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The Impact of Individual Attributes on Transfer Fees and Market Value of Football Players

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Preface

This master thesis is written as the final part of the master's program in Business Administration at Molde University College, a college specialized in logistics. It has been an enriching journey of exploration and research on the topic of what determines the value of football players. I would like to take this opportunity to express my gratitude and acknowledge the individuals and institutions that have contributed to the completion of this thesis.

First and foremost, I would like to extend my heartfelt appreciation to my supervisor, Kjetil Kåre Haugen, for their invaluable guidance, expertise, and support throughout this research endeavor. Their insightful feedback and encouragement have been instrumental in shaping the direction and quality of this thesis.

I am indebted to Lånekassen, whose financial support made this research possible. Their investment in my education and research has been integral to the successful completion of this thesis.

I am also grateful to my friends and colleagues for their encouragement, discussions, and constructive feedback. Their support and camaraderie have been invaluable throughout this academic journey.

Last but not least, I want to express my deepest gratitude to my family. Their unwavering love, encouragement, and understanding have been the pillars of strength throughout my studies. Their belief in my abilities and their constant support have been the driving force behind my achievements.

This thesis would not have been possible without the collective support, guidance, and encouragement from all those mentioned above. While every effort has been made to ensure the accuracy and quality of this research, any shortcomings or errors are solely my responsibility.

Kristoffer Røsand Dalseng
May, 2023

Abstract

This master's thesis focuses on examining the attributes of individual football players and their relationship to both the transfer fees and market values. The world of football is highly competitive and financially driven, and understanding the factors that influence how football players are valued is essential for clubs, agents, and other stakeholders. The objective of this study is to analyze the impact of different player attributes on the transfer fees and estimation of market value to help determine what attributes have the strongest impact on players of various positions.

A dataset containing information of 1120 professional football players from the last five seasons was collected from transfermarkt.com and fifaindex.com. The dataset includes data for the players individual attributes, contract length, age, potential, transfer fee, market value, and position they play on the pitch. Regression models were used as the main statistical tool to analyze the relationship between the included variables and their impact on both the transfer fee and the market value of the observations. The observations were grouped by their positions to be able to investigate what attributes affect the attributes for different positions. The variables for each position were selected based on the average ratings for the attributes for every position.

The result of the research found different attributes to be of significance for each position, while the contract length was found to be significant for transfer fees. Age was insignificant in most cases, but the potential of the players proved to be of significance for both metrics of value. Some limitations and uncertainties surrounding the data used in the analysis might affect the overall results.

This master's thesis contributes to the understanding of the complex relationship between individual player attributes and the financial aspects of football transfers. By identifying the attributes that significantly influence transfer fees and market values, this research provides valuable insights for clubs, agents, and others involved in player valuation. The findings may facilitate more informed decision-making processes in player transfers and contribute to the overall efficiency and transparency of the football transfer market.

Innhold

1.0 Introduction

Professional football has been the biggest sport on the planet for a while and the number of people that watch and enjoy the sport increases every year (Pruna et al., 2018). Professional football (also known as soccer) consists of leagues in many different countries which include players from all over the world (Reilly & Gilbourne, 2003). The vast number of players can change clubs across the leagues from different countries through transfers from one club to another, which creates a huge market of players that's sold and bought by different clubs. As the biggest clubs are seeking to obtain the best players in the world to obtain an advantage over their rivals, more money is being spent, and the industry keeps on growing (Pifer et al., 2018). The amount of money in the transfer market is of staggering magnitude. The best players in the world get transferred for millions of dollars, and what determinate the prices of players have been of growing interest the last two decades. There are multiple factors that affect the market value of a player, such as age, skillset, contract length, potential and performance.

The purpose of this thesis is to explore the relationship between a player's skillset and their market value. This paper will investigate how various abilities and characteristics are valued for different player positions on the field. The characteristics included will consist of skills for different categories of attributes for areas like goals scoring abilities, defensive abilities, physical factors, and ball control. With this in mind the following research question was established:

> *Can the individual skillset of football players help determinate the transfer fees in football? And what attributes have the biggest influence on the value for players in the different positions in football?*

The results of the research done in this paper find the attributes used to be decent at estimating what drive the value of players and some of attributes used had a significant impact on both the transfer fee and estimation of market value. As there are a lot of variations of players and their attribute-profiles for the different positions on the field, it is challenging to create an accurate model to estimate the value of players. The attributes used in this paper are collected from databases based on the attribute-system for the FIFA-

games made by EA. This creates some uncertainty as the attributes are made both as a reflective representation of the real-life players as well as aspects tied to the gameplay and "feel" of controlling each player. But overall, the research finds the attributes to be able to show trends for some of the attributes for different positions and proves that further research looking into the skillset of players could help determine the value of players further.

In my research I will use data surrounding the most expensive transfers from the last 6 seasons, and the data will consist of statistical data collected from various sources. The dataset includes 1120 observations from various leagues across the world. By combining data from various sources, we can process and analyze the data by using tools like regression which will be the main method used to analyze the data. This study will expand on the literature done by others who have tried to determine what factors affect the market value of players. The findings from the analysis will provide a more nuanced understanding of the determining factors than what previous studies have done. By examining the relationship between a player's skillset and market value, I hope to provide clubs, investors and players with more insight that can assist them in making more informed decisions surrounding transfers and player valuation. This study's findings will have implications for the field of sport economics, as well as the football industry.

2.0 Theory & Literature review

This chapter will look at existing literature surrounding the transfer market and valuation of football players. This chapter will provide a comprehensive overview of the theories, knowledge, and debates on the topics that affect the research question, and limitations and gaps in the existing literature.

2.1 How transfers work

When a football club wishes to offload a player, they typically put the player on the transfer market, making them available for other clubs to purchase. The reasons for doing so can vary, such as to raise funds, clear roster space, or to allow the player to seek opportunities with another team (Sloane, 1969). It could also be the player wants to leave for other reasons such as for more game time, better opportunities, or a change of scenery.

The process of selling a player on the transfer market starts with the club determining an asking price for the player (Liu et al., 2016). This asking price is the amount of money that the club hopes to receive for the player and can be based on various factors such as the player's performance, the remaining duration of the contract, the player's age, and future potential (Garcia del Barrio & Pujol, 2016). For example, a young player with a long contract and potential for development will likely have a higher asking price than an older player with a short contract and limited potential.

Once the asking price is set, the club will advertise the player's availability to other clubs, which can be done through various channels such as the media, agents, or the club's own network of contacts. This process is usually handled by the club's transfer department and their agents, who will reach out to other clubs and gauge their interest in the player. They will also provide information about the player, such as their statistics, videos of their performances, and other relevant information that can help the interested clubs evaluate the player.

Clubs that are interested in buying the player can then engage in negotiations with the selling club to finalize the transfer. The negotiations will continue until both clubs have agreed on the transfer fee and other conditions of the transfer (Geey, 2019). These

conditions can include add-ons, performance-based bonuses, and clauses such as a buy-back option or a percentage of future transfer fee (Colantuoni & Devlies, 2016; Franceschi et al., 2023). The negotiations can be a lengthy process and may involve multiple rounds of discussions and counter-offers.

In summary, the process of selling a player on the transfer market includes determining an asking price, advertising the player's availability, and negotiating with interested clubs until an agreement is reached. The specifics of each transfer will depend on the unique circumstances of the clubs and players involved. The club's financial situation, the player's desire to leave or stay, the player's market value, and the buying club's budget are all factors that can influence the transfer negotiations. Moreover, the process of selling a player is not a one-time event but a continuous process where the club will look for potential buyers for the player throughout the transfer window (Carmichael & Thomas, 1993).

2.1.1 The Bosman ruling and the modern way of trading players

"*At the top level of today's game, agents, lawyers, banks, marketing, and PR agencies have all carved out considerable influence. The introduction of these industries and their ways of working have largely benefitted the sport and the players: standards have risen in terms of financial rigour, commercial best practice, and legal protection for athletes with very short careers.*"

- Luca Vialli (Geey, 2019)

In the past three decades, the global football industry has undergone significant transformations, characterized by increased financial resources and media exposure for football leagues worldwide. This growth has attracted numerous actors into the economic ecosystem surrounding football. Historically, player contracts and transfers were straightforward affairs with no requirement for intermediary agents. However, the bargaining power of players was significantly limited compared to contemporary times. As the industry entered into new commercial deals, greater amounts of capital were infused into the football ecosystem, necessitating the introduction of new regulatory frameworks (Geey, 2019).

The current system for player transfers, including the rules and regulations that govern them, is a direct result of the Bosman ruling in 1995. This ruling fundamentally altered the way in which player ownership was affected upon the expiration of a contract. Prior to the Bosman ruling, clubs retained ownership over a player even after their contract had ended, and other clubs were required to pay transfer fees to acquire them (Simmons, 1997). However, after the ruling, players were no longer beholden to their former clubs and were free to sign new contracts with any team they chose.

The Bosman ruling had a significant impact on the transfer market, shifting power away from clubs and towards players, making contract negotiations more important than ever before. This ruling marked the beginning of the transfer market as we know it today, with large clubs paying exorbitant amounts for the best players, while smaller clubs benefit economically by developing and selling talented players to bigger clubs. Additionally, the length of a player's contract has become a critical factor in determining the price of a transfer, with the remaining duration of a contract affecting the balance of power between the selling club, buying club, and the player (Feess & Muehlheusser, 2003).

2.2 Valuing players

The interest in the value of football players, and how to estimate them, has been of growing interest, and there have been several attempts trying to determinate the factors that affect the valuation of football players.

2.2.1 Market value and crowd-sourcing

The "wisdom of crowds" is a concept that suggests that the collective judgement or opinion of a group of people is often more accurate than that of a single individual. This idea has been applied in various contexts, including decision-making, prediction, and problem-solving. In the context of the transfer market in football, the wisdom of crowds refers to the collective judgement of clubs, investors, and fans in determining the value of a player.

Transfer market values are the prices that clubs are willing to pay for players in the market. These values are determined by a combination of factors, including a player's skillset,

performance, and potential. The wisdom of crowds can play a role in shaping these values, as the collective opinion of clubs and investors can influence the demand for a player and ultimately their market value. For instance, if many clubs are interested in signing a player, their demand for that player will increase, resulting in a higher market value. Similarly, if a player is highly regarded by fans and considered to be a top talent, their market value may also be higher due to the collective judgement of the crowd.

The wisdom of crowds is not a new concept, and it has been used for various reasons such as predicting the outcome of games and tournaments, forecasting the stock market and even for election prediction. However, it is important to note that not all crowd-sourced information is reliable, and it should be used with caution. Crowd-sourced information can be a useful way to gather a wide range of perspectives and experiences on a particular topic, but it is important to verify information from multiple sources before relying on it. Additionally, it is important to consider the credibility and expertise of the individuals providing the information.

Multiple studies have investigated the reliability of crowd-sourced data from websites such as transfermarkt.de (Coates & Parshakov, 2022; Herm et al., 2014; Prockl & Frick, 2018). These studies have found that crowd-sourced data can be reliable and sometimes outperform predictions made by experts in the field. However, the studies also found that there is a risk of bias in crowd-sourced data and that it should be used with caution. There is a tendency for crowd-sourced data to underestimate fees for transfers. Overall, it is important to carefully evaluate the credibility and reliability of crowd-sourced information before using it.

In summary, the wisdom of crowds can play a significant role in shaping transfer market values in football by taking into account the collective judgement of clubs, investors, and fans. However, it is important to be cautious when using crowd-sourced information, and to carefully evaluate its credibility and reliability before using it. By being mindful of these considerations, the market can more accurately reflect a player's true value and potential, ultimately leading to more informed decision-making and a more efficient transfer market.

2.2.2 What determines the value of a player

A study by Fiona Carmichael et al. published in 1999 (Carmichael et al., 1999) found that the market value of a football player can be influenced by various factors. Using regression analysis, the study examined the determinants of a player's market value, including common variables such as age, goals scored, and position on the field. The findings of the study were influential in subsequent research on the subject and have been replicated by other researchers who have added additional variables to the analysis (Dobson, Gerrard, & Dobson, 2000; Dobson, Gerrard, & Howe, 2000; Hofmann et al., 2021). In 2019 the Journal of sport economics published an article by Maribel Serna Rodrigues et al. which found five variables to be the strongest influence on the value of a player: performance, participation in national team, age, goals scored, and age-squared (Serna Rodríguez et al., 2019).

Despite the insights gained from these studies, one aspect of player pricing that has received little attention is the impact of different skillsets on the value of players in different positions on the field. Different positions on the field require different skills, and it is possible that certain skillsets may be more highly valued in some positions than in others. For example, a striker would be expected to have a high level of finishing ability, while a midfielder would be expected to have good ball control and passing skills.

Investigating this relationship between different skillsets and player value in different positions could provide valuable insights into the market value of players and help to identify which skills are most valued in different positions. This could aid clubs and investors in determining the value of a player, as well as help players to better understand the skills that are most valued in their position. This information can be used to help them focus on developing and honing the skills that are most likely to increase their market value.

Additionally, this research could provide insights into the way in which skillsets are valued in the current market. It could help to identify any discrepancies or biases in the way that players are valued and provide information on how to address these issues.

In conclusion, investigating the relationship between different skillsets and player value in different positions on the field could provide valuable insights into the market value of players. It would be interesting to explore the effect of different skillsets on market value of players according to their positions on the field, in order to better understand the skills that are most valued in different positions and how they affect the market value of players.

2.3 Positions in football

A football team consists of players playing in different positions, with different duties and responsibilities on the field. Players in various positions require different skillsets and abilities to play their role for their team (Berber et al., 2020; McLean et al., 2018).

2.3.1 Goalkeeper

The goalkeeper is the last line of defence to prevent the opposing team from scoring goals. The goalkeepers play most of the time close to their own goal and use their whole body to block and “save” shots from the opposing team. The goalkeeper is allowed to use their hands within their penalty area and stays within their penalty area most of the match. Goalkeepers are not expected to contribute much to the play on the field except for receiving passes from their team to relieve pressure and to change play from one side of the pitch to the other. This makes the goalkeeper’s role in the team unique from the other players and therefore the attributes for a goalkeeper will be vastly different than the outfield players. The attributes in the dataset include 5 directed at goalkeeper specifically, gkpos (GK positioning), gkdive, gkhandling, gkkicking, gkrefelx. These 5 variables can be expected to be high for goalkeepers. Of the remaining attributes we can expect to see high values for reaction and maybe strength.

2.3.2 Centre-back

The centre-back is the main defensive position on the field, and their role is to defend their own goal from the opposition's attacks. The centre-backs play in the center “lane” of the defense and their abilities as defenders are therefore crucial in the defensive play to avoid

conceding goals. They play closest to the team's goalkeeper and communication between the centre-backs, the goalkeeper, and other defenders is key to building a strong defensive backline. Most commonly teams play with 2 centre-backs, but sometimes teams play with 1 or 3 centre-backs.

Centre-backs need to possess attributes that make them better at their defensive duties, such as strength, balance, interceptions, and tackling abilities. Acceleration and sprint speed might also be valued for the centre-back to defend against fast attackers and counter-attack from the opposition. Centre-backs also play a role in initiating attacks and distributing the ball forward when attacking and therefore passing skills might be important.

2.3.3 Fullbacks

The left and right backs are part of the defensive backline of a team and play with the centre-back to create a solid defense against the opposing team. While the centre-backs stay in the central lane of the pitch the fullbacks play a wider position to defend the sides from crosses and passes into the penalty area.

Fullbacks are more involved in the attacking play than centre-backs and move further up the pitch to support their team in attacking, by making overlapping runs and crossing into the penalty area.

Fullbacks need to have a balance of attributes that make them good at defending their sides as well as abilities to strengthen their attacking capabilities. Attributes like slide and standing tackles, agility, sprint speed and acceleration, stamina, and long and short passes are typically skills that are valued for a side back.

2.3.4 Wing back

The wing back position is a more offensive oriented version of the fullback, playing a role as both a Full-back and a winger. Their defensive role is similar to the fullbacks in defending the flanks from passes and crosses into the penalty area and supporting the centre-backs to form a strong backline.

