right area of the court, (5) the types of turn displayed within the centre area of the court, (6) the types of turn displayed within the inner left area of the court, (7) the types of turn displayed within the wide left area of the court, and (8) the types of turn displayed and the frequency of passes that led to a shot being taken. If a significant finding was evident, post hoc comparisons were completed using Wilcoxon signed-rank tests. A Bonferroni correction was applied and therefore the alpha level was set at 0.0167.

**3. Results**

From 500 centre passes analysed within this study, 494 (98.8%) were successful, whilst there were only 6 (1.2%) unsuccessful centre passes, where the initial first pass failed to reach a team-member. The findings reveal that 463 (93.7%) of the 494 successful centre passes resulted in a secondary successful pass. Players who did not turn when receiving the centre pass gained the highest percentage of success for the following pass (95.3%). The players who turned out when receiving the centre pass successfully completed 137 out of 147 (93.2%) of the following passes. Finally, players who turned in when receiving the centre pass completed 203 out of 218 (93.1%) of the following passes. There was no significant difference between the type of turn and the success of the following pass (ᵡ²2= 1.469, *p* = 0.480).

Table 3. Centre passes and turning.

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| --- | --- | --- |
| **Type of turn** | **Outcome of following pass** | **Frequency** |
| **Turn in**  | Successful | 203 (93.1) |
| **Turn in**  | Unsuccessful | 15 (6.9) |
| **Turn out** | Successful | 137 (93.2) |
| **Turn out**  | Unsuccessful | 10 (6.8) |
| **No turn**  | Successful | 123 (95.3) |
| **No turn**  | Unsuccessful | 6 (4.7) |

Of the 494 successful centre passes, 100 (20.2%) of the passes were received in the wide right area, 95 (19.2%) within the wide left area, 89 (18.0%) in the inner right area, 82 (16.6%) in the inner left area, 75 (15.2%) within the centre area and 53 (10.7%) in the defensive half. There was a significant difference between the types of turn displayed within the defensive half of the court (ᵡ²2= 24.367, *p* = 0.001). The Wilcoxon tests revealed that there was a significantly greater use of the no turn compared to a turn in (*T* = 0, *p* = 0.001, *r* = -0.90) and the turn out (*T* = 0, *p* = 0.001, *r* = -0.90) within the defensive half of the court.

When the centre passes were received in the wide right area, the players were most likely to turn out (40.0% of centre passes received in the wide right area), however this was only slightly higher than when turning in (37.0%). There was no significant difference between the types of turn displayed within the wide right area of the court (ᵡ²2= 5.915, *p* = 0.052). When the centre passes were received in the wide left area, the players were much more likely to turn in (62.1% of centre passes received in the wide left area) than they were to turn out (27.4%). There was a significant difference between the types of turn displayed within the wide left area of the court (ᵡ²2 = 25.245, *p* = 0.001). The Wilcoxon tests revealed that there was significantly greater use of the turn in compared to the turn out (*T* = 0, *p* = 0.001, *r* = -0.88) and the no turn (*T* = 0, *p* = 0.001, *r* = -0.88) within the wide left area of the court. There was also significantly greater use of the turn out compared to the no turn (*T* = 4, *p* = 0.009, *r* = -0.70) within the wide left area of the court.

There was no significant difference between the types of turn displayed within the inner right area of the court (ᵡ²2= 4.409, *p* = 0.110). There was a significant difference between the types of turn displayed within the inner left area of the court (ᵡ²2 = 14.364, *p* = 0.001). The Wilcoxon tests revealed that there was significantly less use of the no turn compared to the turn in (*T* = 0, *p* = 0.003, *r* = -0.78) and the turn out (*T* = 0, *p* = 0.007, *r* = -0.72) within the inner left area of the court. There was a significant difference between the types of turn displayed within the centre area of the court (ᵡ²2 = 18.286, *p* = 0.001). The Wilcoxon tests revealed that there was a significantly greater use of the turn in compared to a turn out (*T* = 0, *p* = 0.001, *r* = -0.85) and the no turn (*T* = 0, *p* = 0.003, *r* = -0.78) within the centre area of the court.

