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**Prifysgol Fetropolitan Caerdydd**

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**Analysis of technical effectiveness of football  
players within their club compared to their country.**

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Analysis area)**

**Alicia Jordan Davies**

**Analysis of technical effectiveness of football players**  
**within their club compared to their country.**

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## **Abstract**

The aim of this study was to see whether footballers are more technically effective when playing for their club compared to their country. To meet the aim of the study, two competitions were analysed. These were the English Premier League (EPL) 2013/14 season and the FIFA World Cup 2014. Four players, who were felt by the researcher to have a big influence on their teams and were both involved in the EPL and the World Cup, were chosen. All four players were watched in three games for each competition, which totalled to six games each. A hand notation system was used and was made up of thirteen performance indicators which were categorised into attacking and defending. Performance profiles for each player in both competitions were created from these results. The average and standard deviation from the results were calculated and a paired T-test and a Cohen's D test were used to find the P values and to see whether the figure was significantly different or not and to see how big the effect size was. By using the average result in both competitions, this allowed for comparison.

The results of this study found that in the EPL, players have more successful outcomes compared to players playing for their country in the FIFA world cup. It was concluded that the reason for this is because in the EPL there are players of mixed ability compared to in the World Cup where the players are the best in their position in respect to their given nationality, which leads to better defending and a quicker, more difficult game to play in. a further, somewhat surprising finding of this particular study was that there were many performance indicators that were significantly different which resulted in the players being more technically effective for their club compared to their country.

# **Chapter 1- Introduction**

## **1.1 Introduction**

Association football is mostly known as football or soccer, which is a team sport played with eleven players with a round ball (Gifford, 2009). It is arguably the most popular sport around the world attracting millions of fans in all countries. Wade (1975) established football as a continuous game full of constant change of possession and action, in which each player exhibits a unique style.

Many countries have their own leagues but the biggest of them all is said to be the English Premier League also known as the Barclays Premier League. The Barclays Premier League was launched in 1992 and quickly became the world's most popular sports league (Harris, 2013). The EPL has numerous main attractions such as the number of world class players that get attracted to play there, the passionate fans that fill the stadiums week in week out to see their favourite teams, the different styles of football demonstrated by each team and lastly the uncertainty of the outcome of the final league standings when it comes to the end of the season as there are normally 5-6 teams who battle it out for the top four finish.

The Federation Internationale de Football Association World Cup, also known as FIFA World Cup, is the biggest competition within football which happens every 4 years in a chosen host country. It is the greatest sporting tournament in the world and is challenged by 208 member Associations of FIFA (FIFA online, 2014). The competition has occurred 19 times with just 8 teams becoming victorious. Brazil have won it 5 times, Italy have won it 4 times, Germany have won it 3 times, Argentina and Uruguay with 2 victories and England, Spain and France with the one. The FIFA World Cup is the world's most popular sporting event; with an expected 715.1 million individuals who watched the final of the 2006 FIFA World Cup in Germany and the 2010 competition final broadcasted it around 204 nations on 245 TV stations (FIFA online, 2014). The build up to the competition every four years is massively promoted by the media and sponsorship deals are always a big part of the tournament. The media and fans make the tournament one of the greatest on the planet. It has been expressed that "the World Cup finals put extraordinary weight on player's shoulders because of the expectations of the nation's supporters and also the media. The increase of expectation can help the mental advancement of a player (Kahane and Schmanske, 2012, pp.461-462). It could be contended that the World Cup has numerous differences compared to playing at club level in the EPL.

Pundits say that the EPL is one of the best leagues in the world to play in yet it is believable to recommend that it is very different from playing for your country. Kahane and Schmanske (2012) likewise expressed that the World Cup finals could be contended to be a unique exercise in competition among other countries which is unlikely to be the same at club level, where teams play one another more than once. It is possible for players who are successful in the World Cup finals to draw attention to themselves from bigger clubs around the world which could mean a new contract and an increase in wages.

In the current study, a hand notational system was used to record the data, to make the data more presentable and to show clearly any differences. Hughes and Franks (1997) stated that hand notational systems are inexpensive, easily portable and more accurate to use. Notational analysis was designed for precise and objective analysis within sport. The quantified information provided by notational analysis helps avoid coach misperceptions and identifies facets of the game that require attention (Hughes and Franks, 1997). For many years analysis of football matches have been based on hand notations which were filled in when watching games with modern ways of match analysis that were being developed in the early 1980's (Erdmann, 1993; Hughes and Franks, 2004). Notational analysis is additionally a scientific based strategy for observation, which has been effectively utilised in past research for the quantitative measurements of development variables and examination of skill execution (e.g., Reilly and Thomas, 1976; Ali and Farrally, 1991; Robinson et al., 1994; Carter, 1996).

The objective reflection of performance that notational analysis provides therefore stresses why there has been, and still is, a need for notational analysis within football and why research studies have to be continually conducted in order to offer an accurate account of association football. As Alli (1988) recommends association football is not only a game, it is a professional sport and the object of scientific research emphasises the requirement for objective, valid and reliable information to be produced from analysis to both inform science and impact upon the expert setting and the advancement of the game. Furthermore, whilst opinion may be both regarded and substantial in a few occasions of association football, success can't be

bedded and mapped upon solely opinion alone (Bate, 1988) along highlighting the requirement for objective measures within analysis of association football.

The requirement for this objective analysis as opposed to opinionated analysis is surely required at the elite world class level in each game, not to mention association football. Furthermore, association football is still reliably covered with stubborn examination, even at the most world class standard. Whether this feeling is about the choices made by an official or the way a team has performed, a high level of subjectivity is apparent inside of association football. In this manner, these subjective opinions have prompted inquiries over the quality of players, teams and the level of play reached in at certain levels and types of competition.

Football is one of the most analysed sports and has a relatively long history of performance analysis (Reep and Benjamin, 1968). The ultimate objective of performance analysis in football is to enhance player and team performance within the specific context of competition or training (Tenga, 2013). This studied the question 'how technically effective are footballers when playing for their club compared to playing for their country?' Little research has been done in this area. Technical effectiveness is concerned with the assessment of the effect of the skills performed by players during match play and it is expressed by using positive-to-negative ratios (Tenga, 2013). "Effectiveness is defined as the power to produce an effect" (Palao and Morante, 2013, pp.22). In more simple terms technical effectiveness is where the objective of the movement is achieved by the execution of an effective movement. O'Donoghue (2015) defined technical effectiveness as working out the percentages of the skills that are performed in games successfully, for example pass completion in football. "A proper analysis of the technique efficacy involves the integration of the different perspectives of analysis" (Bartlett, 2001, pp.122). In football, effectiveness is measured by how the athlete performs different actions.

Carling et al, (2009) evaluated effectiveness by collecting data on shots, successful shots and successful passes etc. in this study four players will be analysed, who played in the 2013/2014 season in the EPL and the FIFA World Cup in Brazil 2014, and data will be collected. All four players will be compared by looking at the technical variables of their performances in 3 EPL games and 3 World Cup games. The aim of the current study will be to discover if players play differently for their

clubs compared to playing for their countries in major competitions an area that has not been researched before.

This research was also conducted to give an insight into the field of using notational analysis concerned with the performance profiling of individual players within association football. There is a big gap in the research within comparing footballer's performance who are at elite level and technical effectiveness of elite footballers when playing for their team. This provides further rationale for undertaking of this research.

#### Limitations of the study are:

The limitations of this study are as follows:

Time- the time it will take to watch the whole game and record data will take more than 90 minutes.

Replays- when a goal is scored the TV channel will normally edit a shot on goal or a foul, this could interrupt the game and you could end up missing vital aspects of play.

Biased- an analyser may take a liking to one certain player and this would end up in higher ratings for that individual.

Delimitations of the study are that the four players selected are all of an elite standard and are all important players for their club and country. This study cannot be compared to studies of non-elite performers because of the different performance levels and standards set by the elite athletes. Lastly, because of the vast number of technical aspects in football, the study will not include difficult techniques that may be demonstrated by only a handful of world class players.

The research hypothesis of this study is that it would be expected that players will produce better statistics when playing for their club compared to their country.

In order to test the hypotheses of this thesis, and that of general agreement in association football that the English Premier League produces a higher standard of play than that of FIFA World Cup, the study is structured in the following format. This format was an introduction, literature review, methodology, results, discussion and a conclusion. In the next chapter, existing literature that has been conducted on

performance profiling, association football and playing styles, will be reviewed. This will then be followed by the methodology chapter which states how the study was done, the performance indicators and the reasons for analysing those certain aspects of performance. The results are shown in chapter 4 and discussed and related to existing literature in chapter 5. The final chapter is that of the conclusion which emphasises the main findings of this study and offers suggestions for future research that could be conducted within this area of performance analysis along with the limitations of the study.

## **Chapter 2- Literature Review**

In this chapter, previous research is examined which will be relevant to the study that has been carried out. It is important to look at the existing literature to see what gaps are there and what can be done to broaden knowledge on specific subjects in Performance Analysis. Looking at the existing literature helped the researcher to decide on devising a suitable research question and highlight the findings of previous work that can be used to discuss the results of the current study.

Football has become one of the most popular sports to use performance analysis compared to other sports. Nevertheless, research within the performance analysis sector are still minimal. The outcome of this has led to most research papers being based on similar aspects. For example, papers compare that how successful or non-successful teams play under different circumstances are all very popular. Along these lines implying that notational analysis within the association football has traditionally been exploring and recognising strategic data or described performances of football teams. Coupled close by this fundamental area of notational analysis research is that on the technical effectiveness that is involved in football, is like the research on how effective teams are, yet is focussed more upon the result of particular performance indicators. The underpinning studies in this area of research within association football have formed part of this review of literature, in order to give a background into research work conducted within the sport and to provide a rationale for the undertaking of the current study.