In attacking play they move upwards the field to create a wider attacking formation, to create opportunities for crossing the ball into the “box” and forcing the opposition to widen their defenses, which creates more room in the central area of the pitch for the attack to penetrate. The wing backs need to possess attributes for both their defensive role and their offensive role. Interceptions, tackling, acceleration, agility, dribbling, ball control, stamina and passing are skills that are important for a wing back to be able to defend and attack with high quality in both ends of the field.

2.3.5 Midfield

The midfield positions are the link between the backs and the attackers and are responsible for maintaining ball possession and delegating the ball within the team. The midfield is responsible for controlling the pace of the game, maintaining structure and creating chances for their team. Midfielders are required to move up and down the pitch frequently and play the ball within the team to create opportunities. The midfield consists of defensive, central and attacking midfielders.

Defensive midfielders are often strong and play to disrupt the opposing attack as a link between the midfield and the defenses of the team, as their positioning is deeper than the rest of the midfield.

The central midfielders support their team by moving around the ball and passing to create room and opportunities to move the ball forward towards the goal.

The attacking midfield are midfielders that are more attack oriented. They are often called playmakers, as their task is to create direct goal scoring opportunities for the attacking players, but also possess attributes making them capable of scoring goals themselves.

As midfielders are required to pass the ball and move a lot, attributes like vision, short- and long passes, stamina and abilities that make the midfielders able to hold the ball are key attributes for midfielders. Defensive midfielders require better intercepting, defensive abilities, and higher aggressiveness. Attacking midfielders will require more offensive oriented attributes like ball control, dribbling, finishing, shotpower, freekick.

2.3.6 Wingers

Wingers are attacking players that play on the flanks of the pitch to widen the attacking formation and to create goal scoring opportunities from the sides by crossing and passing the ball into the penalty area. Wingers are an important part of the team's attack, as their wide position will force the defending team to widen their defensive positioning, thus creating more room for attackers. Wingers will also need to run into the box and act as an additional striker. As wingers often possess high running speed, they are often crucial in counter-attacking opportunities, as they are capable of outrunning defenders. Wingers are required to handle one on one situations with their ball control and dribbling skills to pass defenders. Overall, the winger will need to possess great attacking attributes such as acceleration, running speed, ball control, dribbling, finishing, balance, agility and crossing to play his role in the offensive play for their team.

2.3.7 Central forward (CF) and striker (ST)

The central forward and striker positions are players that play the key role of getting the ball into the net of the opposition's goal. ST's focus is directly at scoring goals while CF's play a bigger part in the attacking play, both as a goal scorer but also to create opportunities for other players on the team. Both CF's and ST's need to be able to score goals in different ways and position themselves to attain the ball in good positions. Attackers vary in playing style and different teams will value different types of attackers that suits their playing style, but overall skills as finishing, agility, reactions, aggression and attack positioning are important for attackers, while the CF's players might require higher passing abilities than ST.

3.0 Method

The method chapter will provide a comprehensive overview of the techniques used in my research study, including the use of linear regression as a statistical tool. By presenting a detailed report of my research methodology, this chapter will provide the reader with an understanding of the reliability and validity of my results.

3.1 Web scraping and data collecting

There are many databases of statistical data for various aspects of football that can be used to collect the data that is needed for the analyses. One of the most used online databases for data surrounding player transfers is transfermarkt.com (English version of transfermarkt.de). Transfermarkt.com collects data through the process of crowdsourcing and is considered the most reliable source of transfer data. We can find data for every transfer, including estimates of market value for players, fees, negotiating clubs, and remaining time of contracts.

#	Player	Age	Market value at time	Season	Nat.	Left	Joined	Fee
1	Neymar Left Winger	25	€100.00m	17/18		Barcelona LaLiga	Paris SG Ligue 1	€222.00m
2	Kylian Mbappé Centre-Forward	19	€120.00m	18/19		Monaco Ligue 1	Paris SG Ligue 1	€180.00m
3	Ousmane Dembélé Right Winger	20	€33.00m	17/18		Bor. Dortmund Bundesliga	Barcelona LaLiga	€140.00m
4	Philippe Coutinho Left Winger	25	€90.00m	17/18		Liverpool Premier League	Barcelona LaLiga	€135.00m
5	João Félix Second Striker	19	€70.00m	19/20		Benfica Liga NOS	Atlético Madrid LaLiga	€127.20m

Figure 1 Top 5 most expensive player from transfermarkt.com

For statistical data on player ratings, I will rely on the data collected for the FIFA (Fédération Internationale de Football Association)-games developed by EA (Electronic arts). EA got a team of 25 producers, 400 data contributors and 6 000 volunteering data reviewers, who work on collecting data and maintaining an accurate estimation of the skillset of players included in the games. A new FIFA-game is released every year and the data get updated with every release, but the ratings of players get regularly adjusted trough the season. Sites like FIFAIndex.com collect all the player data from the games and contain a large database of 16 000-20 000 players for each year, and every update during

the season. The player-ratings in games consists of 7 categories for the different aspects of skills, with multiple attributes for each category. The 7 categories and attributes consist of:

1. Ball skills (Ball control, dribbling)
2. Physical (Acceleration, stamina, strength, balance, sprint speed, agility, jumping)
3. Goalkeeper (GK Positioning, GK diving, GK handling, GK kicking, GK reflexes)
4. Defence (marking, slide tackle, stand tackle)
5. Mental (aggression, reactions, att. position, interceptions, vision, composure)
6. Shooting (heading, shot power, finishing, long shots, curve, FK acc., penalties, volleys)
7. Passing (crossing, short pass, long pass)

Note: The attribute marking is not included in the latest edition of the game, and is therefore excluded from the analysis.

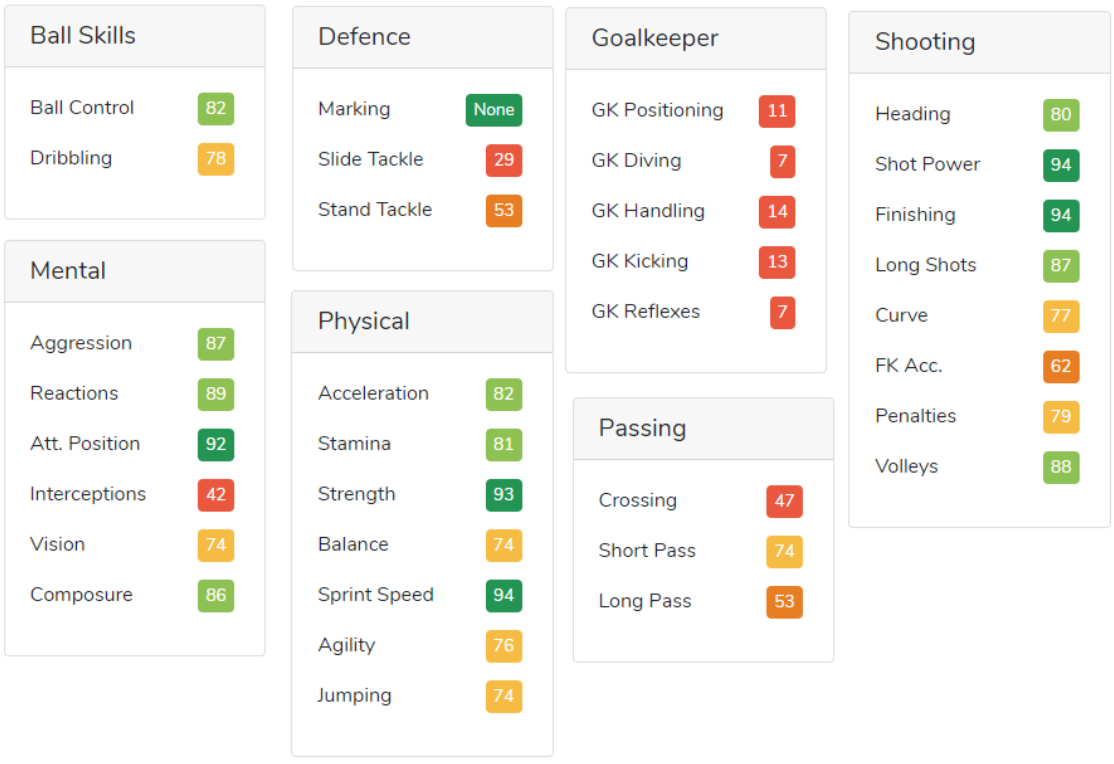

Figure 2 Attributes from fifaindex.com

Every category consists of attributes that are given a value between 1-99, where higher values are better. Ball skills refer to a player's proficiency in handling the ball while in motion and with their feet. Physical attributes encompass general physical variables such as speed, stamina, and agility. Goalkeeper attributes pertain solely to the specialized skills necessary for goalkeepers and are not relevant for other players. Defence attributes

encompass defensive skills that are essential for players in positions requiring contribution to the defensive side of the game. Mental attributes assess a player's behavioral tendencies and ability to read the game. Shooting attributes relate to finishing and shooting abilities. Finally, passing attributes reflect a player's capacity to accurately execute passes of varying distances and crosses.

These attributes encompass all essential components of a football player's skillset that will be utilized for analysis. It is crucial to acknowledge that not all skills are universally necessary for every player, as distinct positions mandate varying proficiencies. For instance, attackers such as Messi, Neymar, or Haaland are not required to contribute significantly to defence since their energy is typically directed towards attacking. Conversely, defensive players do not prioritize goalscoring attributes such as shooting and finishing, as they infrequently encounter opportunities to score goals and are primarily focused on creating opportunities for strikers while attacking. Additionally, teams have diverse playstyles and will place varying importance on different skillsets when selecting players.

To be able to create a dataset containing the information that is needed for the analysis of the attributes effect on the value of players we would need to mine data from various online sources and databases to combine all the data to create a dataset. Web-scraping is a process used to collect data from online sources efficiently (Zhao, 2017), by programming software that can mine out the data it is programmed to. To collect the data used in this research, two tools for webscraping have been applied to automate the process, webscraper.io and parsehub. Both services let the user create web-scraping programs without the need to use programming language to collect data and was used to mine the data used in this paper.

3.1.1 Dataset

The resulting dataset consists of observations that have been transferred during the last 5 seasons, including the 2018/19 up until the 2022/23 season. For each season the 250 most expensive transfers were collected, but because of missing data some observations had to be dropped. The 18/19 season consists of 223 observations, the 19/20 season got 237 observations, the 20/21 season have 226 observations, the 21/22 season consist of 201

observations, and the 22/23 season consist of 233 observations, giving us a total of 1120 observations.

The dataset can be accessed at the following links:

Excel spreadsheet

Stata file

Season	Freq.	Percent	Cum.
18/19	223	19.91	19.91
19/20	237	21.16	41.07
20/21	226	20.18	61.25
21/22	201	17.95	79.20
22/23	233	20.80	100.00
Total	1120	100.00	

Table 1 Distributions of observations per seasons

Of the 1120 observations there are 50 goalkeepers, 294 backs, 441 midfielders, 83 wings, and 252 attackers.

The backs consist of 163 centre-backs, 64 left backs, 46 right backs, 7 left wing backs, and 14 right wing backs. The midfielders consist of 155 central midfielders, 75 left midfielders, 59 right midfielders, 82 defensive midfielders, and 70 offensive midfielders. The wings consist of 42 left wingers and 41 right wingers. Attackers consist of 239 strikers and 13 central forwards.

Because some positions consist of few observations some positions have been grouped with other similar positions. The positions that will be used in the analysis are goalkeepers, centre-backs, fullbacks (LB, RB, RWB, LWB), central midfield(LM, CM, RM), central defensive midfield, central attacking midfield, wings(LW, RW), and forwards(CF, ST).

Position	Freq.	Percent	Cum.
CAM	70	6.25	6.25
CB	163	14.55	20.80
CDM	82	7.32	28.13
CF	13	1.16	29.29
CM	155	13.84	43.13
GK	50	4.46	47.59
LB	64	5.71	53.30
LM	75	6.70	60.00
LW	42	3.75	63.75
LWB	7	0.63	64.38
RB	46	4.11	68.48
RM	59	5.27	73.75
RW	41	3.66	77.41
RWB	14	1.25	78.66
ST	239	21.34	100.00
Total	1120	100.00	

Table 2 Distribution of players in positions

The variables in the dataset includes: Market value (MVattime, and Mv3), transfer fee (fee, and Fee3), age, age2, position, remaining contract length (Contract, and con2), selling club, buying club, leaving league, joining league, TOT, POT, POT2, rightfooted, ballcontrol, dribbling, crossing, shortpass, longpass, heading, shotpower, finishing, longshot, curve, freekick, penalties, volleys, slidetackle, standtackle, acceleration, stamina, strength, balance, sprintspeed, agility, jumping, gspos, gsdive, gkhandling, gkkicking, gkrefelx, aggression, reaction, attPos, interception, vision, and composure.

MVattime – The estimated market value for the player at the time of the transfer in euros based on the crowdsourced estimates from transfermartk.com.

Mv3 – MVatttime / 1 000 000. Market value in millions.

fee – The estimates of the fee actually paid for the transfer.

Fee3 – fee / 1 000 000. Fee in millions.

age – The age of the player at the time of the transfer

age2 – The age of the player^2. As the effect of the age on the market value and fee can be assumed to be non-linear, I include a squared version of the age to improve the accuracy of the regressions.

position – The position the player plays on the field. This variable consists of the following positions: goalkeeper, centre-back, left back, right back, left wing back, right

wing back, left mid, central defensive mid, central mid, central offensive mid, right mid, left wing, right wing, central forward, and striker.

Position2 – The abbreviations for the positions. This variable consist of the following positions: GK (Goalkeeper), CB (Centre-back), LB (Left back), RB (Right back), LWB (Left wing back), RWB (Right wing back), LM (Left mid), CDM (Central defensive mid), CM (Central mid), CAM (Central offensive mid), RM (Right mid), LW (Left wing), RW (right wing), CF (Central forward), and ST (striker). This variable is separated into different dummy variables for each of the positions.

Contract - This is the remaining length of the players' contract in months at the time of the transfer. The remaining time of a contract is expected to play a big role in the fee paid for a player, as the closer the contract is to its end date the lower the fees will be, as a player is free to join any club when the contract expires. The longest remaining duration of the contract for the observations in the dataset is 64 months (5 years and 4 months), while the lowest is 4 months. 62 observations are missing information about the remaining contract length and will need to be dropped when analyzing with fee as a variable but can still be used when looking at the market value of the players.

con2 – The remaining time of the player contract in years.

TOT (Total) – The overall score of the stats for the player, given they play their position. This means that stats that don't affect a player's ability to play their role won't affect this variable. The TOT of a player is a score from 1-99 that represents their ability to play their position, and is calculated by multiplying all attributes with a weighted coefficient for the position they are assigned to (Murphy, 2019).

POT (Potential) – This is an estimate of the potential highest TOT-score the player is able to achieve. This variable has a score between TOT and 99 and is calculated the same way as the TOT-rating but with potential rating for the attributes.

POT2 – This variable calculates the difference between TOT and POT (POT – TOT), to see how big the improvement the player can achieve.

Rightfooted - Is a dummy for which of the players foots is the dominate foot, where 1 is right footed and 0 is left footed.

LeagueLeft – The league the club selling the player belongs to.

JoinedLeague – The league the club buying the player belongs to.

For both the leaving leagues and joining leagues I have made dummy variables for the top 9 leagues and a dummy for the rest. These leagues include Premier League (England), La Liga (Spain), Bundesliga (Germany), Serie A (Italy), Ligue 1 (France), Liga Bwin

(Portugal), Liga MX Clausura (Mexico), Süper Lig (Turkey), Premier Liga (Russia) as the top 9.

The variables based on the player stats from FIFA are all given a score from 1-99, where 99 is the best possible rating and 1 the worst.

acceleration – The rate of how fast a player running speed increases from 0 to top speed.

aggression – The rate of initiation and willingness to press the opponent. High aggressiveness will make a player more likely to take risky tackles and put more pressure on the opposition.

agility – How agile a player is when handling the ball.

attPos – The ability to find open space and move into good positions for goal scoring opportunities.

balance – The ability to keep upright and keep going. The balance stat will increase a player's ability to avoid falling or losing their direction when being tackled or in duels.

ballcontrol – A player's ability to keep possession of the ball.

Composure – How well a player can handle mental pressure and stress.

crossing – How accurate a player is when crossing the ball.

curve – The ability to curve the ball when shooting or passing the ball.

dribbling – The ability to carry the ball and move past opposing players with the ball.

finishing – The ability to score goals from within the penalty area, excluding headers.

freekick – The accuracy of freekicks

heading – The accuracy when heading the ball at goals or passing.