Table 4. Centre passes and received areas.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Type of turn** | **Defensive half** | **Wide right** | **Inner right** | **Centre** | **Inner left** | **Wide left** |
| **Turn in** | 5 (9.4) | 37 (37.0) | 32 (36.0) | 46 (61.3) | 39 (47.6) | 59 (62.1) |
| **Turn out** | 2 (3.8) | 40 (40.0) | 34 (38.2) | 17 (22.7) | 28 (34.1) | 26 (27.4) |
| **No turn** | 46 (86.8) | 23 (23.0) | 23 (25.8) | 12 (16.0) | 15 (18.3) | 10 (10.5) |

When players turned in and the following pass was successful, the teams were able to create a shooting opportunity on 159 occasions (78.3% of successful turn ins), for turning out 111 shots were created (81.0% of successful turn outs) and for no turns 99 shots were attempted (80.5% of successful no turns). There was a significant difference in the frequency of passes that led to a shot being taken for the different turns (ᵡ²2 = 17.273, *p* = 0.001). The Wilcoxon tests revealed that there were significantly less passes displayed that led to a shot being taken following a turn out compared to a turn in (*T* = 7, *p* = 0.016, *r* = -0.65) and a no turn (*T* = 0, *p* = 0.001, *r* = -0.85).

Table 5. Centre passes, subsequent passes and shooting opportunities.

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Turn** | **Centre passes that led to a shot** | **Total number of passes from initial receiver to shot taken** | **Average number of passes following a centre pass to a shot being taken** |
| **Turn in successful** | 159 | 680 | 4.28 |
| **Turn out successful** | 111 | 390 | 3.51 |
| **No turn successful**  | 99 | 448 | 4.53 |

**4. Discussion**

The purpose of this study was to analyse the chosen direction of turn when players received a centre pass in netball and the subsequent possession sequence. There were 500 centre passes analysed, 494 (98.8%) of which were successful in maintaining possession from the first pass. From the 494 successful centre passes a further 463 (93.7%) were successful in completing the following pass. This high percentage is supported by Beagles (1992) who suggested centre passes should be well rehearsed and display high rates of success. Players who did not turn when receiving the centre pass gained the highest percentage of success for the following pass (95.3%). However, this percentage was only slightly higher than turn out (93.2%) and turn in (93.1%). There was no significant difference between the type of turn and the success of the following pass (ᵡ²2= 1.469, *p* = 0.480). It appears that the player who received the ball from a centre pass would usually be able to pass the ball to a team-member and retain possession for their team. Previous coaching literature has suggested that netball coaches instruct players to have three available straight-line passing options in numerous directions (Navin, 2008). It appears that due to the high success rates of the following pass, the players who receive the centre pass have potential passing options available to them.

Of the 494 successful centre passes, 100 (20.2%) of the passes were received in the wide right area, 95 (19.2%) within the wide left area, 89 (18.0%) in the inner right area, 82 (16.6%) in the inner left area, 75 (15.2%) within the centre area and 53 (10.7%) in the defensive half. A predictable result was that teams attempted to pass the ball forwards from a centre pass rather than backwards. The ball was also more likely to be received in the wide areas of the court. This may be due to the starting positions of the defensive players at a centre pass. Defensive players are traditionally taught to stand on the inside of their opponent along the third lines (Shakespeare and Caldow, 2009). This may encourage the attacking players to move to a wider area to be able to move away from their defender and receive the ball. At elite level netball it may be expected that teams will adopt various tactics and adapt these tactics when defending centre passes. A suggestion for further research would be to explore the starting positions of both the attackers and defenders at a centre pass and how this influences the outcome of a centre pass. In this current study, defenders found it extremely difficult to prevent the attacker from receiving the ball from a centre pass (only 1.2% of centre passes were unsuccessful), so it appears that defensive tactics from centre passes could be improved.