**(2.1) Comparing different levels of play and contrasting the paradigms of comparing independent sets of matches with different players involved and then looking at the same players competing in two levels.**

Williams (2006) performed a study which took a look at examining the technical differences between the teams in group A and B by comparing the teams who qualified and the teams who didn't take part in the European Championships in Portugal 2004. The aim of Williams' study was to see if there were any technical differences between the goalkeepers of the successful and non-successful teams. Data were collected by watching 12 matches that took place in the tournament. A hand notational system was used to produce the data and a Chi squared was performed. To make sure all data was reliable a percentage error was used. The study concluded that there was no significant difference between the technical abilities of the goalkeepers that were analysed. In this study the limitations were that some key players picked up injuries which had an effect on the end result of the game. A further criticism could be that,

when analysing games, the analyst can sometimes become biased if they are watching their favourite team or a specific player. The limitations of this study was that the main aim of the study was to analyse all the sixteen teams that were competing in the competition but due to timing problems, the teams could not be grouped into C and D. To improve this study, all teams could be analysed to offer a reliable analysis of technical abilities of teams that took part in the competition.

Rowlinson (2006) conducted a study which was very similar to the current study. The title of this study was, 'A Comparison of the Performance Profiles of Association Football Players Who Competed in Both the 2005-2006 UEFA Champions League and the 2006 FIFA World Cup tournaments'. The aim of the study was to "explore the common opinion within association football that the club competition of UEFA Champions League produces a high quality of play than in the international tournament, the FIFA World Cup" (Rowlinson, 2006, pp.4). Eight players who were involved in the UEFA Champions League in 2005-2006 and in the FIFA World Cup 2006 in Germany were analysed. Three games for each player in each tournament were analysed by using a hand notation system. Eleven performance indicators were used to ensure that enough data could be collected in order to make an accurate study. By using the results, the average players' performance in both tournaments were produced and this allowed for comparisons. The study analysed multiple and single match data in order to assess the differences between the players' performances both within and between the two tournaments. The results that were found were that there was no significant evidence to support the view that within association football there is a difference in the quality of play between the UEFA Champions League and FIFA World Cup tournaments. However, there was greater variability between player performances at the FIFA World Cup than during the UEFA Champions League when multiple match data averages were considered. This study offered support of the literature that suggested that multiple match data gives a higher accuracy and reliability level of the sporting performance compared to single match data. The limitation of this study was that only eight players were analysed for three matches each in the both competitions. Reflexions for future research is to map the player where they are on the field and where they complete certain actions to see whether specific areas on the field is where players get the most success.

A study that occurred in Association football looked at the strategies of an English football team in both domestic competition and European (James et al, 2002). By concentrating on the same team competing in two different competitions James et al sought to evoke the procedures the team used. The matches were examined with respect to the frequency and duration of possession in particular ranges of the field of play. By utilising this analysis technique performance from each of the games could be evaluated and a profile of performance was formed. At the point where these profiles were translated it was proposed that teams who played in Europe had a tendency to be described more with play being made more in the pre-defensive area. This might suggest that in European football the opposing team applies more pressure or that the English team were endeavouring to draw the opposing team forward onto them to therefore creating more space behind the defence compared to the domestic competition where the team analysed had a tendency to be occupied with more play in the pre-offensive area of the field. In spite of the fact that from the analysis of the team data it would recommend that individual players are to some degree compelled to change their natural roles depending on the match being played in each competition. Along these lines, James et al (2002) presumed that was apparent strategic procedures at both individual and team levels for each of the two competitions. A limitation of this study was that there were some bias decisions made when analysing. For example, when a lineout occurred the analyst was bias when deciding whether the thrower of the ball or the player jumping for the ball was at fault when the lineout was unsuccessful. For future research, an attempt to embrace extra behaviours to increase the current line of research into rugby union and to contribute to the development of a more inclusive profile of an athlete's performance.

## **2.2 Types of variables used to look at effectiveness of play in football in previous research.**

The studies of Reep and Benjamin (1968) and Bate (1988) showed that by observing goal scoring opportunities and goals within association football it is possible to prescribe a strategic method of play that offers the greatest scoring success. Ali (1988) conducted another study on playing styles of association football teams, but did a more complex approach in his analyses than what the previous authors had done. A hand notation system was used again which observed thirteen different variables of performance. Ali identified and specified the patterns of an attacking play and how successful and unsuccessful an attack turned out to be. When the data was gathered

it showed that the attacks that were taken place down the wings were more successful compared to the runs through the middle of the field and this resulted in more offside decisions given by the officials. Future research should be analysing more quantities of data and also establishing that the amount of data acquired is sufficient to definitely establish a performance profile.

Lago- Penas et al (2011) performed a study on differences in performance indicators between winning and losing teams in the UEFA Champions league. The aim of this study was to identify performance indicators that discriminate winning teams from drawing and losing teams in the UEFA Champions League. The Champions League competition takes place every year and for this study the 2007-2008, 2008-2009 and 2009-2010 competitions were analysed which was 288 matches altogether at the group stages only in the competition. The performance variables that were used were total shots, off sides committed and received, passes, successful passes, shots on goal, corners against, ball possession, crosses against, yellow and red cards, effectiveness, venue and quality of opposition. A one- way ANOVA test was used to analyse the data. The conclusion of the study was that the variables that recognises a distinction between losing a game, winning a game and drawing a game were the venue, quality of opposition, shots on goal and crosses. The limitation of this study were that too many games were analysed and this may have affected the reliability of the study due to the load of games. Instead the study could have just looked at the 2007-2008 competition instead of the three years of games. Future research would look at the relationship between the performance indicators that are related to the teams results and the defence.

Clarke (2012) conducted a more recent study which covered the tactical analysis of successful and non-successful teams in the 2010 FIFA World Cup. The study compared analysis of the tactical and technical patterns of play in 28 games and 28 teams in the 2010 FIFA World Cup in South Africa to see if the successful and non-successful teams were influenced in any sort of way. The study's aim was to expand on the research already done by Hughes et al (1988) and find more recent data. Again the very popular hand notational system was used and the performance indicators that were selected were pass length, pass outcome, pass direction, area of the pitch the pass was made, tackle outcome and cross outcome. "The outcome of the study was the successful team's overall long pass completion in percentages was significantly

higher than that of unsuccessful teams, the successful teams showed a higher total pass frequency in the final third of the pitch” (Clarke, 2012, P8). The conclusion of this study was that the teams who come out on top had the highest pass completion percentage. There were some limitations in the analysis process and areas of the study that could be improved if similar research was to be conducted in the future. Changes to the analysis process would be made to improve the performance indicators to help expose the subtle differences that are current amid successful and unsuccessful teams.

Neville (2006) specifically looked at the technical analysis of 4 teams in group D that took part in the European Championships in 2004. The aim of this study was to provide an insight into whether national playing style is dictated by technical abilities. A hand notational system was used again to record the data. The teams from group B were analysed specifically looking at the technical execution which leads to looking at the individual players and overall team togetherness as well as overall technical profiles. By expanding on existing research that has been covered on technical profiles this has led to the illumination of national playing styles. Technical analysis was used so therefore it was easy to see how effective every national team’s styles impacted how they’d play. The Czech Republic was the most successful team that was analysed with the best technical rating. The conclusion of this study was that the fundamental techniques were performed at a high standard due to a good playing style. Further research on this study is to use the database already used for the technical profile of Euro 2004 could be compiled and a ranking system can be made in order to see whether the most technically team won the competition or the most efficient playing style was used to enable success.

A study led by Taylor et al (2004) conducted further research on performance profiles for elite football players. The aim of their study was to develop substantial performance profiles for football players utilising a professional British football squad. A video analysis was used on twenty-two league games and the data collected gave evidence that in spite of the fact that frequencies of the behaviours that were shown by the players in various positions had crucial contrasts, there were likenesses when the results of these behaviours were considered. Taylor et al (2004) suggested that while they discovered varying technical requests between every position, analysis of only inter-positional profiles cover the nuances of individual player performance. Taylor et

al (2004) considered using intra-positional requests, so that they could manufacture individual profiles of contrasting players from the same position which displayed inconsistencies in performances. Future research to expand on this study would be to ask coaches to assess the behavioural and performance profiles of their players in order to verify any scientific alterations that are identified. A problem that might occur would be that there would be different opinions voiced by different coaches. A limitation of this study is that when choosing the players for the intra-positional analysis, it was based on the principle of a full appearance in at least five matches. Players may have been left out from the analysis that had played an important role in the overall data set.

The current study will build on previous research by developing profiles of the players who took part in the 2013/2014 EPL season and the FIFA World Cup 2014. These profiles will be used to compare the performances of the four chosen players to see how technically effective they all are within their club and country whilst making reference to the previous literature that has been reviewed in this chapter, in order to interpret the results of the current study.

## **Chapter 3- Methodology**

### **3.1 Research design**

This study used an empirical observational design and was conducted using association football specific performance indicators that had been developed and selected and validated as a result from referring to previous literature (see appendix A). The result of doing this was that the data collection was constructed by using 3 games for each player in the EPL and 3 games for each player in the FIFA World Cup. For every match that the players were involved in, a hand notation system was used to collect the data on the performance indicators that were chosen (see appendix B). When the data collection was completed, individual playing profiles were made for each of the four players, one for the EPL games and one for the FIFA World Cup games (see appendix C). This allowed comparisons to be made between the players' own performance in each scenario to see if players were as technically effective when playing for their club compared to their country.