Interceptions – The ability to read and intercept the opposing team passes.

jumping – How high the player is able to jump.

longpass – Ability to make accurate long or arial passes.

longshots – Accuracy when performing shot from long distances.

penalties – Accuracy when taking penalties.

reaction – How quickly the player is able to react to what's happening around them.

short passing – Accuracy when performing short passes.

shotpower – The strength of a player's shots.

slidetackle – The ability to perform sliding tackles.

sprintspeed – The top running speed of a player.

stamina – How long a player is able to sustain high performance before getting tired.

standingtackle – Ability to perform standing tackles.

strength – The overall physical strength of a player

Vision – The awareness of teammates positioning.
volleys – The ability to perform volleys.
gkdive – The ability to make a save while diving as a goalkeeper.
gkhandling – Ability to hold the ball when making a save. A higher score means the goalie is less likely to give rebounds and more likely to be able to hold the ball.
gkkicking – The length and accuracy of goalkicks.
gkpos – The ability to correctly position themselves as a goalkeeper.
gkreflex – How well a goalkeeper can react to shots to save the ball.

3.2 Linear regression

Linear regression is a statistical tool used to analyze quantitative data by looking at the relationship between two or more variables. The point of linear regression is to find the best linear relationship between the dependent variable and the independent variables. By doing this we can see how the dependent variable is affected by the independent variables. The standard type of regression used is called OLS (Ordinary least squares). OLS works by trying to minimize the sum of the squared deviation of the observed value of the dependent variable and the predicted value of the dependent variable for every observation. The OLS method assumes a linear relationship between the dependent variable and the independent variables (Draper, 1981; Johansen, 1980).

The results from the linear regression model will give us a coefficient for each independent variable that indicates how much the dependent variable is affected by a change of one unit of the independent variable. The result will include a p-value for every independent variable, which measures the significance level of the variable. Typically, we use 3 levels of significance for the variables, 0.01, 0.05, and 0.1, where lower values indicate a stronger significance. Variables with p-values higher than 0.1 are considered not statistically significant and the observed relationship between the variables could reasonably occur by chance.

The equation for a linear regression can be written like this:

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 \dots \beta_k * x_k + \varepsilon$$

y – dependent variable

x_k – independent variable

β_0 – is the intercept (The value of y if x = 0)

β_k – is the slope for x_i (The change in y when x_i increase by 1)

ε – Is the error term (The difference between the observed value of y and the predicted value of y)

3.2.1 Collinearity and multicollinearity

Collinearity is when two or more independent variables are highly correlated, which can lead to misleading results for the regression model. When there are three or more variables that are correlated with each other we call it multicollinearity. When there is high correlation between multiple variables it will cause problems as it will make it difficult to estimate the effect of an independent variable on the dependent variable. Collinearity can increase the standard deviations making variables less significant, thus affecting the results in a negative way (Sen & Srivastava, 1997).

There are a total of 33 attributes linked to the skillset of a player, each of these covering a certain aspect of a player's expertise. But some of the attributes might be correlated with each other either positively or negatively. For instance, the variables sliding tackles and standing tackles, sprint speed and accelerations, or dribbling and ballcontrol are examples of attributes that might be correlated for some of the positions. In some of the regressions I've combined certain variables that have a high correlation between two similar attributes to avoid getting attributes that should be positively linked to a position getting a negative coefficient. But in most cases I have kept the variables as they are but made sure to make note of this when discussing the results from the regressions.

Heteroskedasticity

When the variance of errors for the variables is not constant for all observation, we get what we call heteroskedasticity. Heteroskedasticity can lead to biased estimates of the standard errors which can affect the significance of a variable.

In our case our dependent variable will be both the transfer fee and the market value at the time of the transfer. Since I will be using 2 dependent variables, I will need to run separate regression for both dependent variables and run tests for both multicollinearity and heteroskedasticity for every model.

3.2.2 Choosing variables

In order to ascertain the appropriate variables to consider when analyzing each position, an approach involving the use of variable averages will be adopted. Specifically, attributes with average scores surpassing 60 will be deemed suitable independent variables for the positions in question. Consequentially, the first regression model for each position will feature these attributes variables, in conjunction with age, age-squared (age2), and potential skill gain (POT2).

Furthermore, when analyzing the transfer fee, the variable con2 – denoting the remaining duration of a player's contract in years – will be incorporated. This approach is designed to provide a comprehensive analysis of the factors that affect a player's value.

3.2.2.1 Goalkeepers

For the goalkeeper it is expected to see the 5 GK attributes with high scores as well as the reaction stat. The highest averages for goalkeepers are gkreflex (81.3), gkdive (79.6), gkpos (77.3), gkhandling (77), reactions (74.2), gkkicking (73.6), strength (65.7), jumping (65.3). As expected, the goalkeepers have high averages on the GK-specific attributes but score low on most of the other attributes with only 6 stats above 70, and 8 above 60.

Reactions, strength, and jumping are the 3 attributes that are not part of the gk-specific attributes that have an average score higher than 60 and can be considered as significant variables for goalkeepers. Reactions affect how quickly a goalkeeper can react to shots or other scenarios that require the goalkeepers to act.

Strength is important for a goalkeeper when defending the goal from crosses and aerial passes into the box where the GK is expected to push through a crowded box and go into

duels with opposing players. Strength is also important for a goalkeeper to be able to block and hold the ball when the ball gets shot at a force that pushes the ball up to 200 km/t. Goalkeepers are often bigger than the average outfield player, as their reach will impact their ability to save shots farther away from the position of the keeper, and size might be correlated with strength of a player. The size of the goalkeeper will also affect their intimidating effect on opposing players, which will affect their composure as they close in on the GK in one-on-one situations.

The ability to jump will also benefit the goalkeeper when clearing crosses and passes.

Variable	Mean
gkreflex	81.26
gkdive	79.50
gkpos	77.28
gkhandling	77.02
reactions	74.20
gkkicking	73.62
strength	65.72
jumping	65.32

Table 3 Means of attributes for Goalkeepers

3.2.2.2 Centre-backs

For centre-backs the highest average scores for the attributes are, strength (80.9), standtackle (78.4), aggression (76.6), interception (76.4), slidetackle (76.3), jumping (76.1), heading (75.9), reactions (73.1), composure (71.1), stamina (70.9), sprintspeed (70.3), shortpass (69.8), ballcontrol (66.2), longpass (65.38), and acceleration (65.3) respectively. The remaining attributes are below 60 and can therefore be considered insignificant for centre-backs. Looking back at the expected attributes for centre-backs from chapter 2, I expected strength, balance, interception, standing tackles, and sliding tackles to be highly valued. Further I expected that acceleration, sprint speed, short passes, and long passes could also be important for centre-backs. Out of the expected variables only balance got an average lower than 60, while the rest of the variables should be important for centre-backs. Out of the 33 variables tied to a player's attributes 11 are

above 70 and 15 above 60. These attributes are tied to either defensive capabilities or general player capabilities. The average TOT score for the centre-backs in the dataset is 76.6, and the average POT2 is 5.8.

Variable	Mean
Strength	80.90
Standtackle	78.44
aggression	76.58
Interceptions	76.37
slidetackle	76.26
jumping	76.06
heading	75.87
reactions	73.09
Composure	71.05
stamina	70.87
sprintspeed	70.26
shortpass	69.77
ballcontrol	66.17
longpass	65.38
acceleration	65.29

Table 4Means of attributes for centre-backs

3.2.2.3 Fullbacks

Earlier, I expected attributes like slide and standing tackling, interception, agility, sprint speed, acceleration, stamina, long and short passes, dribbling, and ballcontrol to be important for fullbacks. The means of the attributes for fullbacks show us that the highest scored attributes are: sprintspeed (80), acceleration (79.8), stamina (79.7), crossing (75.2), agility(74.9), ballcontrol (74.5), standtackle (74.2), dribbling (74), balance (73.3), reactions (73.2), slidetackle (73.1), shortpass (73.1), interceptions (71.8), aggression (71.3), jumping (70.6), composure (70.2), strength (67.3), attPos (66.3), curve (66.3), shotpower (66.2), longpass (65.9), vision (64.8), heading (62.7). These attributes show signs of the fullbacks being more offensive oriented than the centre-backs, and that the fullbacks have a wider set of skills than the centre-backs. 16 of the 33 attributes are above 70, and 23 above 60. The fullback's profile consists of both defensive and offensive skills as well as general attributes. The 3 highest attributes tell us that a fullback's ability to run up and down the field on the flanks both when attacking and defending is of high importance. The ability to cross the ball into the box is the fourth highest attribute, followed by agility and ballcontrol which both contributes to how well a player can move

with the ball which can relate to acceleration and sprintspeed to make the fullbacks excellent players to create fast paced offensive plays on the flank to catch the opposing team off guard. The first defensive attribute comes in as seventh highest, which may indicate that the fullbacks are in a more offensive oriented position than expected. Surprisingly the stats for attacking position (att.Pos) has an average score of 66.3, which can be assumed to be an attribute more important for strikers and CAM's. The average TOT score for all fullbacks is 76 and the average POT2 is 5.7.

Variable	Mean
sprintspeed	80.00
acceleration	79.77
stamina	79.75
crossing	75.21
agility	74.95
ballcontrol	74.52
Standtackle	74.20
dribbling	73.99
balance	73.34
reactions	73.22
slidetackle	73.16
shortpass	73.13
Interceptions	71.82
aggression	71.34
jumping	70.57
Composure	70.28
strength	67.31
attPos	66.37
curve	66.35
shotpower	66.19
longpass	65.95
Vision	64.76
heading	62.73

Table 5 means of attributes for fullbacks

3.2.2.4 Central midfield

The midfield positions are the link between the backs and the attackers and are responsible for maintaining ball possession and delegating the ball within the team. The midfield is responsible for controlling the pace of the game, maintaining structure, and creating chances for their team. Midfielders are required to move up and down the pitch frequently and play the ball within the team to create opportunities. The midfield consists of defensive, central, and attacking midfielders.

Defensive midfielders are often strong and play to disrupt the opposing attack as a link between the midfield and the defenses of the team, as their positioning is deeper than the rest of the midfield.

The central midfielders support their team by moving around the ball and passing to create room and opportunities to move the ball forward towards the goal.

Attacking midfielders are more attack oriented than other midfielders. They are often called playmakers, as their task is to create direct goal scoring opportunities for the attacking players, but also possess attributes making them capable of scoring goals themselves.

As midfielders are required to pass the ball and move a lot, attributes like vision, short and long passes and stamina are key attributes for midfielders. But overall, the midfield need a wide set of attributes. Defensive midfielders require better intercepting, defensive abilities, and higher aggressiveness. Attacking midfielders will require more offensive oriented attributes like ball control, dribbling, finishing, shotpower, and freekick.

For the central midfielders I expected vision, passing skills, stamina and attributes that reflect the ability to hold and move with ball to be of highest importance. The highest averages for the attributes are: dribbling (78.2), ballcontrol (78.1), agility (77.8), acceleration (77.1), stamina (76.3), shortpass (76), sprintspeed (75.8), balance (75.3), composure (74), reaction (73.6), vision (73.6), shotpower (73.6), attPos (71.2), longpass (70.8), longshots (69.6), curve (69.2), crossing (69), finishing (66.3), strength (65.1), jumping (65), aggression (64.7), volleys (61.8), freekick (61.1), and penalties (60.8). 14 of the 33 attributes are above 70 and 24 are above 60.

The 3 highest averages are for attributes that reflect a player’s ability to move with the ball in their feet. Further we see attributes tied to passing, speed, and attacking the opposing team by setting up their teammates. The skillset of central midfielders is wide with generally high averages for most of the included attributes except the attributes that are

mainly for goalkeepers. There are only 4 attributes with less than 60 on average; standing tackles, interception, heading, and slidetackles of the attributes linked to outfield players.

Variable	Mean
dribbling	78.232
ballcontrol	78.107
agility	77.754
acceleration	77.163
stamina	76.273
shortpass	76.097
sprintspeed	75.824
balance	75.346
Composure	74.055
reactions	73.619
Vision	73.592
shotpower	73.574
attPos	71.277
longpass	70.799
longshots	69.592
curve	69.197
crossing	68.99
finishing	66.336
strength	65.128
jumping	65.062
aggression	64.692
volleys	61.768
freekick	61.18
penalties	60.772

Table 6 Mean of attributes for central midfield

3.2.2.5 Central defensive midfield

For the central midfielders it is expected to see similar stats as for other midfielders but with higher averages for defensive skills and lower for attacking skills. The highest averages is stamina (81), aggression (77.7), shortpass (77.2), standtackle (76.9), interception (76), strength (75.7), ballcontrol (75.1), longpass (74.5), reaction (74.3), composure (73.7), slidetackles (72.8), jumping (71.1), dribbling (71.3), shotpower (71.2), vision (70.3), agility (69.4), acceleration (67.7), sprintspeed (67.5), balance (67.2), heading (65.2), attPos (63.7), longshots (63.2), crossing (61.3). Of the 33 attributes 15 are above 70

and 23 are above 60. Curve (59.8), penalties (57.2), finishing (55.4), freekick (55.3), and volleys (51.6) are the attributes with an average score less than 60.

The averages for the central midfielders are as expected with a focus on attributes similar to the central midfield, but with higher values for defensive attributes like standtackle, aggressions, interception and strength, and lower scores for more offensive attributes like attPos, longshots, finishing and volleys.

Variable	Mean
stamina	81.012
aggression	77.695
shortpass	77.244
Standtackle	76.854
Interceptions	75.963
strength	75.683
ballcontrol	75.122
longpass	74.549
reactions	74.232
Composure	73.683
slidetackle	72.793
jumping	71.366
dribbling	71.317
shotpower	71.159
Vision	70.28
agility	69.366
acceleration	67.707
sprintspeed	67.549
balance	67.232
heading	65.232
attPos	63.671
longshots	63.244
crossing	61.329

Table 7 Means of attributes for central defensive midfielders

3.2.2.6 Central attacking midfield

For the attacking midfielders we can expect to see higher averages for attacking attributes and lower stats for defensive attributes than the central midfield. The highest averages are agility (80.1), dribbling (79), ballcontrol (79), acceleration (78.2), balance (77.2), sprintspeed (77), shortpass (76.5), vision (76.1), shotpower (74.8), composure (74.7),

stamina (74.3), curve (73.5), attPos (73.5), reaction (73), longshots (72.6), longpass (71.1), finishing (71), crossing (70.5), freekick (68), volleys (66.9), penalties (66.8), jumping (61.9), strength (61.1). Of the 33 attributes 18 are above 70 and 23 are above 60. The attributes below 60 are aggression (58.6), heading (55), standingtackle (47.6), interception (46.1), and slidetackle (41.4) of the outfield attributes.

Variable	Mean
agility	80.129
dribbling	79.043
ballcontrol	78.986
acceleration	78.157
balance	77.186
sprintspeed	76.7
shortpass	76.471
Vision	76.114
shotpower	74.757
Composure	74.686
stamina	74.271
curve	73.514
attPos	73.457
reactions	73.043
longshots	72.557
longpass	71.071
finishing	71.029
crossing	70.529
freekick	68.043
volleys	66.929
penalties	66.843
jumping	61.929
strength	61.114

Table 8 Means of attributes for Central attacking midfielders

3.2.2.7 Wings

For the wing positions, it is expected to see high stats for acceleration, running speed, ball control, dribbling, agility, balance, crossing and passing. The highest average stats for wingers is acceleration (86.2), agility (84.5), sprintspeed (84), dribbling (82.2), ballcontrol (80.6), balance (80), stamina (76.2), shotpower (75.8), attPos (75.4), composure (75.2), reactions (75.1), shortpass (74.7), vision (74.5), curve (73.7), finishing (73.3), crossing (72.5), longshots (72), volleys (68.4), longpass (66), penalties (65.5), jumping (63.7),

freekick (63.3), strength (61.9). 17 of the 33 attributes are above 70 and 23 are above 60. Five attributes are below 60. These are aggression (58), heading (54.4), standing tackle (37.5), interceptions (31.1), and slidetackle (33.6).