One of the most interesting findings was the type of turn used when the ball was received in a wide area of the court. When the centre passes were received in the wide right area, the players were most likely to turn out (40.0% of centre passes received in the wide right area), however this was only slightly higher than turning in (37.0%). There was no significant difference between the types of turn displayed within the wide right area of the court (ᵡ²2= 5.915, *p* = 0.052). When the centre passes were received in the wide left area, the players were much more likely to turn in (62.1% of centre passes received in the wide left area) than they were to turn out (27.4%). There was a significant difference between the types of turn displayed within the wide left area of the court (ᵡ²2 = 25.245, *p* = 0.001). The Wilcoxon tests revealed that there was significantly greater use of the turn in compared to the turn out (*T* = 0, *p* = 0.001, *r* = -0.88) and the no turn (*T* = 0, *p* = 0.001, *r* = -0.88) within the wide left area of the court. A potential reason for this could be due to the tactics applied by the defensive team, where they are trying to force the attacking team to play in a certain direction and blocking the runs of the attacking players (Sheryn and Sheryn, 2012). A further potential reason could be related to the handedness of the players, with the majority of players being right hand dominant. A right hand dominant player who receives the ball in the wide left area, is likely to prefer to turn in as they can then execute a very quick secondary pass with the movement of the right arm going across the body (shoulder adduction). A turn outwards in the wide left area may lead to the player executing the following pass with the arm going away from the body (shoulder abduction). Previous research has shown that shoulder adduction can act as a significant predictor of throwing velocity (Bartlett, Storey and Simons, 1989); therefore players may turn in a particular direction so that they can execute the following pass with greater velocity.

A total of 369 centre passes led to a shooting opportunity (74.7% of successful centre passes). This suggests that the teams were consistently able to move the ball forwards from a centre pass and provide shooting opportunities for the GS and GA (Woodlands, 2006). When players turned in and the following pass was successful, the teams were able to create a shooting opportunity on 159 occasions (78.3% of successful turn ins), for turning out a 111 shots were created (81.0% of successful turn outs) and for no turns 99 shots were attempted (80.5% of successful no turns). There appears to be little difference between the type of turn performed when receiving a centre pass and whether that possession sequence leads to a shooting opportunity.

There was a significant difference in the frequency of passes that led to a shot being taken for the different turns (ᵡ²2 = 17.273, *p* = 0.001). The Wilcoxon tests revealed that there was significantly less passes displayed that led to a shot being taken following a turn out compared to a turn in (*T* = 7, *p* = 0.016, *r* = -0.65) and a no turn (*T* = 0, *p* = 0.001, *r* = -0.85). With some caution this may suggest that a player who turns out when receiving the ball from a centre pass may have a more direct passing option available to them for their secondary pass. However, the difference in mean passes could be due to player actions and movements that occur later in the possession sequence. It would be advised to develop an appropriate sequential system to further investigate the possession sequence following a centre pass (O’Donoghue, 2015). This sequential system could also record the duration of a possession sequence following a centre pass and how this impacts upon creating a shooting opportunity.

A key limitation of this study is that the analysis has focused solely on the attacking team. The actions of the attacking players will be influenced by the movements and actions of the defensive players, so defensive tactics from centre passes should be explored in future investigations. Further research should also be conducted into the movement of the attacking players from centre passes, this could explore the types of feints and dodges that are being applied by attacking players.

**5. Conclusion**

The purpose of this study was to analyse the chosen direction of turn when players received a centre pass in netball and the subsequent possession sequence. There was no significant difference between the type of turn used and the success of the following pass. However, there were a number of significant differences between the types of turn used when receiving the ball from a centre pass in different areas of the court. The findings suggest that players are more likely to use a particular turning direction when they are in a certain area of the court. The current study only focused on the actions of the attacking team and therefore future research should investigate defensive tactics from centre passes. It may also be appropriate to explore the movement of the attacking players from centre passes, as this could provide insights into the types of feints and dodges that are being applied by attacking players.

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