### **3.2 Subjects**

The subjects chosen for this study were four high profile professional football players who were felt to be important individuals for their club and country. All four players had competed in the EPL 2013/2014 season and the FIFA World Cup in Brazil and they had completed the full ninety minutes in six games in total, three matches in each and were of various playing positions. The chosen number for the matches were chosen because six would give a big enough sample size to collect enough data.

The subjects were also chosen based upon whether they had completed 90 minutes in 3 EPL games and 3 World Cup games. This information was gathered from the official UEFA website ([www.uefa.com](http://www.uefa.com)), the four players met all the criteria that was needed to carry out this study.

### **3.3 Performance indicators and operational definitions**

For this study a total of twelve performance indicators were chosen for the player analysis. These were chosen based upon the analyst's previous experience of analysing association football when using a hand notation system. The eleven performance indicators were separated into two areas which were defensive skills and attacking skills. This was done so that it would be easier to see what elements of the performance the individual player spent mostly doing when playing in the match.

Defensive action variables:

1) *Tackle*- was defined as when the player that is being analysed dispossessed or attempted dispossess the ball from an opponent by a physical challenge or defensive pressure when an actual challenge/tackle is attempted.

An example of a *Successful Tackle* is when the player goes to tackle the opponent to prevent a goal scoring opportunity or to win the ball.

An example of an *Unsuccessful Tackle* is when the player goes in to tackle the opponent and doesn't win the ball which leads to the opponent going past them.

2) *Clearance*- In this study a defensive action is defined as when the player kicks the ball away if they intended it or not from danger or relieves the attacking pressure that was being applied by the opponent.

An example of a *Successful Clearance* is when the player kicks the ball clear inside their own eighteen-yard box when under pressure from an opponent.

An example of an *Unsuccessful Clearance* is when the player kicks the ball away needlessly when under no pressure at all and when the clearance goes to the opponent so they can attack once more.

3) *Fouls*- A foul is where a player would either kick, trip, collide with the opposing player or deliberately touch the ball with their hand. This would result in either a free kick or a penalty depending on where the foul has been taken place.

4) *Errors leading to a goal*- this is where the player makes a mistake which then the opposition capitalises and scores from this particular error.

Attacking action variables:

5) *Pass*- when a player in possession of the ball attempts to play the ball to one of their own team mates with any part of the body except the head. A short pass is where a player passes the ball to their teammate over a short distance. A long pass is where a player passes the ball to their team mates over a long distance. A forward

pass is where the player plays the ball forward to their teammate and a backwards pass is where they pass it backwards to keep possession.

An example of a *Successful Pass* is when a player in possession passes the ball to their team mate without any interceptions by the opposing team.

An example of an *Unsuccessful Pass* is when the player in possession attempts a pass and it goes to the opposition or goes out of play.

6) *Cross*- Any ball that is attempted to be played into the opponent's penalty box from a wide area with aim of creating a goal scoring opportunity.

7) *Dribbles*- When the player in possession of the ball either takes multiple touches of the ball, whilst keeping the ball under control, or when the player with the ball attempts to take the ball past an opponent.

8) *Shots*- Any attempt at the opponent's goal with any part of the player's body with the intention to score a goal.

An example of a *Successful shot* is where the player hits the target of the goal with their shot, regarding if it hits the goal keeper or not.

An example of an *Unsuccessful shot* is where the player shoots and it goes off target.

9) *Assists*- An assist is a contribution by a player which helps to score a goal.

10) *Chances Created*- this is where a player creates a chance for their team, either by making runs, playing through balls etc. A chance is not always a goal that is scored but is a chance that is given to the team to attempt a shot on goal.

### **3.4 System procedure**

The match footage of all the English Premier League 2013/14 and the 2014 World Cup fixtures were provided by one of the Sports Performance Analysts in Cardiff Metropolitan University. The matches that the players were playing in were selected for the study and were played back post event. When watching the games, the

selected 4 players were analysed using the thirteen performance indicators that were chosen. The performance indicators were tallied in the relevant boxes in a data collection table that had been made especially for the hand notation. Also included on the page was the tournament and the opposition. At the end of each game the total number of each performance indicators were taken into consideration to see how effective the player was in that chosen game. Comparisons were made for each game for their club and each game for their country.

This data was then obtained from the analysis of each player from each of the six games that were chosen from the world cup competition and the EPL was added to a Microsoft Excel spreadsheet with all the individual data that was collected (see Appendix D). Each individual performance indicator and the totals of each player was added for each individual game. The average and standard deviation of the performance indicators from the 2014 World Cup and the EPL 2013/14 season were calculated. This data was analysed and interpreted and this can be seen in the results section below.

### **3.5 Reliability testing**

The reliability testing used for this system was completed using an intra reliability method. This is where the analyst uses the hand notation system to watch the specified player in the chosen game twice. When completed the first time, the analyst is given a week to then complete the hand notation again, this will avoid any learning effects. The 5% error limit that was said to be acceptable for this study seemed realistic because the investigation of this study turned out to be a total percentage error of 3.6%. The work of Hughes et al (2002) used a level of 5% for error because it was the most desirable for a measure of reliability within academic research. To work out the percentage error the following equation was used  $\%Error = (\sum(\text{MOD}[V_1 - V_2] / V_{\text{TOTMEAN}})) \times 100$ .

### **3.6 Data analysis**

The data that were produced by the hand notation form the player analysis in this study were tested for statistical significance by using a paired t-test and a Cohen's d test. This type of test was chosen because the data that was collected contained information for the same player under two different conditions. The mean performance for each player under each condition was determined and the mean performance under the two conditions that were compared. All match data was

analysed for statistical significance by using a paired t-test and to determine the effect size a Cohen's d test was used. The mean average and standard deviation was also used to make comparisons between each player within each tournament. The p value of significance was set at 0.05 for the data analysed within this study.

## **Chapter 4- Results**

#### **4.1 Results**

This section highlights and clarifies the outcomes accumulated by using the methodology utilised for the investigation of the player performances in this study. Specifically, it looks at the differences and compares player performances in the EPL 2013/14 and 2014 FIFA World Cup based upon the data collected. Individual and multiple performance profiles of their statistics of club and country are excessively analysed altogether in order to answer the question of whether players are more technically effective for their club compared to their country.

The analysis provided data for the four players that was determined by the thirteen individual performance indicators for each player at both club and country level. The results were collected for all of the players' individual performances from the six games and the averages and standard deviation frequencies were calculated. A paired t-test was used because the same player was used under two different conditions to make a p value and the Cohen's d test was used to see if the result had a large, moderate or small effect size. The results that were collected for the total number of successful and unsuccessful passes were put into a graph to show any differences between pass completion when playing for their domestic club in the EPL compared to playing for their country in the FIFA World Cup (figure 1). From these results it shows that the players made more passes when they were playing in the EPL compared to when they were involved in the World Cup. There were also more short and long passes made which could justify that the players were more involved in the game within their club than country because the World Cup is the highest level that any player can play at which means that standards are higher. The percentage of long passes that were successful in the EPL were 74% and 73% in the World Cup. These results for the long passes were not significantly different between the two ( $p > 0.05$ ) and a moderate effect was found ( $d = 0.7$ ).

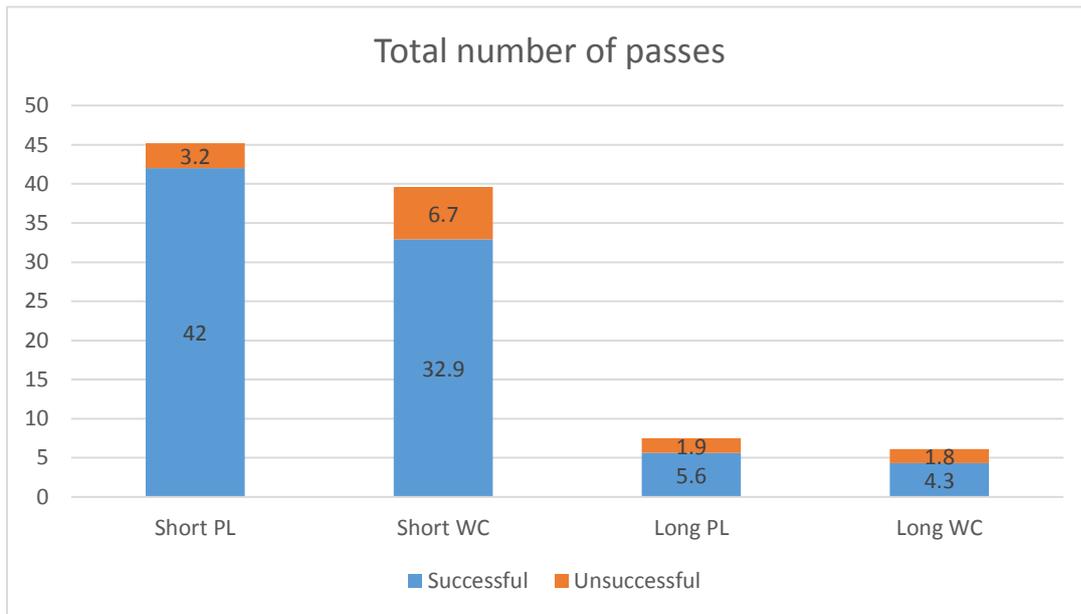


Figure 1- Total number of Passes completed

All the defending and attacking performance indicators were put together and averaged in their subdivisions. These data suggested that on average dribbling success was more common within the EPL 13/14 compared to the 2014 FIFA World Cup (Figure 2). Figure 2 shows that in the EPL more dribbles were made but also more were unsuccessful. This could be down to the fact that the standard is not as high in the EPL so therefore more dribbles can be made that are successful as the players have more time on the ball, also there could be more space to run into in the EPL as teams might stand off their opposition more. These results were not significantly different and had a small effect ( $d=0.2$ ). They also had a trivial effect which means that there is a miniscule difference between the two means.