The wingers have 6 attributes above 80 and an average TOT of 78.2 which is the second highest after goalkeepers. The stats for wingers reflect their role in the team, with high stats for attributes that affect their ability to move quickly up and down the flanks and move into the penalty area with and without the ball. They have high stats for attributes for their offensive position, with decent passing and crossing skills, but also abilities that make them able to create goal scoring opportunities or scoring themselves.

Variable	Mean
acceleration	86.181
agility	84.482
sprintspeed	84.084
dribbling	82.169
ballcontrol	80.566
balance	80.048
stamina	76.193
shotpower	75.831
attPos	75.386
Composure	75.253
reactions	75.084
shortpass	74.735
Vision	74.542
curve	73.687
finishing	73.265
crossing	72.47
longshots	71.867
volleys	68.386
longpass	65.976
penalties	65.458
jumping	63.687
freekick	63.253
strength	61.855

Table 9 Means of attributes for wingers

3.2.2.8 Forwards

Forwards are the players expected to score most of the goals for the team and their attributes should reflect this, with high averages for stats that affect their ability to score goals and create goalscoring opportunities. Finishing, shooting power, sprinting speed, acceleration, attPos, ballcontrol are attributes that are expected to be high for forwards. The highest averages are sprintspeed (78), finishing (77.3), shotpower (77.2), attPos (77.1), acceleration (76.2), ballcontrol (75.6), strength (75.2), dribbling (74.5), jumping (73.2), reactions (73.5), composure (72.3), agility (72.3), stamina (72), heading (71.9), penalties (70.6), volleys (70.6), shortpass (69.8), longshots (69.4), balance (67.9), vision (65.9), curve (63.4), aggression (60.4). 16 of the 33 stats are above 70 and 22 are above 60.

The averages for the forwards reflect their role in their team as the goal scorers, with high averages for stats that affect their ability to score goals and getting into goalscoring opportunities.

Variable	Mean
sprintspeed	77.988
finishing	77.313
shotpower	77.242
attPos	77.131
acceleration	76.179
ballcontrol	75.639
strength	75.155
dribbling	74.54
jumping	73.615
reactions	73.54
Composure	72.325
agility	72.282
stamina	72.056
heading	71.94
penalties	70.607
volleys	70.556
shortpass	69.766
longshots	69.413
balance	67.944
Vision	65.861
curve	63.413
aggression	60.429

Table 10 Means for attributes of forwards

4.0 Results

The primary objective of this chapter is to present the results in a clear and concise manner, focusing on the key findings that are most relevant to the research objectives. The first part covers the averages for the various positions and briefly compares the differences between them. The second part of the chapter introduces the results from the regression models that analysis the different positions' impact on the market value and transfer fee. Lastly the results from the analysis of the attributes and their effect on transfer fee and market value are introduced. The results listed in this chapter will be the backbone of this paper and will be further discussed in chapter 5.

As the variables Fee3 and Mv3 are used instead of fee and MVattime, the results will show the transfer fee and market value in millions.

4.1 Averages

The average transfer fee for the players in the dataset is 19.4 million euros, while the market value is 17.3 million euros. The average age of the players is 23.7 years old, and the remaining contract at the time of the transfer is 2.158 years. For the TOT (Total score for their ability to play their position) stat, the average score is 76.49 with a potential (POT2) score of + 5.55 on average.

For the various positions on the field, we can see that goalkeepers have the lowest estimated market value with 12.6 million euros on average, while the second and third lowest is fullbacks and central defensive midfielders, with 13.4 million and 15.6 million respectively. The three highest valued positions are central forward, wings, and central midfielders, with 26.4, 23.6 and 20.2 million euros. Further we got wingbacks with 17.5, central attacking midfield with 17.4, striker with 17.3, and centre-backs with 16.7.

The average transfer fees for the various positions are slightly higher than the average market value. The highest fee is paid for central forwards with an average fee of 31.8. The second highest is wings with an average fee of 26.8, while centre-back is the third highest with 20.5 million euro. Strikers have an average fee of 19.7 million euros, fullbacks 16.8,

central attacking midfield 16.7, wingbacks 16.6, central defensive midfield 16.6, and the lowest average fee is for goalkeepers with 15.9.

The averages for the TOT-stat show that goalkeepers have the highest average total skill score for their position with an average of 79, while the second highest is for wings with an average of 78. Centre-backs, wingbacks, central defensive midfielders, central attacking midfielders, and central forwards all have an average of 77. Fullbacks, central mids and strikers have the lowest average with 76.

For the whole dataset the average age of the players is 24 years old. Goalkeepers are the oldest players in the dataset with an average age of 26. Centre-backs, CDM's, CAM's, CF's, and strikers have an average age of 24, and fullbacks, wingbacks, central mids, and wings have an average age of 23.

Based on the average we can see that there is a difference in the value for players in different positions. Goalkeepers have the highest average score but also the lowest market value and transfer fees, meaning the transfer market might put less value in goalkeepers than other positions. Central forwards are considerably higher valued than strikers, even though their roles are similar. It's worth noting that there are only 13 CFs in the dataset, but there are 239 strikers.

Averages	MV	Fee	TOT	Age
Total	17.3	19.4	76	24
GK	12.6	15.9	79	26
CB	16.7	20.5	77	24
FB	13.4	16.8	76	23
WB	17.5	16.6	77	23
CDM	15.6	16.6	77	24
CM	20.2	20.6	77	23
CAM	17.4	16.7	77	24
WING	23.6	26.8	78	23
CF	26.4	31.8	77	24
ST	17.3	19.7	75	24

Table 11 Averages for positions (MV and Fee in millions)

4.2 Result from regression analysis

4.2.1 Value differences between positions

Four models were created to look at the differences between the market value and transfer fee for the various positions. Two models use the grouped positions as independent variables while the other two use all the positions in the dataset. The regression models for this subchapter can be found in **Appendix A.** The coefficients for the models are in millions.

For the regressions model for transfer fee with the grouped positions the variables con2 ($\beta = 2.293$, SE = 0.366, $t = 6.26$, $p < 0.001$), POT2 ($\beta = 1.487$, SE = 0.236, $t = 6.29$, $p < 0.001$), midfield ($\beta = 6.844$, SE = 2.089, $t = 3.28$, $p = 0.001$), CB ($\beta = 6.72$, SE = 2.185, $t = 3.08$, $p = 0.002$), CDM ($\beta = 4.315$, SE = 2.409, $t = 1.79$, $p = 0.074$), CAM ($\beta = 4.814$, SE = 2.487, $t = 1.94$, $p = 0.053$), and atta ($\beta = 9.985$, SE = 2.093, $t = 4.77$, $p < 0.001$), wing ($\beta = 10.5$, SE = 2.438, $t = 4.31$, $p < 0.001$) are significant at the 0.01 level. Fullback ($\beta = 4.713$, SE = 2.269, $t = 2.08$, $p = 0.038$) is significant at the 0.05 level.

For the regression model for market value the variables TOT ($\beta = 3.2$, SE = 0.096, $t = 33.38$, $p < 0.001$), POT2 ($\beta = 1.247$, SE = 0.206, $t = 6.06$, $p < 0.001$), fullback ($\beta = 8.177$, SE = 1.944, $t = 4.21$, $p < 0.001$), midfield ($\beta = 11.494$, SE = 1.791, $t = 6.42$, $p < 0.001$), CB ($\beta = 8.933$, SE = 1.869, $t = 4.78$, $p < 0.001$), CDM ($\beta = 8.441$, SE = 2.064, $t = 4.09$, $p < 0.001$), CAM ($\beta = 9.618$, SE = 2.136, $t = 4.50$, $p < 0.001$), atta ($\beta = 12.996$, SE = 1.793, $t = 7.25$, $p < 0.001$), and wing ($\beta = 11.494$, SE = 2.09, $t = 5.50$, $p < 0.001$) are significant at the 0.01 level.

Position	Transfer fee	Market value
TOT	3.2***	3.2***
POT2	1.3***	1.3***
Con2	2.3***	-
CB	6.7***	8.9***
FB	4.7**	8.2***
Mid	6.8***	11.5***
CDM	4.3***	8.4***
CAM	4.8***	9.6***
Wing	10.5***	11.5***
Forward	9.9***	13.0***
R-squared	0.387	0.539

Table 12 Coefficients for positions (grouped)(numbers in millions)

In the model for transfer fee which includes all the positions con2 (β = 2.296, SE = 0.367, t = 6.26, p < 0.001), TOT (β = 2.621, SE = 0.112, t = 23.37, p < 0.001), POT2 (β = 1.422, SE = 0.238, t = 5.97, p < 0.001), CM (β = 7.794, SE = 2.189, t = 3.56, p < 0.001), LW (β = 12.826, SE = 2.818, t = 4.55, p < 0.001), CF (β = 18.336, SE = 4.115, t = 4.46, p < 0.001), ST (β = 9.401, SE = 2.099, t = 4.48, p < 0.001), CB (β = 6.599, SE = 2.18, t = 3.03, p = 0.003), RW (β = 7.759, SE = 2.845, t = 2.73, p = 0.006) are significant at the 0.01 level. RM (β = 5.707, SE = 2.605, t = 2.19, p = 0.029), LM (β = 5.204, SE = 2.49, t = 2.09, p = 0.037), and RB (β = 5.433, SE = 2.747, t = 1.98, p = 0.048) are significant at the 0.05 level. CAM (β = 4.691, SE = 2.482, t = 1.89, p = 0.059), LB (β = 4.755, SE = 2.56, t = 1.86, p = 0.064), and CDM (β = 4.192, SE = 2.404, t = 1.74, p = 0.081) are significant at the 0.1 level.

For the regressions model with all the positions that looks at the market value the variables TOT (β = 3.185, SE = 0.096, t = 33.21, p < 0.001), POT2 (β = 1.185, SE = 0.207, t = 5.72, p < 0.001), LB (β = 7.499, SE = 2.193, t = 3.42, p = 0.001), CB (β = 8.819, SE = 1.865, t = 4.73, p < 0.001), RB (β = 8.701, SE = 2.373, t = 3.67, p < 0.001), LM (β = 10.429, SE = 2.138, t = 4.88, p < 0.001), CDM (β = 8.324, SE = 2.059, t = 4.04, p < 0.001), CM (β = 12.472, SE = 1.875, t = 6.65, p < 0.001), CAM (β = 9.499, SE = 2.13, t = 4.46, p < 0.001), RM (β = 9.574, SE = 2.232, t = 4.29, p < 0.001), LW (β = 14.281, SE = 2.413, t = 5.92, p < 0.001), RW (β = 8.308, SE = 2.437, t = 3.41, p = 0.001), CF (β = 18.814, SE = 3.523, t = 5.34, p < 0.001), and ST (β = 12.552, SE = 1.798, t = 6.98, p < 0.001) are significant at the 0.01 level. RWB (β = 7.937, SE = 3.442, t = 2.31, p = 0.021) is significant at the 0.05 level. LWB (β = 8.746, SE = 2.373, t = 3.67, p = 0.057) is significant at the 0.1 level.

Position	Transfer fee	Market value
TOT	2.621***	3.185***
POT2	1.422***	1.185***
Con2	2.296***	-
CB	6.599***	8.819***
LB	4.755*	7.499***
RB	5.433**	8.701***
LWB	-	8.746*
RWB	-	7.939**
CDM	4.192*	8.324***
CM	7.794***	12.472***
LM	5.204**	10.429***
RM	5.707**	9.574***
CAM	4.691*	9.499***
LW	12.826***	14.281***
RW	7.759**	8.308***
CF	18.336***	18.814***
ST	9.401***	12.552***
R-squared	0.394	0.545

Table 13 Coefficients for positions

4.2.2 Overall

I conducted four linear regressions analysis to create four different models to examine the relationships between the dependent variables and the independent variables for the whole dataset. Models 1 & 2 were done with transfer fee as the dependent variable while models 3 & 4 were done with market value as dependent variable. The regression models for this subchapter can be found in **Appendix B: Total.** The coefficients for the models are in millions.

All the four models are statistically significant were as model 1 $F(37,1082) = 15.47$, $p < .001$, and accounted for 34.6% of the variance in transfer fees. Model 2 $F(22,1097)=26.08$, $p<.001$, explaining 34.3% of the variance in transfer fee. Model 3 $F(37,1076) = 25.46$, $p < .001$ and explained 46.7% of the variance in market value, and model 4 $F(22,1091) = 43.16$, $p < .0001$, with an R-squared value of .465. Models 1 & 2 included all 1120 observations, while models 3 & 4 consists of 1114 observations.

In model 1 con2 ($\beta = 2.603$, $SE = 0.385$, $t = 6.76$, $p < 0.001$), POT2 ($\beta = 0.886$, $SE = 0.244$, $t = 3.63$, $p < 0.001$), ballcontrol ($\beta = 0.625$, $SE = 0.16$, $t = 3.91$, $p < 0.001$), reactions ($\beta = 1.226$, $SE = 0.11$, $t = 11.11$, $p < 0.001$), and sprintspeed ($\beta = 0.261$, $SE = 0.093$, $t = 2.81$, $p = 0.005$) are significant at the 0.01 level. Composure ($\beta = 0.225$, $SE =$

0.091, t = 2.47, p = 0.014) is significant at the 0.05 level, and Interceptions (β = -0.115, SE = 0.069, t = -1.66, p = 0.097) is significant at the 0.1 level.

In model 2 con2 (β = 2.594, SE = 0.382, t = 6.79, p < 0.001), POT2 (β = 0.917, SE = 0.24, t = 3.83, p < 0.001), ballcontrol (β = 0.607, SE = 0.155, t = 3.91, p < 0.001), sprintspeed (β = 0.221, SE = 0.061, t = 3.60, p < 0.001), reactions (β = 1.228, SE = 0.107, t = 11.48, p < 0.001), and Composure (β = 0.238, SE = 0.089, t = 2.69, p = 0.007) are significant at the 0.01 level. Heading (β = 0.106, SE = 0.052, t = 2.05, p = 0.041) is significant at the 0.05 level. Gkpos (β = 0.197, SE = 0.109, t = 1.80, p = 0.072), and gkkicking (β = 0.193, SE = 0.109, t = 1.77, p = 0.077) are significant at the 0.1 level.

In model 3 ballcontrol (β = 0.523, SE = 0.143, t = 3.65, p < 0.001), reactions (β = 1.321, SE = 0.099, t = 13.36, p < 0.001), and composure (β = 0.401, SE = 0.082, t = 4.89, p < 0.001), strength (β = 0.163, SE = 0.057, t = 2.85, p = 0.004) ae significant at the 0.01 level. POT2 (β = 0.525, SE = 0.221, t = 2.37, p = 0.018), stamina (β = -0.152, SE = 0.065, t = -2.34, p = 0.019), and gkpos (β = 0.243, SE = 0.12, t = 2.03, p = 0.043) are significant at the 0.05 level. Acceleration (β = 0.187, SE = 0.099, t = 1.89, p = 0.059), and interceptions (β = -0.113, SE = 0.062, t = -1.81, p = 0.07) are significant at the 0.1 level.

In model 4 ballcontrol (β = 0.496, SE = 0.138, t = 3.59, p < 0.001), gkpos (β = 0.351, SE = 0.074, t = 4.75, p < 0.001), reactions (β = 1.353, SE = 0.095, t = 14.30, p < 0.001), Composure (β = 0.406, SE = 0.079, t = 5.14, p < 0.001), and strength (β = 0.17, SE = 0.055, t = 3.09, p = 0.002), stamina (β = -0.16, SE = 0.06, t = -2.65, p = 0.008) are significant at the 0.01 level. POT2 (β = 0.512, SE = 0.218, t = 2.35, p = 0.019), freekick (β = 0.078, SE = 0.037, t = 2.11, p = 0.035), dribbling (β = -0.214, SE = 0.103, t = -2.08, p = 0.038), and Interceptions (β = -0.118, SE = 0.057, t = -2.07, p = 0.038) are significant at the 0.05 level.