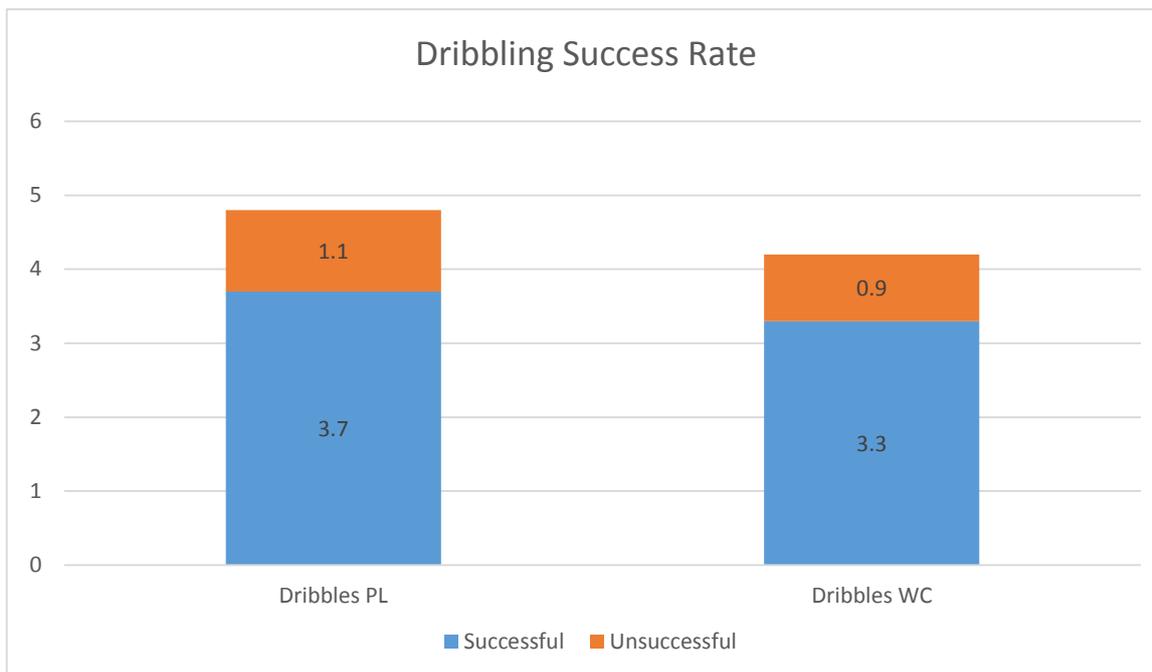


Figure 2- Dribbling success rate

As could have been expected, in both the competitions there were more shots in the EPL and more shots were on target. More crosses were displayed in the EPL whereas more were successful in the World Cup. Chances created were at the minimum in the World Cup with the EPL having a higher score also. Lastly assists were bigger in the EPL. These results could come down to the World cup having all of the best players in their chosen country playing compared to club level where players are mixed ability. The number of shots could be as a result of how well the defending of the opposition is because if the defence are doing their job really well then less shots are to be made, this is the same as the crosses made, chances created and the assists. All these results are shown in table 1. The shot success rate was almost significantly different and there was a large effect size ( $d=1.1$ ). Chances created have a large effect size ( $d=0.8$ ) and assists have a moderate effect size ( $d=0.4$ ) and are not significantly different. Total shots were significantly different and had a large effect size ( $d=1.2$ ) and total crosses were not significantly different with a small effect size ( $d=0.2$ ).

Table 1- Attacking play performance indicators

<b>Attacking variables</b>	<b>PL</b>	<b>WC</b>	<b>P</b>
Shots	2.1±1.1	0.8±1.0	0.08
% Shots on Target	51.3±13.7	20.8±5.9	0.07
Crosses	2.8±2.5	2.3±2.3	0.80
Cross %	42.5±40.7	42.9±41.7	0.97
Chances created	2.3±2.0	1.3±0.6	0.34
Assists	0.4±0.6	0.2±0.4	0.74

The defensive performance indicators as a whole had little data compared to the attacking performance indicators. This might be because of the players chosen were not defensively minded so completed more attacking when performing skills. The defensive performance indicators as a whole between the two competitions were quite mixed. For example, the mean score and standard deviation of the successful and unsuccessful tackles were greater in the EPL whereas the tackle percentage was higher in the World Cup. The tackle percentage maybe higher because in the World Cup there is more demand on the players to work back to tackle the opposition as the tempo can be much greater and the oppositions would be a better standard so there would be more players making tackles successful or not.

The total tackles were very significant with a large effect ( $d=2.3$ ). The mean score of the successful and unsuccessful clearances were higher in the World Cup possibly due to the players doing more defending than what they would do in the EPL. The percentage of clearances successful was greater in the EPL this again could be due to the difference in standards and players could have more time on the ball whereas in the World Cup players would rush a clearance and give it back to the opposition making it unsuccessful. The clearances were not significant and had a moderate effect ( $d=0.4$ ). Errors leading to a goal were higher in the World Cup, this maybe because there is more pressure when on the ball so players are more likely to make costly mistakes.

Table 2- Defensive play performance indicators

<b>Defensive Play</b>	<b>PL</b>	<b>WC</b>	<b>P</b>
Tackles	8.2±1.7	4.3±1.6	0.59
Tackle %	75.6±9.1	79.9±13.9	0.04
Clearance	1.8±2.2	2.9±4.7	0.76
Clearance %	57.5±1.2	45.8±53.3	0.59
Fouls	1.1±0.69	0.75±0.32	0.42
Errors leading to a goal	0.0±0.0	0.22±0.19	0.18

The means for the forward and backward pass and percentages are shown in figure 3. This figure shows how positive players were when they had the option to pass. Depending on what situation they were in depended on whether the ball would go forwards or backwards. There was very little percentage value comparison between forward passes made in the EPL and the World Cup. This could be because players when making a pass in each competition will tend to opt to making it forward to attack at any opportunity. The backward passing had very little between the two competitions. The values were not significant and the forward passing had a moderate-large effect size ( $d=0.6$ ) and the backward passing had a large effect size ( $d=0.9$ ).

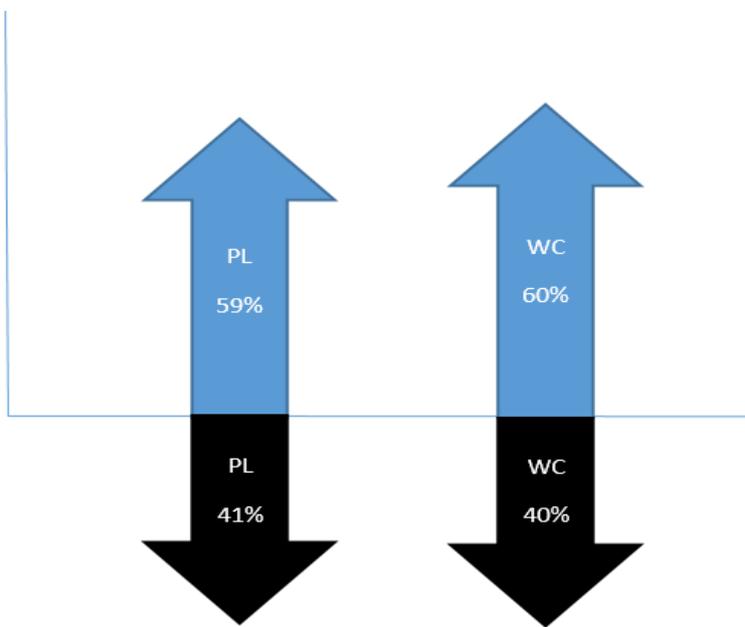


Figure 3- The mean percentage of forward and backward passes

The performance profiles shown in table three and four have used two of the four players' means and standard deviations of how they performed in the three games in the EPL and the three games in the FIFA World Cup. From table three, player 2 was more technically effective when playing for their club compared to their country because their results are much higher. Player 3 again was more technically effective for their club also with higher statistics for each variable going to the Premier League.

Table 3- Performance profile of Player 2

<b>Premier League</b>	<b>Variables</b>	<b>World Cup</b>
7.6±3.7	Tackles	4.3±0.7
0.0±0.0	Clearances	10.0±4.6
1.0±1.2	Fouls	1.0±0.5
0.0±0.0	Errors leading to a goal	0.3±0.5
1.0±0.5	Shots	0.0±0.0
6.3±0.4	Crosses	0.3±0.2
5.0±0.5	Chances created	0.3±0.2
1.3±0.2	Assists	0.0±0.0
6.0±0.5	Dribbles	1.0±0.0
39.0±6.0	Forward Passes	32.7±11.9
33.7±4.2	Backward Passes	15.7±1.8

Table 4- Performance profile of player

<b>Premier League</b>	<b>Variables</b>	<b>World Cup</b>
10.0±1.2	Tackles	4.3±0.7
2.3±0.9	Clearances	10.0±4.6
0.3±0.4	Fouls	1.0±0.5
0.0±0.0	Errors leading to a goal	0.3±0.2
1.3±0.6	Shots	0.0±0.0
0.7±0.8	Crosses	0.3±0.2
1.0±0.8	Chances created	0.3±0.2
0.0±0.0	Assists	0.0±0.0
1.0±0.0	Dribbles	1.00±0.0
37.0±9.5	Forward Passes	32.7±11.9
23.0±10.2	Backward Passes	15.7±1.8

## **Chapter 5- Discussion**

## **5.1 Discussion**

The aim of this study was to explore whether football players are more technically effective when playing for their club compared to their country by looking at two different competitions which were the EPL season 13/14 and the FIFA World Cup 2014. The study used a hand notational system which used a range of defensive and attacking performance indicators, to generate robust evidence, to make profiles of the four players chosen who competed in both competitions. By using this evidence, the total number of actions completed by each player in both competitions were highlighted and both were compared on what actions occurred between the three games in each totalling six games each. When analysing football, notational analysis can be used to record the number of actions throughout a game, this is one of the most commonly used methods (Mackenzie & Cushion, 2013). Differences between each player, technical effectiveness between each other and when playing in each competition and their performances in each match by using the defending and attacking indicators were analysed to see whether there are any differences between the two. All four players were chosen by the selection of the fact they were deemed to be big influences in their clubs and countries ambitions in the year of 2013-14.

The main part of this study was to compare the technical effectiveness of the players when playing in two different competitions, the EPL and the FIFA World Cup. With the study's aim in mind, the results showed that players competed far better in the EPL when playing for their respected club so therefore were more technically effective. These results were expected because the FIFA World Cup is the highest level any player can compete at and is the biggest football competition there is, which means that every single player that plays has been chosen to represent their country because they are in the squad to play in the World Cup. Rahal Rajeev (2014) says that in the World Cup you are going to play against the toughest and most skilful players in the world. On the other hand, Eugene Sebastian (2014) stated that a club has a higher standard and a more competitive team compared to what a world cup squad has because it is possible to strengthen your team by transferring players from other teams. Therefore, as a result this will create an atmosphere that is more competitive where each year, teams are spending a high amount of money to be able to compete with the top teams. On the other hand, national teams only have one pool of players that are liable to play and represent their country. Ashirbad Nayak (2014) also agrees

that football clubs invest huge money to have the best possible squad as football is a team game one should expect more success percentage at a club as compared to a country. Bloomfield *et al.* (2005) found that 38.5% of players in Europe's top 4 football leagues in the 2002-2003 season were foreign players. International matches are few and far between in club football and hence it could be argued that it is not possible to get that chance to build a good, strong team chemistry. Some players do not demonstrate to supporters around the world their full potential when playing in a FIFA World Cup competition, this is because the level of the club they play for has a better overall squad of players than what they play with when they play for their club. However, it has been stated that "no matter what happens the World Cup will always be the grandest stage, the path to eternal glory" (Cariappa, 2014).

'Performances in the world cup are not necessarily in itself a measurement for judging the greatness of a player. But performing there does add to their greatness factor' and popularity as the FIFA World cup is one of the most popular and televised sporting events in the world' (Pullela, 2014). This quote shows that players don't have to perform amazingly well in this competition to be recognised but to be part of the squad that is chosen is quite an achievement itself. 'Playing in your country's jersey brings out a kind of passion that you can't see in club football' (Cariappa, 2014). It is argued that certain players thrive off playing for their country, the passion, the pressure and especially playing in front of their own fans. The FIFA World Cup 2014 which was hosted by Brazil, a country where football is of great importance, was said to have been one of the best for years, the standard of football by each team was improved and the attacking principle of the game was taken more serious by all of the teams which lead to lots of goals and excitement. Houllier who is a French football manager, was impressed by the effort put in by the American and Belgium's in the knock out round. 'They gave everything, what surprised me in the World Cup is the physical commitment of all the teams. How quick the game is, the World Cup has never been so fast and the intensity and the level has never been this high. Five of the round of 16 games were not decided in normal time, a record which is the first time since 1938' (Winter, 2014).

The results from this study were very similar to two different studies that have been done previously. These were Gerisch and Reichelt (1993) and Luhtanen et al (1997) who collected information on players' performances to hopefully see whether they were always effective in each competition they would play in. They both created profiles for the players they chose and by doing this they were able to compare and contrast whether players would play any different under different competitions. Their studies showed no significant differences, making the technical effectiveness of each player nearly the same in each game. Olsen and Larsen (1997) recommended that if players perform more successful actions, this increases a team's performance to a higher standard and increases the chances of the team being successful and winning games. This is linked to the present study because in this particular study the players performed much higher successful actions compared to unsuccessful actions between the both tournaments, suggesting that in both competitions, all players played to the same high standard they were expected to. Part of the results from this study do support the Olsen and Larsen (1997) study because the average player performs all the more attacking actions over the course of the game than defensive ones. Hence recommending that maybe players without the ball in both competitions make the opponents make mistakes instead of chasing the ball and making a high number of challenges to get the ball back. Due to the nature of the matches that have been as part of this the current study, the EPL and the FIFA World Cup, which these players were playing within highly successful teams thus why there are results that are similar to each other in the total amount of actions the players perform. In spite of the fact that this study utilised the same four players in two different competitions and were part of apparently the best teams on the planet in the FIFA World Cup. This might subsequently offer a clarification as to why the standard of play by the players in both competitions were quite similar for certain performance indicators.

Performance profiles were used to visually compare two players who were chosen to see if the data collected was any different. A table was chosen to present the performance profiles because the variables used had a big difference from the lowest to highest. Multiple match profiles can also show the spread of performances for an athlete who may be consistent or erratic with respect to some aspects of performance (O'Donoghue, 2005). A radar chart was another option but again this was not used because the variables were too different. Using this table to show the performance

statistics of the variables in the EPL and the FIFA World Cup, improves the methodology of the O'Donoghue (2002) study of Performance models of ladies' and men's singles tennis at the Australian Open. In team games some players have positional roles that necessitate specific strengths that are not required by players in other positional roles. For these reasons we cannot expect the variables that comprise a performance profile to be correlated in the way that the dimensions of a construct used in sports psychology are. (O'Donoghue and Holmes, 2015). Content validity is very relevant in performance profiles. A profile has content validity if it consists of performance indicators that cover all relevant aspects of performance (O'Donoghue, 2015).

This study took into account that there would be reliability issues. James et al (2002) reported that a big number of data collection systems lack reliability, stating problems with measurement and accuracy of the equipment used as complications. To make sure all the data in this study was reliable, a performance analysis student analysed one game for each player to see if there were any big differences results wise. An intra reliability method was used to test the reliability for this hand notational system and this is where the analyst would watch the specific player in the chosen game twice. When watched one game, a duration of one week is left until another game can be watched. This method was used so it would avoid any learning effects. A percentage of 5% is acceptable for an error limit but this study ended up having an overall percentage error of 3.6%.

The main question in this study was, how technically effective are footballers when playing for their club in the EPL compared to their country when competing in the FIFA World Cup? The main findings of this study are that there was evidence that players were more technically effective when playing in the EPL 2013/14 season compared to when they played for their country in the FIFA World Cup 2014. The data that was collected was put into graphs and tables to show the comparisons of how differently the players would play in each competition. It was argued that what made the players more technically effective when playing in the premier league was that the total shots made, total tackles made, total passes made, chances created and the percentage of successful shots were all significantly different. This was proven by using the Cohens d test where the effect size is taken into consideration. A small effect is  $d=0.2$ , a

medium is  $d=0.5$  and a large effect size is  $d=0.8$ . If two sets of data do not differ by 0.2 standard deviations or more then the difference is trivial even if it is statistically significant. The findings of this study also allowed comparisons to be done between the number of games watched and to describe how the players performed when playing for their club in the EPL and for their country in the FIFA World Cup. From the data collected, using the six matches per player in each competition and the mean and standard deviation, differences in specific performance indicators were found and showed that players performed better when playing for their country. Some suggested that may affect the players' performance were that the World Cup is the last competition of the competitive season and players' may face fatigue due to the amount of games, training and that travelling to and from games can affect them mentally and physically. Another consideration that needs to be taken on board is the weather difference between both environments. During the EPL 2013/14 the weather is cold and miserable mostly throughout the year whereas when playing in Brazil in the World Cup, the weather was very humid and was worse in certain places than others. This environment would take some good time for players to adapt and some could even struggle. Furthermore, team cohesion (Carron, 1982) affects the performance of each individual on the team. A greater level of team cohesion is possible for club sides than for international sides who train together less frequently, which can determine how well the team plays.

The study expanded on the existing literature by analysing twenty-four games whereas James et al (2002) analysed twenty and Taylor et al (2004) analysed just sixteen. With the little amount of games analysed, inquiries could be raised in the matter of whether the performances are representative of a wider population. An issue with using a tournament competition like the FIFA World Cup is that there is the need for immediate success whereas when looking at the EPL 2013/14, which is a season based competition, teams tend to play to what their strengths are as a squad and also seeing as a season has around forty games and this gives teams a chance to build momentum and to improve. The current study found that when analysing technical variables, the number of actions varied for each one. For example, passing had the biggest number from all of the results which is understandable. Whilst solid comparison and analysis of this can be embraced, it could be contended that when a performance indicator reaches a certain amount of tallies, there is no need to carry on

investigating that one variable. Hughes, Evans and Wells (2001) expressed that the level of analysis completed ought to be decided upon in connection to the amount of matches needed to concentrate on.

Implications of the findings of this study were that undertaking reliable and accurate analysis of sport can help the coaching process (O'Donoghue & Mayes, 2013), the technique improvement (Palao & Morante, 2013) and tactical awareness (Hibbs & O'Donoghue, 2013). James, Mellalieu and Jones (2005) reports how technical investigation of variables can recognise strengths and weaknesses for individual players and areas which can be taken from this study.