Variable	Model 1	Model 2	Model 3	Model 4
con2	2.603***	2.594***	-	-
POT2	0.886***	0.917***	0.525**	0.512**
ballcontrol	0.625***	0.607***	0.523***	0.496***
reactions	1.226***	1.228***	1.321***	1.353***
sprintspeed	0.261***	0.221***	-	-
Composure	0.225**	0.238***	0.401***	0.406***
Interceptions	-0.115*	-	-0.113*	-0.118*
Heading	-	0.106**	-	-
Gkpos	-	0.197*	0.243**	0.351***
gkkicking	-	0.193*	-	-
strength	-	-	0.163***	0.17***
stamina	-	-	-0.152**	-0.16***
Acceleration	-	-	0.187*	-
Freekick	-	-	-	-
dribbling	-	-	-	-0.214*
R-Squared	0.346	0.343	0.467	0.465

Table 14 Four models for whole dataset (coefficients in millions)

4.2.3 Goalkeepers

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for goalkeepers. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix C: GK.** The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 $F(22,27) = 3.22$, $p < .001$, and accounted for 72.4% of the variance in transfer fees. Model 2 $F(16,33)=5.2$, $p<.001$, explaining 71.6% of the variance in transfer fee. Model 3 $F(21,28) = 2.47$, $p < .001$ and explained 64.9% of the variance in market value, and model 4 $F(13,36) = 4.82$, $p < .0001$, with an R-squared value of .635. All the models consist of 50 observations.

The results indicate that several variables are statistically significant as predictors for both

transfer fee and market value.

In model 1 reactions (β = 1.342, SE = 0.425, t = 3.16, p = 0.004), and shotpower (β = -0.494, SE = 0.161, t = -3.07, p = 0.005) are significant at the 0.01 level. gkdive (β = 1.821, SE = 0.772, t = 2.36, p = 0.026), and strength (β = -0.504, SE = 0.218, t = -2.32, p = 0.028) are significant at the 0.05 level. agility (β = -0.368, SE = 0.211, t = -1.74, p = 0.093) is significant at the 0.1 level.

In model 2 reactions (β = 1.351, SE = 0.373, t = 3.62, p = 0.001), shotpower (β = -0.498, SE = 0.135, t = -3.69, p = 0.001), strength (β = -0.524, SE = 0.183, t = -2.87, p = 0.007), and gkdive (β = 1.915, SE = 0.659, t = 2.91, p = 0.007) are significant at the 0.01 level. agility (β = -0.412, SE = 0.157, t = -2.62, p = 0.013), and gkreflex (β = -1.216, SE = 0.576, t = -2.11, p = 0.042) are significant at the 0.05 level. Composure (β = -0.338, SE = 0.174, t = -1.94, p = 0.061) is significant at the 0.1 level.

In model 3 none of the variables are significant.

In model 4 gkpos (β = 1.867, SE = 0.726, t = 2.57, p = 0.014) is significant at the 0.05 level, and POT2 (β = 1.724, SE = 0.977, t = 1.76, p = 0.086) is significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
Reactions	1.342***	1.351***	-	-
Shotpower	-0.494***	-0.498***	-	-
Strength	-0.504**	-0.524***	-	-
Gkdive	1.821**	1.915***	-	-
Agility	-0.368*	-0.412**	-	-
Gkreflex	-	-1.216**	-	-
Composure	-	-0.338*	-	-
Gkpos	-	-	-	1.867**
POT2	-	-	-	1.724*
R-Squared	0.724	0.716	0.649	0.635

Table 15 four models for goalkeepers (coefficients in millions)

4.2.4 Centre-backs

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for centre-backs. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix D: CB).** The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 $F(16,146) = 10.028$, $p < .001$, and accounted for 55.6% of the variance in transfer fees. Model 2 $F(9,153)=15.909$, $p<.001$, explaining 53.7% of the variance in transfer fee. Model 3 $F(16,146) = 17.178$, $p < .001$ and explained 66.8% of the variance in market value, and model 4 $F(12,150) = 22.873$, $p < .0001$, with an R-squared value of .647. All the models consist of 163 observations.

The results indicate that several variables are statistically significant as predictors for both transfer fee and market value.

In model 1 con2 ($\beta = 2.661$, $SE = 0.91$, $t = 2.92$, $p = 0.004$), slidetackle ($\beta = 1.139$, $SE = 0.431$, $t = 2.64$, $p = 0.009$), and reactions ($\beta = 0.916$, $SE = 0.312$, $t = 2.94$, $p = 0.004$) had positive coefficients and were significant at the 0.01 level, while jumping ($\beta = 0.315$, $SE = 0.128$, $t = 2.45$, $p = 0.015$) was significant at the 0.05 level, and strength ($\beta = 0.413$, $SE = 0.225$, $t = 1.83$, $p = 0.069$) and acceleration ($\beta = -0.342$, $SE = 0.19$, $t = -1.8$, $p = 0.074$) being significant at the 0.1 level.

In model 2 reactions ($\beta = 0.93$, $SE = 0.278$, $t = 3.35$, $p = 0.001$), con2 ($\beta = 2.404$, $SE = 0.868$, $t = 2.77$, $p = 0.006$), jumping ($\beta = 0.322$, $SE = 0.12$, $t = 2.69$, $p = 0.008$) were significant at the 0.01 level. Acceleration ($\beta = -0.269$, $SE = 0.117$, $t = -2.29$, $p = 0.023$), ballcontrol ($\beta = 0.496$, $SE = 0.22$, $t = 2.26$, $p = 0.025$), strength ($\beta = 0.423$, $SE = 0.191$, $t = 2.21$, $p = 0.029$), and tackle ($\beta = 0.756$, $SE = 0.372$, $t = 2.03$, $p = 0.044$) were significant at the 0.05 level.

In model 3
slidetackle ($\beta = 1.407$, $SE = 0.339$, $t = 4.16$, $p = 0.000$), strength ($\beta = 0.661$, $SE = 0.175$, t

= 3.78, p = 0.000), reactions (β = 0.795, SE = 0.243, t = 3.27, p = 0.001), jumping (β = 0.349, SE = 0.101, t = 3.46, p = 0.001), are significant at the 0.01 level. Stamina (β = -0.302, SE = 0.133, t = -2.28, p = 0.024) was significant at the 0.05 level.

In model 4 reactions (β = 0.8, SE = 0.212, t = 3.77, p = 0.000), strength (β = 0.638, SE = 0.168, t = 3.80, p = 0.000), tackle (β = 0.976, SE = 0.283, t = 3.44, p = 0.001), jumping (β = 0.357, SE = 0.102, t = 3.50, p = 0.001) were significant at the 0.01 level. Ballcontrol (β = 0.446, SE = 0.176, t = 2.54, p = 0.012), stamina (β = -0.287, SE = 0.128, t = -2.24, p = 0.027) were significant at the 0.05 level.

Variable	Model 1	Model 2	Model 3	Model 4
Con2	2.661***	2.404***	-	-
Slidetackle	1.139***	-	1.407***	-
Reactions	0.916***	0.93***	0.795***	0.8***
Jumping	0.315**	0.322***	0.349***	0.357***
Strength	0.413*	0.423**	0.661***	0.638***
Acceleration	-0.342*	-0.269**	-	-
Tackle	-	0.756**	-	0.976***
Ballcontrol	-	0.496**	-	0.446**
Stamina	-	-	-0.302**	-0.287**
R-squared	0.556	0.537	0.668	0.647

Table 16 four models for centre-backs (coefficients in millions)

4.2.5 Fullbacks

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for fullbacks. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix E: FB).** The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 ($F(26,104) = 3.266$, $p < 0.001$), and accounted for 44.9% of the variance in transfer fees. Model 2 ($F(10, 120) = 8.33$, $p < 0.001$), explaining 41% of the variance in transfer fee. Model 3 ($F(23, 104) = 4.839$, $p < 0.001$), and explained 54.3% of the variance in market value, and model 4

(F(11, 116) = 11.822, p < 0.001), with an R-squared value of .529. Model 1 & 2 consist of 131 observations while model 3 & 4 include 128 observations.

In model 1 con2 (β = 2.889, SE = 0.753, t = 3.84, p < 0.01) is significant at the 0.01 level, while composure (β = 0.374, SE = 0.209, t = 1.78, p = 0.077), and stamina (β = -0.333, SE = 0.187, t = -1.77, p = 0.079) is significant at the 0.1 level.

In model 2 con2 (β = 2.749, SE = 0.707, t = 3.89, p < 0.001) is significant at the 0.01 level. Composure (β = 0.393, SE = 0.174, t = 2.26, p = 0.026) is significant at the 0.05 level. reactions (β = 0.423, SE = 0.244, t = 1.73, p = 0.085), and slidetackle (β = 0.463, SE = 0.275, t = 1.68, p = 0.095) is significant at the 0.1 level.

In model 3 Acceleration (β = 0.579, SE = 0.258, t = 2.24, p = 0.027), and reactions (β = 0.58, SE = 0.286, t = 2.02, p = 0.046) are significant at the 0.05 level.

In model 4 acceleration (β = 0.341, SE = 0.13, t = 2.63, p = 0.01) is significant at the 0.01 level, while reactions (β = 0.569, SE = 0.23, t = 2.48, p = 0.015) is significant at the 0.05 level, and dribbling (β = -0.408, SE = 0.241, t = -1.69, p = 0.094) is significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
Con2	2.889***	2.749***	-	-
Composure	0.374*	0.393**	-	-
Stamina	-0.333*	-	-	-
Reactions	-	0.423*	0.58**	0.569**
Slide tackle	-	0.463*	-	-
Acceleration	-	-	0.58**	0.341***
Dribbling	-	-	-	-0.408*
R-squared	0.449	0.41	0.543	0.529

Table 17 four models for fullbacks (coefficients in millions)

4.2.6 Central midfield

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for players in the central midfield. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players.

The regression models for this subchapter can be found in **Appendix F: CM.** The coefficients in the models are in millions.

All the four models are statistically significant, were as model 1 $F(28,260) = 6.555$, $p < .001$, and accounted for 41.4% of the variance in transfer fees. Model 2 $F(19,269)=9.805$, $p<.001$, explaining 40.9% of the variance in transfer fee. Model 3 $F(27,260) = 13.037$, $p < .001$ and explained 57.5% of the variance in market value, and model 4 $F(16,271) = 22.485$, $p < .0001$, with an R-squared value of .647. The models for transfer fee contain 289 observations while the models for market fee consist of 288 observations.

The results indicate that several variables are statistically significant as predictors for both transfer fee and market value.

In model 1 con2 ($\beta = 2.459$, $SE = 0.693$, $t = 3.55$, $p = 0.000$), POT2 ($\beta = 1.244$, $SE = 0.456$, $t = 2.73$, $p = 0.007$), and ballcontrol ($\beta = 1.142$, $SE = 0.436$, $t = 2.62$, $p = 0.009$) is significant at the 0.01 level. Sprintspeed ($\beta = 0.343$, $SE = 0.172$, $t = 1.99$, $p = 0.047$) is significant at the 0.05 level, and reactions ($\beta = 0.475$, $SE = 0.246$, $t = 1.93$, $p = 0.055$) and shotpower ($\beta = 0.35$, $SE = 0.184$, $t = 1.90$, $p = 0.059$) is significant at the 0.1 level.

In model 2 con2 ($\beta = 2.489$, $SE = 0.679$, $t = 3.67$, $p = 0.000$), sprintspeed ($\beta = 0.362$, $SE = 0.116$, $t = 3.13$, $p = 0.002$), POT2 ($\beta = 1.275$, $SE = 0.438$, $t = 2.91$, $p = 0.004$), and ballcontrol ($\beta = 1.119$, $SE = 0.413$, $t = 2.71$, $p = 0.007$) are significant at the 0.01 level, while shotpower ($\beta = 0.373$, $SE = 0.161$, $t = 2.31$, $p = 0.022$), and reactions ($\beta = 0.477$, $SE = 0.236$, $t = 2.02$, $p = 0.044$) are significant at the 0.05 level.

In model 3 reactions ($\beta = 0.831$, $SE = 0.207$, $t = 4.01$, $p = 0.000$), ballcontrol ($\beta = 1.218$, $SE = 0.372$, $t = 3.28$, $p = 0.001$), and POT2 ($\beta = 1.332$, $SE = 0.378$, $t = 3.52$, $p = 0.001$) is significant at the 0.01 level, while shortpass ($\beta = 0.73$, $SE = 0.299$, $t = 2.44$, $p = 0.015$), and stamina ($\beta = -0.226$, $SE = 0.106$, $t = -2.13$, $p = 0.034$) are significant at the 0.05 level.

In model 4 POT2 ($\beta = 1.268$, $SE = 0.355$, $t = 3.57$, $p = 0.000$), reactions ($\beta = 0.857$, $SE = 0.193$, $t = 4.43$, $p = 0.000$), ballcontrol ($\beta = 1.176$, $SE = 0.362$, $t = 3.25$, $p = 0.001$),

sprintspeed (β = 0.302, SE = 0.091, t = 3.32, p = 0.001) are significant at the 0.01 level. Shortpass (β = 0.723, SE = 0.285, t = 2.53, p = 0.012), and stamina (β = -0.206, SE = 0.098, t = -2.11, p = 0.036) are significant at the 0.05 level. Shotpower (β = 0.253, SE = 0.131, t = 1.92, p = 0.056), and longpass (β = -0.3, SE = 0.16, t = -1.88, p = 0.062) are significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
con2	2.459***	2.489***	-	-
POT2	1.244***	1.275**	1.332***	1.268***
ballcontrol	1.142***	1.119***	1.218***	1.176***
reactions	0.475*	0.477**	0.831***	0.857***
sprintspeed	0.343**	0.362***	-	0.302***
stamina	-	-	-0.226**	-0.206**
Shotpower	0.35*	0.373**	-	0.253*
Shortpass	-	-	0.73**	0.723**
Longpass	-	-	-	-0.3*
R-squared	0.414	0.409	0.575	0.647

Table 18 four models for central midfield (coefficients in millions)

4.2.7 CDM

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for players in the central defensive mid position. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix G: CDM.** The coefficients for the models are in millions.

All the four models are statistically significant were as model 1 $F(27,54) = 2.656$, $p < .001$, and accounted for 57% of the variance in transfer fees. Model 2 $F(17,64)=4.556$, $p<.001$, explaining 54.8% of the variance in transfer fee. Model 3 $F(26,55) = 3.694$, $p < .001$ and explained 63.6% of the variance in market value, and model 4 $F(13,68) = 8.318$, $p < .0001$, with an R-squared value of .614. All the models for CDM consist of 82 observations.

In model 1 con2 (β = 3.69, SE = 1.181, t = 3.12, p < 0.01) is significant at the 0.01 level, while dribbling (β = -0.965, SE = 0.466, t = -2.07, p < 0.05) is significant at the 0.05 level.

In model 2 con2 (β = 3.753, SE = 1.047, t = 3.58, p < 0.01) is significant at the 0.01 level. Dribbling: β = -0.966, SE = 0.418, t = -2.31, p < 0.05 is significant at the 0.05 level. Agility (β = -0.453, SE = 0.263, t = -1.72, p < 0.1), sprintspeed (β = 0.368, SE = 0.197, t = 1.87, p < 0.1), and balance (β = 0.316, SE = 0.188, t = 1.68, p < 0.1) are significant at the 0.1 level.

In model 3 standtackle (β = 1.607, SE = 0.786, t = 2.04, p < 0.05), and attPos (β = 0.457, SE = 0.222, t = 2.06, p < 0.05) are significant at the 0.05 level.

In model 4 standtackle (β = 1.427, SE = 0.384, t = 3.72, p < 0.001) is significant at the 0.01 level. Ballcontrol (β = 1.15, SE = 0.503, t = 2.29, p = 0.025), and shotpower (β = -0.358, SE = 0.167, t = -2.14, p = 0.036) are significant at the 0.05 level. dribbling (β = -0.716, SE = 0.407, t = -1.76, p = 0.083) is significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
con2	3.69***	3.753***	-	-
dribbling	-0.965**	-0.966**	-	-0.716*
agility	-	-0.453*	-	-
sprintspeed	-	0.368*	-	-
balance	-	0.316*	-	-
standtackle	-	-	1.607**	1.427***
attPos	-	-	0.457**	-
ballcontrol	-	-	-	1.15**
shotpower	-	-	-	-0.358**
R-squared	0.57	0.548	0.636	0.614

Table 19 four models for central defensive midfield (coefficients in millions)

4.2.8 CAM

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for players in the central attacking mid position. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value

for the players. The regression models for this subchapter can be found in **Appendix H:** CAM**.** The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 $F(27,42) = 2.625$, $p < .001$, and accounted for 62.8% of the variance in transfer fees. Model 2 $F(13,56)=6.216$, $p<.001$, explaining 59.1% of the variance in transfer fee. Model 3 $F(26,42) = 5.261$, $p < .001$ and explained 76.5% of the variance in market value, and model 4 $F(16,52) = 8.969$, $p < .0001$, with an R-squared value of .734. Models 1 and 2 consist of 70 observations and model 3 and 4 consists of 69 observations.