## **Chapter 6- Conclusion**

## **6.1 Conclusion**

In conclusion this study employed a hand notation system to analyse the performances of four players who played three games in the EPL and three games in the FIFA World Cup. From gathering and analysing data from the thirteen performance indicators chosen, graphs were made to show the percentage of forward and backward passes in both competitions, a graph showing the number of dribbles made in both competitions and the number of successful and unsuccessful passes made in each competition, performance profiles were made for two players to show comparisons and the average player was created for each competition by using the mean average and the standard deviation. The profiles showed that there was evidence that players were more effective when playing for their club compared to their country. The performance indicators that were significantly different were the total number of shots taken, the total number of tackles, the total number of passes, chances created, the percentage of successful shots and the percentage of shots completed. These results all showed that these performance indicators were higher when the players played in the EPL. The study also provided evidence that by watching multiple games, the reliability of the results was better compared to just watching just one game.

Limitations of the study are that the time it took to watch all twenty-four games at ninety minutes long became very tedious and this could have resulted in mistakes being made. The games that were analysed were pre-recorded from the channels Sky Sports, BBC, ITV and BT Sport. This means that replays were made during the games big moments and this could mean that when a replay was shown, specific moments of the game could have possibly been missed. Lastly biased decisions can easily be made by analysts that take a liking to a certain player when watching them. This could end up with having higher ratings for that individual than what they actually achieved. These aspects could be considered to help areas for future research.

## **6.2 Future Research**

For future research, some considerations would be to further investigate and extend the study by using performances from a different league. For example, instead of using the EPL, using La Liga BBVA which is the Spanish domestic league could be

used. Also another consideration would be to use players who played for their club in a league, played for their country in a European tournament and in a world cup so that three comparisons could be made. By making more comparisons, it would make a more accurate account of technical abilities at different levels. Finally, more performance profiles could be produced, and instead of selecting just two out of the four players analysed, complete performance profiles for all four could be used.

Questions addressed might include:

- How technically effective are players when playing in all three of the major competitions (EPL, European Championships and the World Cup)?
- The use of performance profiling within men's soccer in major tournaments
- Positional performance profiles between players who play in the EPL and the FIFA World Cup.

### **6.3 Practical Recommendations**

In team sports, it is difficult for coaches to notice and remember all the key events that occurs during a game. By using performance profiles this would help coaches and players by illustrating the perceptions of the player's performance on a clear profile and this would aid in the process of goal setting to improve the player's performance.

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# **Appendix**

## **Appendix A- List of Performance indicators used in the study**

Defensive:

Tackles

Fouls

Clearances

Errors leading to a goal

Attacking:

Long pass

Short pass

Shots

Crosses

Assists

Dribbles

Chances created

Forward pass

Backward pass

**Appendix B- Blank Data Collection Sheet**

**Player**

**Competition**

**Match**

	<b>Event</b>	<b>Successful</b>	<b>Unsuccessful</b>	<b>Total</b>
<b>Defensive</b>	Tackle			
	Fouls			
	Clearance			
	Errors Leading to a Goal			
<b>Attacking</b>	Long Pass			
	Short Pass			
	Shot			
	Cross			
	Assists			
	Dribble			

Chances Created			
Forward Pass			
Backward Pass			

## Appendix C- Performance Profile of the average player from the EPL and the FIFA World Cup

Average player	WC Mean			WC SD				
Tackle	Tackle	3.16667	1.16667	79.8611	Tackle	0.79349	1.03638	13.8954
Clearance	Clearance	2.08333	0.83333	45.7672	Clearance	3.94757	0.88192	53.2975
Foul	Foul	0.75			Foul	0.31914		
Errors leading to goal	Errors lea	0.22222			Errors lea	0.19245		
Long pass	Long pass	4.5	1.79167	72.7894	Long pass	2.04577	0.89624	15.5682
Short pass	Short pass	32.9167	6.66667	85.451	Short pass	6.27974	6.40023	9.91748
Dribble	Dribble	3.33333	0.91667	85.7534	Dribble	3.80058	1.25831	17.5872
Shot	Shot	0.25	0.58333	20.8333	Shot	0.31914	0.68718	5.89256
Cross	Cross	0.75	1.5	42.9167	Cross	0.87665	1.55158	41.6862
Chances created	Chances c	1.25			Chances c	0.63099		
Assist	Assist	0.22222			Assist	0.3849		
Forward pass	Forward p	26.25			Forward p	6.16066		
Backward pass	Backward	16.4167			Backward	2.9234		
Long pass total	Long pass	6.16667			Long pass	2.63172		
Short pass total	Short pass	39.5833			Short pass	5.4049		
Dribble total	Dribble to	4.25			Dribble to	5.02125		
% Forward	% Forward	60.5319			% Forward	8.04935		
Total passes	Total pass	42.6667			Total pass	4.2339		
Total shots	Total shot	0.83333			Total shot	1		
Total tackles	Total tack	4.33333			Total tack	1.63299		
Total clearances	Total clea	2.91667			Total clea	4.73267		
Total crosses	Total cros	2.25			Total cros	2.34718		

## Appendix D- copies of the spreadsheets from each player

Medel	Match 4			Match 5			Match 6			Summary/mean			Summary/SD						
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success				
Tackle	13	2	86.6667	Tackle	5	2	71.4286	Tackle	8	0	100	Tackle	8.66667	1.33333	86.0317	Tackle	1.59474	0.83148	11.6652
Clearance	1	0	100	Clearance	0	2	0	Clearance	3	1	75	Clearance	1.33333	1	58.3333	Clearance	1.22726	0.4714	32.1551
Foul	0			Foul	0			Foul	1			Foul	0.33333			Foul	0.41574		
Errors lea	0			Errors lea	0			Errors lea	0			Errors lea	0			Errors lea	0		
Long pass	5	1	83.3333	Long pass	12	2	85.7143	Long pass	6	1	85.7143	Long pass	7.66667	1.33333	84.9206	Long pass	2.52885	0.41574	0.37413
Short pass	58	0	100	Short pass	67	1	98.5294	Short pass	25	2	92.5926	Short pass	50	1	97.0407	Short pass	17.2498	0.4714	2.52207
Dribble	1	0	100	Dribble	1	0	100	Dribble	1	0	100	Dribble	1	0	100	Dribble	0	0	0
Shot	1	2	33.3333	Shot	1	0	100	Shot	0	0	0	Shot	0.66667	0.66667	66.6667	Shot	0.41574	0.31427	16.6667
Cross	0	0		Cross	2	0	100	Cross	0	0	0	Cross	0.66667	0	100	Cross	0.83148	0	0
Chances c	1			Chances c	2		100	Chances c	0			Chances c	1			Chances c	0.8165		
Assist	0			Assist	0			Assist	0			Assist	0			Assist	0		
Forward p	44			Forward p	45			Forward p	22			Forward p	37			Forward p	9.53357		
Backward	20			Backward	37			Backward	12			Backward	23			Backward	10.2307		
Long pass	6			Long pass	14			Long pass	7			Long pass	9			Long pass	2.94392		
Short pass	58			Short pass	68			Short pass	27			Short pass	51			Short pass	16.8193		
Dribble to	1			Dribble to	1			Dribble to	1			Dribble to	1			Dribble to	0		
% Forward	68.75			% Forward	54.878			% Forward	64.7059			% Forward	62.778			% Forward	4.25195		
Total pass	64			Total pass	82			Total pass	34			Total pass	60			Total pass	19.6186		
Total shot	3			Total shot	1			Total shot	0			Total shot	1.33333			Total shot	0.56656		
Total tack	15			Total tack	7			Total tack	8			Total tack	10			Total tack	1.24722		
Total clea	1			Total clea	2			Total clea	4			Total clea	2.33333			Total clea	0.87489		
Total cros	0			Total cros	2			Total cros	0			Total cros	0.66667			Total clea	0.83148		

Medel	Match 1			Match 2			Match 3			Summary/mean			Summary/SD						
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success				
Tackle	2	0	100	Tackle	4	2	66.6667	Tackle	5	0	100	Tackle	3.66667	0.66667	88.8889	Tackle	0.56656	0.83148	13.858
Clearance	5	0	100	Clearance	5	2	71.4286	Clearance	14	4	77.7778	Clearance	8	2	83.0688	Clearance	3.74166	0.94281	4.75864
Foul	2			Foul	1			Foul	0			Foul	1			Foul	0.4714		
Errors leading to goal	1			Errors lea	0			Errors lea	0			Errors lea	0.33333			Errors lea	0.15713		
Long pass	3	0	100	Long pass	8	2	80	Long pass	3	0	100	Long pass	4.66667	0.66667	93.3333	Long pass	2.0787	0.83148	8.31479
Short pass	53	0	100	Short pass	46	1	97.8723	Short pass	28	1	96.5517	Short pass	42.3333	0.66667	98.1414	Short pass	7.76666	0.15713	0.69469
Dribble	1	0	100	Dribble	1	0	100	Dribble	1	0	100	Dribble	1	0	100	Dribble	0	0	0
Shot	0	0		Shot	0	0		Shot	0	0		Shot	0	0		Shot	0	0	0
Cross	1	0	100	Cross	0	0		Cross	0	0		Cross	0.33333	0	100	Cross	0.15713	0	0
Chances created	1		100	Chances c	0			Chances c	0			Chances c	0.33333			Chances c	0.15713		
Assist	0			Assist	0			Assist	0			Assist	0			Assist	0		
Forward pass	37			Forward p	45			Forward p	17			Forward p	32.6667			Forward p	11.8832		
Backward pass	19			Backward	12			Backward	16			Backward	15.6667			Backward	1.81217		
Long pass total	3			Long pass	10			Long pass	3			Long pass	5.33333			Long pass	2.91018		
Short pass total	53			Short pass	47			Short pass	29			Short pass	43			Short pass	7.71722		
Dribble total	1			Dribble to	1			Dribble to	1			Dribble to	1			Dribble to	0		
% Forward	66.0714			% Forward	78.9474			% Forward	50			% Forward	65.0063			% Forward	11.8204		
Total passes	56			Total pass	57			Total pass	32			Total pass	48.3333			Total pass	10.3649		
Total shots	0			Total shot	0			Total shot	0			Total shot	0			Total shot	0		
Total tackles	2			Total tack	6			Total tack	5			Total tack	4.33333			Total tack	0.68493		
Total clearances	5			Total clea	7			Total clea	18			Total clea	10			Total clea	4.6428		
Total crosses	1			Total cros	0			Total cros	0			Total cros	0.33333			Total clea	0.15713		