In model 1 strength ($\beta = -0.555$, SE = 0.238, $t = -2.33$, $p = 0.025$), and jumping ($\beta = 0.351$, SE = 0.164, $t = 2.14$, $p = 0.038$) are significant at the 0.05 level, while POT2 ($\beta = 1.49$, SE = 0.874, $t = 1.70$, $p = 0.096$) is significant at the 0.1 level.

In model 2 crossing ($\beta = 0.839$, SE = 0.253, $t = 3.31$, $p = 0.002$), strength ($\beta = -0.502$, SE = 0.156, $t = -3.23$, $p = 0.002$), composure ($\beta = 0.738$, SE = 0.234, $t = 3.15$, $p = 0.003$), jumping ($\beta = 0.39$, SE = 0.129, $t = 3.02$, $p = 0.004$), attPos ($\beta = 0.83$, SE = 0.292, $t = 2.84$, $p = 0.006$), and con2 ($\beta = 3.147$, SE = 1.175, $t = 2.68$, $p = 0.01$) are significant at the 0.01 level. Freekick ($\beta = -0.306$, SE = 0.145, $t = -2.12$, $p = 0.039$), and shotpower ($\beta = -0.591$, SE = 0.288, $t = -2.05$, $p = 0.045$) are significant at the 0.05 level.

In model 3 agility ($\beta = -1.344$, SE = 0.552, $t = -2.44$, $p = 0.019$), strength ($\beta = -0.624$, SE = 0.26, $t = -2.40$, $p = 0.021$), longShots ($\beta = 1.049$, SE = 0.454, $t = 2.31$, $p = 0.026$), and ShotPower ($\beta = -0.787$, SE = 0.379, $t = -2.08$, $p = 0.044$) are significant at the 0.05 level, while POT2 ($\beta = 1.853$, SE = 0.975, $t = 1.90$, $p = 0.064$), and penalties ($\beta = -0.441$, SE = 0.238, $t = -1.85$, $p = 0.071$) are significant at the 0.1 level.

In model 4 agility ($\beta = -1.759$, SE = 0.415, $t = -4.23$, $p = 0.000$), strength ($\beta = -0.615$, SE = 0.182, $t = -3.38$, $p = 0.001$), acceleration ($\beta = 1.121$, SE = 0.345, $t = 3.25$, $p = 0.002$) are significant at the 0.01 level. Curve ($\beta = 0.764$, SE = 0.304, $t = 2.51$, $p = 0.015$), ballcontrol ($\beta = 1.454$, SE = 0.607, $t = 2.40$, $p = 0.020$), finishing ($\beta = 0.946$, SE = 0.418, $t = 2.26$, $p = 0.028$), longshots ($\beta = 0.872$, SE = 0.392, $t = 2.22$, $p = 0.030$), shotpower ($\beta = -0.772$, SE = 0.35, $t = -2.21$, $p = 0.032$), and stamina ($\beta = 0.369$, SE = 0.173, $t = 2.14$, $p = 0.037$) are significant at the 0.05 level. shortpass ($\beta = 0.955$, SE = 0.497, $t = 1.92$, $p = 0.060$), balance

(β = 0.35, SE = 0.197, t = 1.78, p = 0.081), and freekick (β = -0.36, SE = 0.203, t = -1.77, p = 0.082) are significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
Strength	-0.555**	-0.502***	-0.624***	-0.615***
Jumping	0.351**	0.390***	-	-
POT2	1.490**	-	1.853**	-
Composure	-	0.738***	-	-
Crossing	-	0.839***	-	-
AttPos	-	0.830***	-	-
Con2	-	3.147***	-	-
FreeKick	-	-0.306**	-	-0.360**
ShotPower	-	-0.591**	-0.787**	-0.772**
Agility	-	-	-1.344**	-1.759***
LongShots	-	-	1.049**	0.872**
Penalties	-	-	-0.441**	-
Acceleration	-	-	-	1.121***
Curve	-	-	0.764**	-
BallControl	-	-	1.454**	-
Finishing	-	-	0.946**	-
Stamina	-	-	-	0.369**
ShortPass	-	-	-	0.955**
Balance	-	-	-	0.350**
R-squared	0.628	0.591	0.765	0.734

Table 20 four models for central attacking midfield (coefficients in millions)

4.2.9 Wings

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for players in the wing positions. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix I: Wing.** The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 $F(27,55) = 2.96$, $p < .001$, and accounted for 59.2% of the variance in transfer fees. Model 2 $F(12,70)=7.68$, $p<.001$, explaining 56.8% of the variance in transfer fee. Model 3 $F(26,56) = 5.65$, $p < .001$ and explained 72.4% of the variance in market value, and model 4 $F(19,63) = 8.33$, $p < .0001$,

with an R-squared value of .7153. All four models consist of 83 observations.

In model 1 age2 (β = 0.551, SE = 0.219, t = 2.52, p = 0.015) and age (β = -26.938, SE = 11.368, t = -2.37, p = 0.021) are significant at the 0.05 level.

In model 2 attPos (β = 1.582, SE = 0.537, t = 2.95, p = 0.004), and age2 (β = 0.494, SE = 0.181, t = 2.73, p = 0.008) are significant at the 0.01 level. Age (β = -24.338, SE = 9.285, t = -2.62, p = 0.011) is significant at the 0.05 level, and ballcontrol (β = 2.029, SE = 1.1, t = 1.84, p = 0.069) is significant at the 0.1 level.

In model 3 jumping (β = -0.453, SE = 0.177, t = -2.57, p = 0.013), Age2 (β = 0.438, SE = 0.175, t = 2.51, p = 0.015), Dribbling (β = 2.561, SE = 1.046, t = 2.45, p = 0.017), Age (β = -20.149, SE = 9.084, t = -2.22, p = 0.031), Volleys (β = 0.802, SE = 0.393, t = 2.04, p = 0.046) are significant at the 0.05 level.

In model 4 age2 (β = 0.481, SE = 0.162, t = 2.97, p = .004), dribbling (β = 2.401, SE = 0.848, t = 2.83, p = .006), age (β = -22.913, SE = 8.278, t = -2.77, p = .007), jumping (β = -0.427, SE = 0.159, t = -2.68, p = .009) are significant at the 0.01 level. Volleys (β = 0.768, SE = 0.35, t = 2.19, p = .032), penalties (β = 0.598, SE = 0.278, t = 2.15, p = .035), and attPos (β = 1.165, SE = 0.574, t = 2.03, p = .047) are significant at the 0.05 level, while acceleration (β = 1.367, SE = 0.73, t = 1.87, p = .066) is significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
Age	-26.938**	-24.338**	-20.149**	-22.913***
Age2	0.551**	0.494***	0.438**	0.481***
AttPos	-	1.582***	-	1.165**
Ballcontrol	-	2.029*	-	-
Jumping	-	-	-0.453**	-0.427***
Dribbling	-	-	2.561**	2.401***
Volleys	-	-	0.802**	0.768**
Penalties	-	-	-	0.598**
Acceleration	-	-	-	1.367*
R-squared	0.592	0.568	0.724	0.7153

Table 21four models for wings (coefficients in millions)

4.2.10 Forwards

I conducted four linear regressions analysis to look at the relations between the attributes and the market value and transfer fee for players in the forward positions. Models 1 and 2 examine the transfer fee while models 3 and 4 examine the market value for the players. The regression models for this subchapter can be found in **Appendix J: Forward.**

The coefficients in the models are in millions.

All the four models are statistically significant were as model 1 $F(26,225) = 5.604$, $p < .001$, and accounted for 0.393% of the variance in transfer fees. Model 2 $F(12,239)=11.873$, $p<.001$, explaining 37.3% of the variance in transfer fee. Model 3 $F(25,225) = 11.072$, $p < .001$ and explained 55.2% of the variance in market value, and model 4 $F(16,234) = 17.587$, $p < .0001$, with an R-squared value of .546. Models 1 and 2 consist of 252 observations and model 3 and 4 consists of 251 observations.

In model 1 sprintspeed ($\beta = 0.728$, $SE = 0.275$, $t = 2.64$, $p = 0.009$) is significant at the 0.01 level. POT2 ($\beta = 1.743$, $SE = 0.694$, $t = 2.51$, $p = 0.013$), heading ($\beta = 0.43$, $SE = 0.206$, $t = 2.08$, $p = 0.038$), con2 ($\beta = 2.097$, $SE = 1.038$, $t = 2.02$, $p = 0.045$) is significant at the 0.05 level, and shortpass ($\beta = -0.597$, $SE = 0.305$, $t = -1.96$, $p = 0.051$) is significant at the 0.1 level.

In model 2 ballcontrol ($\beta = 1.19$, $SE = 0.355$, $t = 3.35$, $p = 0.001$), reactions ($\beta = 0.962$, $SE = 0.262$, $t = 3.67$, $p < 0.001$), sprintspeed ($\beta = 0.521$, $SE = 0.168$, $t = 3.11$, $p = 0.002$) is significant at the 0.01 level. Heading ($\beta = 0.369$, $SE = 0.159$, $t = 2.32$, $p = 0.021$), POT2 ($\beta = 1.393$, $SE = 0.646$, $t = 2.16$, $p = 0.032$), con2 ($\beta = 2.052$, $SE = 0.973$, $t = 2.11$, $p = 0.036$), agility ($\beta = -0.34$, $SE = 0.162$, $t = -2.10$, $p = 0.037$) is significant at the 0.05 level. shortpass ($\beta = -0.548$, $SE = 0.287$, $t = -1.91$, $p = 0.058$) is significant at the 0.1 level.

In model 3 finishing ($\beta = 1.376$, $SE = 0.404$, $t = 3.41$, $p = 0.001$), POT2 ($\beta = 1.848$, $SE = 0.592$, $t = 3.12$, $p = 0.002$) is significant at the 0.01 level. Sprintspeed ($\beta = 0.558$, $SE = 0.232$, $t = 2.40$, $p = 0.017$), and agility ($\beta = -0.517$, $SE = 0.216$, $t = -2.39$, $p = 0.018$) is significant at the 0.05 level, and curve ($\beta = 0.23$, $SE = 0.129$, $t = 1.78$, $p = 0.076$) is significant at the 0.1 level.

In model 4 POT2 (β = 1.709, SE = 0.571, t = 2.99, p < 0.01), Sprintspeed (β = 0.503, SE = 0.148, t = 3.39, p < 0.01), finishing (β = 1.485, SE = 0.332, t = 4.47, p < 0.01), and agility (β = -0.585, SE = 0.178, t = -3.28, p < 0.01) is significant at the 0.01 level. Ballcontrol (β = 0.753, SE = 0.323, t = 2.34, p < 0.05), reactions (β = 0.56, SE = 0.247, t = 2.27, p < 0.05), and curve (β = 0.271, SE = 0.119, t = 2.27, p < 0.05) is significant at the 0.1 level.

Variable	Model 1	Model 2	Model 3	Model 4
Sprintspeed	0.728***	0.521***	0.558**	0.503***
POT2	1.743**	1.393**	1.848***	1.709***
Heading	0.430**	0.369**		
Con2	2.097**	2.052**		
Shortpass	-0.597*	-0.548*		
Ballcontrol		1.190***		0.753*
Reactions		0.962***		0.560*
Agility		-0.340**	-0.517**	-0.585***
Finishing			1.376***	1.485***
Curve			0.230*	0.271*
R-Squared	0.393	0.373	0.552	0.546

Table 22 four models for forwards (coefficients in millions)

5.0 Discussion

This chapter will consist of interpretation and discussion of the results from the analysis in chapter 4, to look at how the various attributes might affect the market value and transfer fee for players in the different positions on the field. As the regressions models use the variables Fee3 and Mv3 for transfer fee and market value the numbers for both values are in millions if not defined otherwise.

5.1 Overall

The regression models, averages, and correlation matrixes for the overall population of the dataset can be found in **Appendix B: Total**.

The results from the regression models for the various positions can help determine what attributes affect both the transfer fee and the market value of a player. This means that the result is not meant to find the most important attributes for the players to play their role, but to find what attributes that affect the pricing of players both positively and negatively. It is expected that the attributes that are important for the different roles will be the attributes determining the pricing of the player, but the results of the analysis find some attributes having a different impact on both transfer fee and market value than expected.

In most of the models the number of significant variables are low compared to the number of attributes included in the models. There could be multiple reasons for this. The number of observations for each position will affect how reliable the results of the regression will be. The amount of observations for some of the positions might be too low to be able to determine the relationship between the dependent variable and the independent variables (Andersen & Skovgaard, 2010). In a smaller population each observation will have a stronger impact on the result, and as there exists a lot of variation between different players and their attributes, the number of observations might be too low for some of the positions.

In the models looking at transfer fee, the remaining time of a player's contract was significant for all positions except for goalkeepers and wingers, with a coefficient between 2 and 3.7 million euros per year, which is substantially higher than the 0.55 – 0.8 million

euros per year, that Coates and Parshakov found (2022) in their research. As the players are free to sign with any club when the contract ends the contract length will affect the transfer fee. The closer a player is to the end of the contract their club will either offer a new contract or what to sell their player to avoid losing the player for free.

One of the variables that would be expected to be significant for both the transfer fee and the market value is the age of the player. In earlier works, age has been found as one of the most important variables when analyzing the value of football players (Carmichael et al., 1999; Dobson, Gerrard, & Dobson, 2000; Dobson, Gerrard, & Howe, 2000; Hofmann et al., 2021), but age is non-significant for all positions except for wingers in the regression models. It is safe to assume that age is a factor of significance for valuating football players, but because of the randomness of the age of the players in the dataset when looking at the transfer fee or the market value it cannot be used as a reliable estimator. By sorting the dataset by the transfer fee and looking at the age of the players, we can witness both young players and older players in any price group. By estimating the average age for both the top and bottom 20, 100, 200, etc. the average age is close to the average age for the whole population for every group. In football it's common to think younger players to be sold for more than older players as their potential for improvement is higher than older players who are more likely to have reached their potential. The variable POT2 is made as an indicator for the potential skill gain a player might be able to reach and have a high negative correlation with age (-0.87) and is significant in several of the models. This variable might be a better variable than age for estimating value, as the potential might be the most important aspect of the age of a player that will affect their value. Age is also the only non-linear variable, and the coefficient of the variable will not be representative of the relationship between age and the dependent variables. The potential for the player is significant in the models for strikers, CAM, CM, GK, and the models for the whole dataset.

One interesting thing to notice is the observed difference between the models for market value and transfer fee, as some positions get different attributes as significant indicators, and their coefficients sometimes have different weights to them based on what dependent variable we use. This might indicate that the attributes that are valued for people trying to estimate the market value are not the same as the attributes that gets valued when clubs negotiate the transfer fee.

For the regressions models for the various positions there is a trend for the models for market value to have higher R-Squared values than transfer fee, meaning the models for market value have a better fit than the models for transfer fee. This means that there is a higher percentage of the models that are not explained by the included variables for the models for transfer fee than for market value.

5.2 Positions

5.2.1 Value differences between positions

The analysis reveals notable variations in the market value and transfer fees of players across different positions. Certain positions exert a more significant influence on both the market value and transfer fees of players. The results discussed in this subchapter are mainly based on the models found in **Appendix A: Positions**.

In terms of transfer fees, wings hold the highest valuation coefficient at 10.5 million euros, followed closely by forwards at 9.9 million euros. Midfielders possess a coefficient of 6.8 million euros, while centre-backs rank at 6.7. Attacking midfielders have a coefficient of 4.8, fullbacks at 4.7, and defensive midfielders at 4.3. The coefficient values for each position are determined relative to goalkeepers, as presented in Table 12.

Regarding the estimation of players' market value, forwards have the highest coefficient of 13.0 million euros, followed by midfielders and wings at 11.5. Attacking midfielders receive a coefficient of 9.6, while centre-backs are valued at 8.9 million euros. Defensive midfielders hold a coefficient of 8.4, and full backs at 8.2. All these values are derived from the analysis presented in Table 12.

For the combined positions, forward, fullback, mid, and wing, we can see some variations between seemingly similar positions. The spread of the market value for the different fullback positions is low, with RB, and LWB being the highest with a coefficient of 8.7 while LB with the lowest with 7.5, resulting in a spread of only 1.2 million euros. For the transfer fee the highest position is RB with 5.4, and the lowest for RWB with only 1.0,

giving us a spread of 4.4 million euros. Both wingback positions scoring lower than the right and left backs.

Position	Transfer fee	Market value
Fullbacks	4.7	8.2
Right back	5.4	8.7
Left back	4.8	7.5
Left wing back	3.9	8.7
Right wing back	1	7.9

Table 23 Differences grouped positions for Fullbacks

For the midfield the central mid gets highest valued with a fee coefficient of 7.8, and market value coef. of 12.5. LM's get a coef. of 5.2 for transfer fee and 10.4 for market value, while RM's gets 5.7 for fee and 7.9 for market value.

Position	Transfer fee	Market value
Mid	6.8	11.5
LM	5.2	10.4
CM	7.8	12.5
RM	5.7	9.6

Table 24 Differences for grouped positions "Central midfield."

For the two wing positions we see that the left wings are higher valued than right wings. The left wings geta coef. of 12.8 for transfer fee and 14,3 for market value, while right wings get 7.8 for transfer fee and 8.3 for market value. As the left wing and right positions are the same position except for the side of the field they play on, it would be natural to assume that the results would be closer to each other. The coefficient for transfer fee has a difference of 5 million euro for the two positions, which is a significant difference as the average transfer fee for wings is 26.8 million euros. The estimated market value has a difference of 6 million euros.

Position	Transfer fee	Market value
Wing	10.5	11.5
LW	12.8	14.3
RW	7.8	8.3

Table 25 Differences between right and left wings and combined wings

Central forwards get a coef. of 18.3, while strikers get 9.4, resulting in a difference of 8.9 million euro for transfer fee. The average transfer fee for forwards is 20.3 (CF 31.8, ST 197). For market value CF's get 18.8, and ST's 12.6. One thing to notice is the number of observations for the CF positions, as there are only 13 CF's in the dataset, the results for the CF's are not reliable. Two of the players, João Félix, and Antoine Griezmann have an estimated market value and transfer fee a lot higher than the rest of the observations for this position and might skew the results.

Position	Transfer fee	Market value
Forward	9.9	13
CF	18.3	18.8
ST	9.4	12.6

Table 26 Differences between CF, ST and combined

5.2.2 Goalkeeper

The models for the goalkeepers (found in **Appendix C: GK,** and summarized in Table 3) have the highest R-squared scores with both models for transfer fee being above 0.7, and the models for market value above 0.6. For both models for transfer fee, reactions and diving skills are the only positive attributes with significant results, while for market value the attributes for GK-positioning and potential were the only of significance. Surprisingly the attributes strength and agility have a negative coefficient in model 1 and 2, while GK-reflexes have a negative coefficient in model 2. It would be natural to assume these three variables to have a positive effect on the transfer fee for goalkeepers. The models for the goalkeepers show signs of multicollinearity with a VIF (variation inflation factor) score for the variables gkpos and gkhandling higher than 10.

Variance inflation factor m1GK

	VIF	1/VIF
gkpos	12.863	.078
gkhandling	11.543	.087
gkdive	5.83	.172
gkreflex	5.378	.186
sprintspeed	3.627	.276
gkkicking	3.583	.279
shortpass	3.495	.286
reactions	3.174	.315
balance	2.942	.34
POT2	2.793	.358
longpass	2.642	.379
stamina	2.608	.383
jumping	2.59	.386
shotpower	2.463	.406
agility	2.375	.421
Composure	2.201	.454
Vision	2.116	.473
aggression	1.928	.519
strength	1.777	.563
con2	1.646	.608
Mean VIF	3.879	.

Table 27 VIF for model 1 for goalkeepers

5.2.3 Centre-backs

From the four models regarding the centre-backs (Found in **Appendix D: CB,** and summarized in Table 16**)**, we can see that some of the attributes included in the analysis are significant and can be used to estimate the transfer fee and market value of a centre-back. The ability to perform sliding tackles have the highest impact on both transfer fee and market value, and reactions, strength, ball control, and jumping are all positively affecting both transfer fee and market value as well. Acceleration has a negative impact on transfer fee, while stamina is negatively affecting the market value. The attributes aggression and interceptions were not of significance even though they are both two of the attributes with the highest average for centre-backs.

The fact that sliding tackles is the attribute with the highest coefficient for centre-back is surprising as slide-tackles is not likely to be important for a centre-back to succeed when playing their role for their team. A player rarely perform sliding tackles, and based on the stats from Premier League in the 22/23 season the 40 centre-backs with the most total slide tackles during this season in Premier League performed between 40 and 80 sliding tackles (StatsCentre, 2023). As the Premier League clubs play a total of 38 league matches in a season and we assume that every one of these centre-backs play every league match, we can conclude that the centre-backs perform 1-2 sliding tackles per match. Therefor it

would be strange to conclude the ability to perform sliding tackles to be the most valuable asset for a centre-back. One factor that might affect the results to overvalue sliding-tackle, is as mentioned in chapter 5, that these stats are based on a videogame, where it might be more common to perform sliding tackles than it is in real life football.

Reactions, jumping, strength and ball control are all attributes it would be common to assume to be important for a centre-back. The fact that acceleration and stamina got a negative coefficient does not necessarily mean its negative for a centre-back to have a quick acceleration or high stamina but could be a result of a tendency for players with higher acceleration and stamina to have lower scores for other more important attributes for a centre-back. For instance, stronger players often have lower acceleration than players with less strength, which can be seen by the slight negative correlation between the two variables. Stamina on the other hand have positive correlations with all attributes expect the attributes linked directly to goalkeepers, and therefore it's harder to see a direct reason for the negative effect on the value for centre-backs. The average stamina for a centre-back is 70.9 (Table 4Means of attributes for centre-backs) while for the whole population the average is 73.3, meaning the centre-backs have a lower than average stamina in general. Stamina is one of the attributes that will be of importance for every on-field player, and even though the average stamina for centre-backs is above 70, it might be of lesser importance than other attributes with similar averages. Based on the paper by Paraskevas, Smilios and Hadjicharalambous (2019), centre-backs are the players who cover the least distance of the out-field players, which makes sense as centre-backs aren't supposed to contribute as much as other positions in the offensive part of the game.

5.2.4 Fullback

For the fullbacks there were few significant variables for both the models for transfer fee and market value (found in **Appendix E: FB,** and summarized in Table 17). Fullbacks are in general versatile and require a broad set of attributes for playing their role and is one of the more diverse roles on the pitch, which is evident by the number of attributes with a rating higher than 60. This means the fullbacks will have a diverse skill-profile and there will be more variation between players for the same position, which makes it harder to create a model for fullbacks as there will be more random variation in the data.

For the transfer fee, the attributes composure, reactions, and slidetackle were of significance and with positive coefficients, while stamina is significant with a negative effect on the fee. In the models for market value reactions and acceleration are the only significant attributes with positive coefficient and dribbling with a negative. With so few variables being significant compared to the amount of high averages for the attribute ratings the four models for the fullbacks can't be trusted as indicators of the transfer fee and market value for fullbacks, but looking at the result we can take note of some of the finds.

Surprisingly, stamina has a negative impact with - 333 000 euros. Stamina is the third highest average for fullbacks and is expected to be important for both side backs and wing backs, as they cover a lot of ground in a match and need to be able to run up and down the flanks during the whole match. Dribbling does also end up with a negative impact on the market value in model 4. Dribbling is not a crucial skill for a fullback, and it makes sense that dribbling ends up with a negative coefficient.

Slidetackle shows up as a positive factor as it did with centre-backs. As discussed earlier it is not an attribute we expect to be of importance as defenders perform at most 1-2 slide tackles on average per match.

Reactions is an attribute that in general would be assumed to be important for all positions as it is important for players to be able to react and make fast decisions in various scenarios all over the field. Reaction is the significant attribute with the highest coefficient for fullbacks.

5.2.5 Central midfield

For the central midfield the attribute ballcontrol is highly significant for all four models (found in **Appendix F: CM,** and summarized in Table 18) with a high coefficient of more than 1.1 million euros. Ball-control is important for midfielders as their role requires them to carry the ball and delegate the ball to the rest of the team, so the ability to control the ball as they move around the pitch is crucial for a good midfielder. Reaction is the second highest valued attribute and as mentioned earlier an attribute that is important for players in every position. Sprintspeed is significant in three of the models and is in general beneficial for all out-field players including the central midfield. The central midfield needs to move and act quickly in both defensive and offensive duties, to press the opponents, close down space, and regain the possession of the ball, as well as to contribute

to counter-attacking, and to quickly advance up the field and break through the defensive line of the opponents. Yet again we see stamina with a negative coefficient for the central midfield in the models for market value, which is even more surprising as the midfielders are the position who covers the most distance during a match in general. Based on the analysis done by Poli, Ravenel and Besson (Poli, 2021) where they tracked running distance of players for 7 855 matches, midfielders run 10.611 km per match on average, which is the highest of all positions. Stamina is important for a player to be able to keep performing at a high level during the whole match and might be one of the most important attributes for a midfielder. Therefor seeing stamina with a negative coefficient would seem strange and looking at the correlation between the attributes for central midfielders the only attribute with a negative correlation is acceleration which is non-significant with a p-value of 0.78 in model 1 and 0.382 in model 3. Stamina have an average rating of 73 for the total population and is an attribute that should be fairly high for all professional football players, and it might be sufficient with an average stamina and therefore having higher stamina is not valued.

5.2.6 CDM

The four models (found in **Appendix G: CDM,** and summarized in Table 19) for defensive midfielders have few significant variables but still moderate overall fit. Analyzing the coefficients in the regressions results for the non-significant variables can be misleading but can still give us insight into what drives the market value and transfer fee of CDM's. Ball control and standing tackle are the highest valued of the attributes, even though standing tackle is only significant in the two models for market value, and ballcontrol is only significant in model 4.

5.2.7 CAM

For the central attacking midfield, the four models (found in **Appendix H: CAM,** and summarized in Table 20) have a varied profile of significant variables, and there is a big difference between the models for transfer fee and market value in what variables end up being significant. Crossing, attack-positioning, composure, and jumping have a positive coefficient for the transfer fee, while strength, freekick and shoot power have negative

coefficient. For market value, long shots, acceleration, curve, ballcontrol, finishing, short pass, and balance are positive, while strength, freekick, agility, and penalties are negative.

Strength is the only attribute which is significant in all four of the models and has a coefficient between -0.5 and -0.6. For the transfer fee, the attributes crossing, composure, and attPos are the highest valued. For market value ballcontrol, finishing, acceleration, long shots, and short passes are the highest valued attributes. Agility has a coefficient of -1.3 and -1.7 in model 3 & 4. Agility has the highest average score for the CAM's, and seeing agility with such a big negative impact on the value is surprising as agility would be assumed as one of the more important attributes for CAM's, as they are required to move with and without the ball in tight spaces between players to penetrate the defenses of the opposition. Ballcontrol is the attribute with the highest value contribution of the attributes and is often linked to the agility of the player, as the two attributes create a synergizing effect. The correlation between ballcontrol and agility is 0.3612 which isn't that high, and as the correlation between is positive the two variables should affect each other positively.

5.2.8 Wings

In the two models for transfer fee, only attack-positioning and ballcontrol were of significance. For the two models for market value attack-positioning, jumping, dribbling, volleys, penalties, and acceleration are of significance (models can be found in **Appendix I: Wing** and summarized in Table 21). The significant attributes for wings are as expected with attributes that are important for wingers with high coefficients, like dribbling, ballcontrol, acceleration, and attack-positioning. Dribbling has a high coefficient of 2.4-2.5 in models 3 and 4, making it highly valuable for wingers. The only significant attribute with a negative impact on the value is jumping, which has a low average score of 63. Jumping is not of importance for wingers as they are more likely to be the player who crosses the ball into the box in attacking play. Penalties and volleys were both significant even though their averages for wingers are at the lower end, as both attributes have averages below 70 and are most likely not of importance for a winger's ability to play their role. Overall, the four models for wingers don't find anything unexpected.

5.2.9 Forwards

The models discussed in this subchapter can be found in **Appendix J: Forward** and Table 22 summarizes the models.

For the forwards the three attributes finishing, ballcontrol, and reactions are the highest valued of the significant attributes. Agility and shortpass show a negative effect on the value for forwards. The positive attributes show signs that attributes that are linked to a forward's ability to score goals are the strongest drivers for their value. Surprisingly agility is negatively affecting the value in models 2, 3, and 4. As agility is based on a player's ability to change directions and move with and without the ball in an agile manner, it would seem like an attribute valued for forwards. Agility has an average rating of 72 meaning it is the 12th highest attribute for forwards, making it a mid-tier attribute for forwards. Shortpass is negatively affecting the transfer fee by 0.5 million euro per integer. As the forwards main role is to score goals and be the target man for the rest of the team during attacks on the opposition the ability to pass the ball is not important for forwards.

5.3 Limitations and weaknesses

As part of the discussion, it is important to understand and look at the limitations and shortcomings of the research. It is crucial to look at the paper in a critical way to reflect over aspects that might affect how reliable and valid the results are.

5.3.1 Inclusion of more variables

The purpose of this paper is to look at the individual skillset of the players of the different positions and how they affect both the market value and the transfer fee of the players. But in the world of football there are more factors that might influence the value of players. To create better models for the analysis, an inclusion of more variables could explain some of the variations in transfer fee and market value could improve results. The only variables that are not tied to player attributes are age and contract length. Historical stats for the player such as playtime, goals per minute played, injury history, etc. could be important factors to include. Factors surrounding areas not directly connected to their abilities as football players, could also impact the pricing of players. For instance, how "famous" a

player is might increase their value, as having popular players on the team can have a positive impact on fan base, and create increased revenue through tickets, and merchandise sold.

5.3.2 Trusting the data

There are several factors regarding the data used in this study that might affect its reliability.

5.3.2.1 Market value

As mentioned in chapter 3, the data used for this research is gathered from crowd sourced data, that relies on data contributed from people reporting their estimates. The market value of a player is determined by analyzing the contributions and discussion between registered users on transfermarkt.com, where anyone can join and influence the market value of a player. This opens for biased and inaccurate opinions affecting the estimates for the market value. Overall, the efforts to analyze the accuracy and reliability of crowdsourced data have found it to be a reliable source of data (Coates & Parshakov, 2022; Herm et al., 2014; Prockl & Frick, 2018), and even outperforming professional predictions of matches, but we should still be cautious of trusting crowd-sourced data. The average market value for the 1120 observations is 11% lower than the transfer fees of the observations, which corresponds with the findings of Coates and Parshakov (2022) that crowd-sourced metrics tends to underestimate the value of players.

"Transfermarkt does not use an algorithm but determines the market values based on the discussions in the market value analysis. As a registered user, you can discuss your arguments about individual players with other users and provide our market value admins with important input for the upcoming update."(Busch, 2022)

5.3.2.2 Transfer fee

The transfer fee on the other hand can sometimes be complicated as clubs rarely share all the details regarding the amount of money involved in trading players and the reported transfer fee is based on various sources of information. Often there are hidden clauses that

can affect the transfer fee based on their performance, future transfers, or other more obscure clauses (Brophy, 2023). The sell-on clause means that the selling club will get a percentage of a future transfer for the player, which can affect the initial transfer fee, and the overall transfer fee for the player. If the two negotiating clubs agree on a 10% sell-on clause and the player is sold from the buying club the next season for 100 million euros, the initial selling club will get 10 million from this transfer (Colantuoni & Devlies, 2016). Performance-based clauses are tied to certain performance-based criterions for the player. For instance, a striker might have a clause that adds 5 million euros for every 10^{th} goal he scores in a season for the buying club. This means that the initial transfer fee of a player is not always representative of the total transfer fee for the player, and clauses might reduce the initial transfer fee a club is willing to sell their player for, in hopes of future payments higher than the reduced initial transfer fee (Ebejer). This means that the transfer fees for the players might not be totally accurate, resulting in skewed results when using the variables to analyze the transfer fees.