Gerrard	Match 1			Match 2			Match 3			Summary			Summary						
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success				
Tackle	4	1	80	Tackle	3	4	42.8571	Tackle	4	3	57.1429	Tackle	3.66667	2.66667	60	Tackle	0.41574	0.56656	7.49906
Clearance	0	0		Clearance	0	0		Clearance	0	3	0	Clearance	0	1	0	Clearance	0	1.24722	0
Foul	0			Foul	1			Foul	2			Foul	1			Foul	0.4714		
Errors leading to goal	0			Errors lea	0			Errors lea	1			Errors lea	0.33333			Errors lea	0.41574		
Long pass	13	3	81.25	Long pass	4	1	80	Long pass	5	4	55.5556	Long pass	7.33333	2.66667	72.2685	Long pass	1.39665	1.22726	10.2015
Short pass	37	39	48.6842	Short pass	26	6	81.25	Short pass	26	2	92.8571	Short pass	29.6667	15.6667	74.2638	Short pass	1.72848	5.73704	7.66845
Dribble	0	0		Dribble	3	0	100	Dribble	1	0	100	Dribble	1.33333	0	100	Dribble	0.87489		0
Shot	1	2	33.3333	Shot	0	0		Shot	0	1	0	Shot	0.33333	1	16.6667	Shot	0.15713	0.4714	8.33333
Cross	2	2	50	Cross	2	3	40	Cross	2	6	25	Cross	2	3.66667	38.3333	Cross	0	1.2862	6.7128
Chances created	1			Chances c	3			Chances c	1			Chances c	1.66667			Chances c	0.83148		
Assist	0			Assist	0			Assist	0			Assist	0			Assist	0		
Forward pass	42			Forward p	23			Forward p	26			Forward p	30.3333			Forward p	3.01027		
Backward pass	13			Backward	14			Backward	11			Backward	12.6667			Backward	1.22726		
Long pass total	16			Long pass	5			Long pass	9			Long pass	10			Long pass	2.16025		
Short pass total	76			Short pass	32			Short pass	28			Short pass	45.3333			Short pass	7.41037		
Dribble total	0			Dribble to	3			Dribble to	1			Dribble to	1.33333			Dribble to	0.87489		
% Forward	76.3636			% Forward	62.1622			% Forward	70.2703			% Forward	69.5987			% Forward	3.67415		
Total passes	55			Total pass	37			Total pass	37			Total pass	43			Total pass	2.82843		
Total shots	3			Total shot	0			Total shot	1			Total shot	1.33333			Total shot	0.56656		
Total tackles	5			Total tack	7			Total tack	7			Total tack	6.33333			Total tack	0.31427		
Total clearances	0			Total clea	0			Total clea	3			Total clea	1			Total clea	1.24722		
Total crosses	4			Total cros	5			Total cros	8			Total cros	5.66667			Total clea	1.2862		

Gerard	Match 4			Match 5			Match 6			Summary/mean			Summary/SD		
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success
Tackle	6	1	85.7143	Tackle	8	3	72.7273	Tackle	6	3	66.6667	Tackle	6.66667	2.33333	75.0361
Clearance	3	0	100	Clearance	1	4	20	Clearance	3	3	50	Clearance	2.33333	2.33333	56.6667
Foul	2			Foul	1			Foul	3			Foul	2		
Errors lea	0			Errors lea	0			Errors lea	0			Errors lea	0		
Long pass	4	3	57.1429	Long pass	7	3	70	Long pass	6	2	75	Long pass	5.66667	2.66667	67.381
Short pass	31	3	91.1765	Short pass	21	6	77.7778	Short pass	30	7	81.0811	Short pass	27.33333	5.33333	83.3451
Dribble	0	0		Dribble	1	0	100	Dribble	2	0	100	Dribble	1		100
Shot	2	3	40	Shot	1	1	50	Shot	2	1	66.6667	Shot	1.66667	1.66667	52.2222
Cross	0	3	0	Cross	0	1	0	Cross	1	1	50	Cross	0.33333	1.66667	16.6667
Chances c	0			Chances c	0			Chances c	2			Chances c	0.66667		
Assist	0			Assist	0			Assist	1			Assist	0.33333		
Forward p	27			Forward p	26			Forward p	32			Forward p	28.33333		
Backward	14			Backward	11			Backward	13			Backward	12.6667		
Long pass	7			Long pass	10			Long pass	8			Long pass	8.33333		
Short pass	34			Short pass	27			Short pass	37			Short pass	32.6667		
Dribble to	0			Dribble to	1			Dribble to	2			Dribble to	1		
% Forwar	65.8537			% Forwar	70.2703			% Forwar	71.1111			% Forwar	69.0783		
Total pass	41			Total pass	37			Total pass	45			Total pass	41		
Total shot	5			Total shot	2			Total shot	3			Total shot	3.33333		
Total tack	7			Total tack	11			Total tack	9			Total tack	9		
Total clea	3			Total clea	5			Total clea	6			Total clea	4.66667		
Total cros	3			Total cros	1			Total cros	2			Total cros	2		

Hazard	Match 4			Match 5			Match 6			Summary/mean			Summary/SD		
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success
Tackle	4	2	66.6667	Tackle	2	1	66.6667	Tackle	9	0	100	Tackle	5	1	77.7778
Clearance	0	0		Clearance	0	0		Clearance	0	0		Clearance	0	0	
Foul	2			Foul	0			Foul	1			Foul	1		
Errors lea	0			Errors lea	0			Errors lea	0			Errors lea	0		
Long pass	2	0	100	Long pass	9	2	81.8182	Long pass	5	2	71.4286	Long pass	5.33333	1.33333	84.4156
Short pass	23	8	74.1935	Short pass	34	1	97.1429	Short pass	27	0	100	Short pass	28	3	90.4455
Dribble	10	2	83.3333	Dribble	9	2	81.8182	Dribble	5	2	71.4286	Dribble	8	2	78.86
Shot	1	0	100	Shot	1	3	25	Shot	1	2	33.3333	Shot	1	1.66667	52.7778
Cross	0	2	0	Cross	0	1	0	Cross	1	2	33.3333	Cross	0.33333	1.66667	11.1111
Chances c	2			Chances c	1			Chances c	5			Chances c	2.66667		
Assist	0			Assist	0			Assist	0			Assist	0		
Forward p	15			Forward p	24			Forward p	18			Forward p	19		
Backward	18			Backward	22			Backward	16			Backward	18.6667		
Long pass	2			Long pass	11			Long pass	7			Long pass	6.66667		
Short pass	31			Short pass	35			Short pass	27			Short pass	31		
Dribble to	12			Dribble to	11			Dribble to	7			Dribble to	10		
% Forwar	45.4545			% Forwar	52.1739			% Forwar	52.9412			% Forwar	50.1899		
Total pass	33			Total pass	46			Total pass	34			Total pass	37.6667		
Total shot	1			Total shot	4			Total shot	3			Total shot	2.66667		
Total tack	6			Total tack	3			Total tack	9			Total tack	6		
Total clea	0			Total clea	0			Total clea	0			Total clea	0		
Total cros	2			Total cros	1			Total cros	3			Total cros	2		

Silva	Match 4			Match 5			Match 6			Summary/mean			Summary/SD		
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success
Tackle	4	4	50	Tackle	5	7	41.6667	Tackle	3	0	100	Tackle	4	3.66667	63.8889
Clearance	0	0		Clearance	0	0		Clearance	0	0		Clearance	0	0	
Foul	0			Foul	3			Foul	0			Foul	1		
Errors lea	0			Errors lea	0			Errors lea	0			Errors lea	0		
Long pass	3	3	50	Long pass	4	2	66.6667	Long pass	4	2	66.6667	Long pass	3.66667	2.33333	61.1111
Short pass	85	1	98.8372	Short pass	64	4	94.1176	Short pass	40	6	86.9565	Short pass	63	3.66667	93.3038
Dribble	4	1	80	Dribble	5	2	71.4286	Dribble	5	1	83.3333	Dribble	4.66667	1.33333	78.254
Shot	1	2	33.3333	Shot	0	0		Shot	0	0		Shot	0.33333	0.66667	33.3333
Cross	2	4	33.3333	Cross	3	4	42.8571	Cross	3	3	50	Cross	2.66667	3.66667	42.0635
Chances c	3			Chances c	6			Chances c	6			Chances c	5		
Assist	2			Assist	1			Assist	1			Assist	1.33333		
Forward p	47			Forward p	42			Forward p	28			Forward p	39		
Backward	45			Backward	32			Backward	24			Backward	33.6667		
Long pass	6			Long pass	6			Long pass	6			Long pass	6		
Short pass	86			Short pass	68			Short pass	46			Short pass	66.6667		
Dribble to	5			Dribble to	7			Dribble to	6			Dribble to	6		
% Forwar	51.087			% Forwar	56.7568			% Forwar	53.8462			% Forwar	53.8966		
Total pass	92			Total pass	74			Total pass	52			Total pass	72.6667		
Total shot	3			Total shot	0			Total shot	0			Total shot	1		
Total tack	8			Total tack	12			Total tack	3			Total tack	7.66667		
Total clea	0			Total clea	0			Total clea	0			Total clea	0		
Total cros	6			Total cros	7			Total cros	6			Total cros	6.33333		

Hazard	Match 1			Match 2			Match 3			Summary			Hazard			Match			
	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success	Successfu	Unsuccess	%Success				
Tackle	4	1	80	Tackle	2	0	100	Tackle	0	0	Tackle	2	0.33333	90	Tackle	0.94281	0.15713	5	
Clearance	0	0		Clearance	0	0		Clearance	0	1	0	Clearance	0	0.33333	0	Clearance	0	0.41574	0
Foul	0			Foul	1			Foul	0		0	Foul	0.33333		Foul	0.41574			
Errors leading to goal	0			Errors lea	0			Errors lea	0		0	Errors lea	0		Errors lea	0			
Long pass	5		100	Long pass	3	2	60	Long pass	1	1	50	Long pass	3	1.5	70	Long pass	0.94281	0.40825	8.16497
Short pass	29	6	82.8571	Short pass	23	5	82.1429	Short pass	38	2	95	Short pass	30	4.33333	86.6667	Short pass	6.12826	1.2862	5.32515
Dribble	10	5	66.6667	Dribble	9	2	81.8182	Dribble	8	1	88.8889	Dribble	9	2.66667	79.1246	Dribble	0.4714	0.68493	4.11761
Shot	2	2	50	Shot	0	2	0	Shot	0	0	0	Shot	0.66667	1.33333	25	Shot	0.31427	0.83148	12.5
Cross	2	0	100	Cross	0	1	0	Cross	0	2	0	Cross	0.66667	1	33.3333	Cross	0.31427	0.4714	15.7135
Chances created	2			Chances c	2			Chances c	1			Chances c	1.66667			Chances c	0.41574		
Assist	0			Assist	1			Assist	1			Assist	0.66667			Assist	0.15713		
Forward pass	27			Forward p	22			Forward p	12			Forward p	20.3333			Forward p	4.37445		
Backward pass	13			Backward	11			Backward	30			Backward	18			Backward	7.84573		
Long pass total	5			Long pass	5			Long pass	2			Long pass	4			Long pass	1.24722		
Short pass total	35			Short pass	28			Short pass	40			Short pass	34.3333			Short pass	4.9015		
Dribble total	15			Dribble to	11			Dribble to	9			Dribble to	11.6667			Dribble to	1.13312		
% Forward	67.5			% Forward	66.6667			% Forward	28.5714			% Forward	54.246			% Forward	15.863		45.4
Total passes	40			Total pass	33			Total pass	42			Total pass	38.3333			Total pass	3.69518		
Total shots	4			Total shot	2			Total shot	0			Total shot	2			Total shot	0.94281		
Total tackles	5			Total tack	2			Total tack	0			Total tack	2.33333			Total tack	1.0304		
Total clearances	0			Total clea	0			Total clea	1			Total clea	0.33333			Total clea	0.41574		
Total crosses	2			Total cros	1			Total cros	2			Total cros	1.66667			Total clea	0.41574		

	PL Mean			PL SD			
Tackle	6.08333	2.08333	75.6836	Tackle	2.04351	1.19799	9.14703
Clearance	0.91667	0.83333	57.5	Clearance	1.13448	1.10554	1.17851
Foul	1.08333			Foul	0.68718		
Errors lea	0			Errors lea	0		
Long pass	5.58333	1.91667	74.4571	Long pass	1.64148	0.68718	12.0671
Short pass	42.0833	3.25	91.0338	Short pass	17.4746	1.79247	5.7936
Dribble	3.66667	1.11111	89.2785	Dribble	3.3665	1.01835	12.3826
Shot	0.91667	1.16667	51.25	Shot	0.56928	0.57735	13.6865
Cross	1	1.75	42.4603	Cross	1.12217	1.5	40.6573
Chances c	2.33333			Chances c	1.98139		
Assist	0.41667			Assist	0.63099		
Forward p	30.8333			Forward p	9.14695		
Backward	22			Backward	8.85689		
Long pass	7.5			Long pass	1.40106		
Short pass	45.3333			Short pass	16.8633		
Dribble to	4.5			Dribble to	4.3589		
% Forward	58.9857			% Forward	8.55391		
Total pass	52.8333			Total pass	16.4801		
Total shot	2.08333			Total shot	1.10135		
Total tack	8.16667			Total tack	1.73205		
Total clea	1.75			Total clea	2.234		
Total cros	2.75			Total cros	2.47019		

pl	Success				Unsuccess				Percentage			
Tackle	8.66667	4	6.66667	5	1.33333	3.66667	2.33333	1	86.0317	63.8889	75.0361	77.7778
Clearance	1.33333	0	2.33333	0	1	0	2.33333	0	58.3333		56.6667	
Foul	0.33333	1	2	1								
Errors leading to goal	0	0	0	0								
Long pass	7.66667	3.66667	5.66667	5.33333	1.33333	2.33333	2.66667	1.33333	84.9206	61.1111	67.381	84.4156
Short pass	50	63	27.3333	28	1	3.66667	5.33333	3	97.0407	93.3038	83.3451	90.4455
Dribble	1	4.66667	1	8	0	1.33333		2	100	78.254	100	78.86
Shot	0.66667	0.33333	1.66667	1	0.66667	0.66667	1.66667	1.66667	66.6667	33.3333	52.2222	52.7778
Cross	0.66667	2.66667	0.33333	0.33333	0	3.66667	1.66667	1.66667	100	42.0635	16.6667	11.1111
Chances created	1	5	0.66667	2.66667								
Assist	0	1.33333	0.33333	0								
Forward pass	37	39	28.3333	19								
Backward pass	23	33.6667	12.6667	18.6667								
Long pass total	9	6	8.33333	6.66667								
Short pass total	51	66.6667	32.6667	31								
Dribble total	1	6	1	10								
% Forward	62.778	53.8966	69.0783	50.1899								
Total passes	60	72.6667	41	37.6667								
Total shots	1.33333	1	3.33333	2.66667								
Total tackles	10	7.66667	9	6								
Total clearances	2.33333	0	4.66667	0								
Total crosses	0.66667	6.33333	2	2								

pl	Success				Unsuccess				Percentage			
4 individuals WC												
Tackle	3.66667	3.33333	3.66667	2	0.66667	1	2.66667	0.33333	88.8889	80.5556	60	90
Clearance	8	0.33333	0	0	2	0	1	0.33333	83.0688	100	0	0
Foul	1	0.66667	1	0.33333								
Errors leading to goal	0.33333		0.33333	0								
Long pass	4.66667	3	7.33333	3	0.66667	2.33333	2.66667	1.5	93.3333	55.5556	72.2685	70
Short pass	42.3333	29.6667	29.6667	30	0.66667	6	15.6667	4.33333	98.1414	82.7321	74.2638	86.6667
Dribble	1	2	1.33333	9	0	1	0	2.66667	100	63.8889	100	79.1246
Shot	0	0	0.33333	0.66667	0	0	1	1.33333			16.6667	25
Cross	0.33333	0	2	0.66667	0	1.33333	3.66667	1	100	0	38.3333	33.3333
Chances created	0.33333	1.33333	1.66667	1.66667								
Assist	0		0	0.66667								
Forward pass	32.6667	21.6667	30.3333	20.3333								
Backward pass	15.6667	19.3333	12.6667	18								
Long pass total	5.33333	5.33333	10	4								
Short pass total	43	35.6667	45.3333	34.3333								
Dribble total	1	3	1.33333	11.6667								
% Forward	65.0063	53.2767	69.5987	54.246								
Total passes	48.3333	41	43	38.3333								
Total shots	0	0	1.33333	2								
Total tackles	4.33333	4.33333	6.33333	2.33333								
Total clearances	10	0.33333	1	0.33333								
Total crosses	0.33333	1.33333	5.66667	1.66667								

## Appendix E- Paired T-tests and Cohens d results

	ttests (paired)			Cohen's d		
	Successfu	unsuccess	total			
Tackles	0.04599	0.24117	0.59376	2.05616	0.82052	0.36259
Clearance	0.58761	1	0.76202	0.45913	0	0.43075
Foul	0.42283			0.66248		
Errors lea	0.1835			2.3094		
Long pass	0.37402	0.54722	0.76869	0.58761	0.15789	0.12069
Short pass	0.35411	0.24511	0.12693	0.77179	0.83408	0.71068
Dribble	0.70667	0.7418	0.40128	0.09302	0.17082	0.23525
Shot	0.06628	0.00599	0.07779	1.5008	0.92261	3.10706
Cross	0.80062	0.79841	0.97777	0.25015	0.16385	0.01108
Chances c	0.3437			0.82938		
Assist	0.7418			0.38281		
Forward p	0.38168			0.59883		
Backward	0.19454			0.94791		
Long pass	0.34016			0.66125		
Short pass	0.58464			0.51643		
Dribble to	0.81602			0.0533		
% Forward	0.22715			0.18626		
Total pass	0.28339			0.98162		
Total shot	0.02188			1.18971		
Total tack	0.00955			2.27833		
Total clea	0.65538			0.33493		
Total cros	0.79613			0.20758		