5.3.2.3 The attributes

The selection of variables shown in Figure 2 Attributes from fifaindex.com is based on the attribute system made for the FIFA games by EA to reflect a player's skills in real life to determine how the player behaves when controlled by the game or when the person playing the game is controlling the player. The variables are assumed to be a representative reflection for the real-life version of the player but as these variables are made to fit into the game and not made purely as reflection of the real-life player skillset some variables might be affected by factors to make the game balanced and playable instead of getting the most accurate stats for each player. Some attributes are specifically affecting how the players are to control in the game but might not be easily interpreted too real-life.

As EA haven't defined explicitly what the different attributes affect the players, we have to base our assumptions on logic and other definitions of the various attributes. The closest definition of the attributes released by EA, is a blog post released by EA in 2012 (EA, 2012). Some of the attributes are self-explanatory, such as sprint speed, stamina or shooting power, but other are part of a more complex system created to determine how the players "feels" to control in-game. There are also several attributes that affect each other and create synergizing relationships between them. For instance, if we look at the

definitions from the 2012 blog post the dribbling capabilities of the player is affected by the dribbling stat, agility, ball control, reactions, and balance. Since how the players "feels" to play is important when designing a videogame, it is understandable that there are multiple attributes that will fine-tune the experience of controlling each player, but for the purpose of analyzing real-life football it would be better with more specific variables looking at the abilities of the players.

5.3.2.4 Defensive awareness

For collecting data for the attributes for the player I relied on the site fifaindex.com and their data. But later, I found out that they were missing data for one attribute called defensive awareness. This attribute reflects a player's awareness of players from the opposition when defending and their ability to position themselves based on what is happening around them. Defensive awareness is an important attribute for players in defensive positions, and missing this attribute could make the analysis for CB's, FB's and CDM's less accurate.

5.3.3 Selection of observations

The total dataset consists of 1120 observations, which can be considered enough to result in statistically significant findings. As the dataset is separated into different positions, the number of observations for each position becomes smaller than optimal. As there are a total of 33 attributional variables, and a lot of variations between the players in each position, it would be beneficial to increase the number of observations for most of the positions in the dataset. By increasing the number of observations, we would have been able to include the positions that were combined with others because of the lack observations. Frank E. Harrell's recommends having 10-20 observations for every variable included in the analysis (Harrell, 2015). By including more observations, it would also create opportunities to group observations by their transfer fees, which could create better results as some observations might skew the result. The 10 most expensive players in the dataset range from 180 – 87 million euros, where Kylian Mbappé was sold for 9 times the average transfer fee of 19 million euros. 755 out of the 1120 observations were sold for less than the average transfer fee, while 365 were sold for more. The difference between

the most expensive observations and the rest of the dataset could be caused by minor differences in their rating for attributes.

5.4 Conclusion

The research presented in this paper analyzed how the attributes of football players affect their market value and their transfer fees. The aim of the study was to investigate an area surrounding the estimation of value for football players that have been overlooked by earlier work. The result from the analysis will contribute to the already existing literature on the topic and might inspire further research on the topic. For further research it is important to evaluate the limitations and weaknesses of the study to understand how to approach the topic in a way that might create more precise results.

In conclusion, this master thesis has analyzed the attributes influencing the value of players in the football industry. The analysis found different significant variables for the different positions and found the contract length of players to be significant for the transfer fee. Interestingly, age did not prove to be a significant factor, but the potential of the players had a significant impact on transfers.

Overall, the study finds the attributes of a player to be a good estimator for valuating players and highlights some attributes for each position to be influencing the market value and transfer fee. But as there are some aspects of the research that might influence the reliability of the results, such as the number of observations for the various positions and fact that the data used for the attributes is collected from a videogame designed to reflect the ability of the real-life players, but also to be balanced and playable for the person playing the game, these aspects raise some concerns regarding the generalizability of the findings to real-world player valuations and transfer fees.

Additionally, using data from a video game introduces potential biases and deviations from reality. While the game aims to reflect real-life player abilities, it is important to recognize that the game's design considerations may not perfectly align with the intricacies of the actual player market. The attributes measured in the game may not fully capture the nuanced qualities that professional scouts, coaches, and managers assess when valuing players in the real world.

To enhance the reliability of future studies in this area, it would be beneficial to incorporate larger and more diverse datasets that encompass a wider range of players and positions.

Ultimately, while the study offers valuable insights into the potential influence of player attributes on market value and transfer fees, it is essential to interpret the findings with caution due to the limitations inherent in the research design and data source. Further research using more robust methodologies and data collection methods is necessary to establish stronger correlations between player attributes and their impact on the market.

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Table of figures

Appendix A: Positions

STATA commands for differences between positions
// create table with averages for all positions
tabstat Mv3 Fee3 TOT age, by(Position2) statistics(mean)
// reg model 1
reg Fee3 age age2 con2 TOT POT2 fullback midfield CB CDM CAM atta wing
// store model 1
est store m1pos
// reg model 2
reg Mv3 age age2 TOT POT2 fullback midfield CB CDM CAM atta wing
// store model 2
est store m2pos
// reg model 3
reg Fee3 age age2 con2 TOT POT2 LB CB RB LWB RWB LM CDM CM CAM RM LW RW CF ST
//store model 3
est store m3pos
//reg model 4
reg Mv3 age age2 TOT POT2 LB CB RB LWB RWB LM CDM CM CAM RM LW RW CF ST
//store model 4
est store m4pos
// create table for all four models
estout m1pos m2pos m3pos m4pos, cells(b(star fmt(3))) legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))

Table means Position2

	Mv3	Fee3	TOT	age
CAM	17.44	16.717	76.586	23.8
CB	16.696	20.473	76.595	23.626
CDM	15.628	16.587	76.805	24.195
CF	26.462	31.831	76.538	24.077
CM	20.174	20.656	76.581	23.716
GK	12.634	15.945	79.080	26.08
LB	12.968	16.427	75.828	23.453
LM	16.612	17.497	75.933	22.827
LW	26	28.456	77.952	23.262
LWB	20	21.071	77.143	22.143
RB	14.132	17.355	75.826	23.283
RM	14.802	16.752	75.373	22.678
RW	21.244	25.049	78.390	23.171
RWB	16.329	14.439	76.643	23.143
ST	17.341	19.651	75.824	24.029

Reg fee positions

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	.459	1.761	0.26	.794	-2.995	3.914	
age2	-.016	.033	-0.49	.627	-.082	.049	
con2	2.293	.366	6.26	0	1.574	3.012	***
TOT	2.633	.112	23.51	0	2.413	2.853	***

POT2	1.487	.236	6.29	0	1.023	1.951	***
fullback	4.713	2.269	2.08	.038	.262	9.164	**
midfield	6.844	2.089	3.28	.001	2.744	10.943	***
CB	6.72	2.185	3.08	.002	2.433	11.007	***
CDM	4.315	2.409	1.79	.074	-.412	9.041	*
CAM	4.814	2.487	1.94	.053	-.066	9.695	*
atta	9.985	2.093	4.77	0	5.879	14.091	***
wing	10.5	2.438	4.31	0	5.716	15.284	***
Constant	-203.752	26.531	-7.68	0	-255.809	-151.695	***

Mean dependent var	19.374	SD dependent var	16.773
R-squared	0.387	Number of obs	1120
F-test	58.236	Prob > F	0.000
Akaike crit. (AIC)	8971.674	Bayesian crit. (BIC)	9036.948

*** p<.01, ** p<.05, * p<.1*

Reg market value position

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-.079	1.554	-0.05	.959	-3.129	2.971	
age2	-.007	.029	-0.24	.813	-.065	.051	
TOT	3.2	.096	33.38	0	3.012	3.388	***
POT2	1.247	.206	6.06	0	.843	1.651	***
fullback	8.177	1.944	4.21	0	4.362	11.991	***
midfield	11.494	1.791	6.42	0	7.98	15.009	***
CB	8.933	1.869	4.78	0	5.265	12.601	***
CDM	8.441	2.064	4.09	0	4.391	12.491	***
CAM	9.618	2.136	4.50	0	5.427	13.809	***
atta	12.996	1.793	7.25	0	9.477	16.516	***
wing	11.494	2.09	5.50	0	7.394	15.594	***
Constant	-238.78	23.452	-10.18	0	-284.797	-192.764	***

Mean dependent var	17.333	SD dependent var	16.585
R-squared	0.539	Number of obs	1114
F-test	117.311	Prob > F	0.000
Akaike crit. (AIC)	8578.210	Bayesian crit. (BIC)	8638.398

*** p<.01, ** p<.05, * p<.1*

Reg fee positions

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	.296	1.764	0.17	.867	-3.166	3.757	
age2	-.015	.033	-0.44	.662	-.08	.051	
con2	2.296	.367	6.26	0	1.576	3.016	***
TOT	2.621	.112	23.37	0	2.401	2.841	***
POT2	1.422	.238	5.97	0	.955	1.889	***
LB	4.755	2.56	1.86	.064	-.268	9.779	*
CB	6.599	2.18	3.03	.003	2.321	10.877	***
RB	5.433	2.747	1.98	.048	.043	10.822	**
LWB	3.949	5.36	0.74	.461	-6.569	14.466	
RWB	1.003	4.019	0.25	.803	-6.882	8.888	
LM	5.204	2.49	2.09	.037	.318	10.091	**
CDM	4.192	2.404	1.74	.081	-.524	8.909	*
CM	7.794	2.189	3.56	0	3.499	12.089	***
CAM	4.691	2.482	1.89	.059	-.179	9.561	*
RM	5.707	2.605	2.19	.029	.595	10.82	**
LW	12.826	2.818	4.55	0	7.296	18.355	***
RW	7.759	2.845	2.73	.006	2.177	13.342	***
CF	18.336	4.115	4.46	0	10.262	26.41	***
ST	9.401	2.099	4.48	0	5.282	13.52	***

Constant	-199.373	26.638	-7.48	0	-251.64	-147.107	***

Mean dependent var	19.374	SD dependent var	16.773
R-squared	0.394	Number of obs	1120
F-test	37.601	Prob > F	0.000
Akaike crit. (AIC)	8973.258	Bayesian crit. (BIC)	9073.680

*** *p<.01, ** p<.05, * p<.1*

reg market value position

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-.237	1.556	-0.15	.879	-3.29	2.815	
age2	-.005	.029	-0.18	.857	-.063	.052	
TOT	3.185	.096	33.21	0	2.997	3.373	***
POT2	1.185	.207	5.72	0	.778	1.591	***
LB	7.499	2.193	3.42	.001	3.196	11.801	***
CB	8.819	1.865	4.73	0	5.16	12.477	***
RB	8.701	2.373	3.67	0	4.045	13.357	***
LWB	8.746	4.59	1.91	.057	-.26	17.752	*
RWB	7.937	3.442	2.31	.021	1.184	14.69	**
LM	10.429	2.138	4.88	0	6.233	14.625	***
CDM	8.324	2.059	4.04	0	4.285	12.363	***
CM	12.472	1.875	6.65	0	8.794	16.151	***
CAM	9.499	2.13	4.46	0	5.319	13.679	***
RM	9.574	2.232	4.29	0	5.195	13.953	***
LW	14.281	2.413	5.92	0	9.546	19.015	***
RW	8.308	2.437	3.41	.001	3.526	13.09	***
CF	18.814	3.523	5.34	0	11.902	25.725	***
ST	12.552	1.798	6.98	0	9.024	16.081	***
Constant	-234.377	23.515	-9.97	0	-280.518	-188.237	***

Mean dependent var	17.333	SD dependent var	16.585
R-squared	0.545	Number of obs	1114
F-test	72.840	Prob > F	0.000
Akaike crit. (AIC)	8578.755	Bayesian crit. (BIC)	8674.054

*** *p<.01, ** p<.05, * p<.1*

	m1pos	m2pos	m3pos	m4pos
age	0.459	-0.079	0.296	-0.237
age2	-0.016	-0.007	-0.015	-0.005
con2	2.293***		2.296***	
TOT	2.633***	3.200***	2.621***	3.185***
POT2	1.487***	1.247***	1.422***	1.185***
fullback	4.713*	8.177***		
midfield	6.844**	11.494***		
CB	6.720**	8.933***	6.599**	8.819***
CDM	4.315	8.441***	4.192	8.324***
CAM	4.814	9.618***	4.691	9.499***
atta	9.985***	12.996***		
wing	10.500***	11.494***		
LB			4.755	7.499***
RB			5.433*	8.701***
LWB			3.949	8.746

RWB			1.003	7.937*
LM			5.204*	10.429***
CM			7.794***	12.472***
RM			5.707*	9.574***
LW			12.826***	14.281***
RW			7.759**	8.308***
CF			18.336***	18.814***
ST			9.401***	12.552***
constant	-203.752***	-238.780***	-199.373***	-234.377***

* p<0.05, ** p<0.01, *** p<0.001

Appendix B: Total

//Whole dataset
// Summarize variables
sum Fee3 Mv3 con2 age ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping gkpos gkdive gkhandling gkkicking gkreflex aggression reactions attPos Interceptions Vision Composure
// regression model 1
reg Fee3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping gkpos gkdive gkhandling gkkicking gkreflex aggression reactions attPos Interceptions Vision Composure
//store model 1
est store m1
// regressions model 2
// store model 2
est store m2
// regression model 3
reg Mv3 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping gkpos gkdive gkhandling gkkicking gkreflex aggression reactions attPos Interceptions Vision Composure
//store model 3
est store m3
// regression model 4
// store model 4
est store m4
// create a table with the 4 models for
estout m1 m2 m3 m4, cells(b(star fmt(3))) legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))

// Correlation of variables for GK

corr age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping gkpos gkdive gkhandling gkkicking gkreflex aggression reactions attPos Interceptions Vision Composure

Averages for dataset

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	1120	19.374	16.773	5	180
Mv3	1114	17.333	16.585	.4	150
con2	1120	2.158	1.112	0	5.333
age	1120	23.719	3.18	16	36
ballcontrol	1120	72.985	12.629	10	94
dribbling	1120	71.154	14.845	10	95
crossing	1120	61.047	16.697	9	92
shortpass	1120	71.623	10.377	17	92
longpass	1120	64.269	12.62	19	89
heading	1120	61.912	16.186	8	93
shotpower	1120	70.054	12.278	14	94
finishing	1120	60.308	19.036	5	94
longshots	1120	60.903	18.02	4	92
curve	1120	61.23	17.106	9	90
freekick	1120	52.555	17.628	8	92
penalties	1120	58.079	15.221	11	91
volleys	1120	56.377	17.789	7	90
slidetackle	1120	50.482	23.552	9	90
Standtackle	1120	54.189	23.227	10	90
acceleration	1120	74.172	11.786	26	96
stamina	1120	73.295	11.806	16	95
strength	1120	70.241	11.665	30	96
balance	1120	69.138	13.357	24	95
sprintspeed	1120	74.713	11.299	26	96
agility	1120	72.04	12.459	21	95
jumping	1120	69.405	11.355	32	95
gkpos	1120	13.291	14.218	2	86
gkdive	1120	13.406	14.626	2	90
gkhandling	1120	13.324	14.132	2	90
gkkicking	1120	13.263	13.459	3	85
gkreflex	1120	13.578	14.991	3	90
aggression	1120	64.656	15.619	12	93
reactions	1120	73.621	6.656	50	96
attPos	1120	64.932	17.959	4	95
Interceptions	1120	52.933	22.841	9	91
Vision	1120	66.557	11.984	21	91
Composure	1120	72.082	8.219	26	95

Regression model 1 all

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.603	.385	6.76	0	1.848	3.359	***
age	-.151	1.876	-0.08	.936	-3.833	3.531	
age2	-.011	.036	-0.30	.767	-.081	.06	
POT2	.886	.244	3.63	0	.407	1.364	***
ballcontrol	.625	.16	3.91	0	.311	.938	***
dribbling	-.09	.127	-0.71	.48	-.339	.159	
crossing	-.021	.062	-0.34	.736	-.142	.101	

shortpass	-.165	.134	-1.23	.219	-.428	.098	
longpass	.085	.084	1.01	.313	-.08	.249	
heading	.091	.061	1.51	.132	-.028	.21	
shotpower	-.066	.07	-0.94	.345	-.204	.071	
finishing	-.086	.078	-1.11	.269	-.238	.066	
longshots	-.052	.072	-0.72	.472	-.192	.089	
curve	-.03	.066	-0.46	.649	-.159	.099	
freekick	.068	.05	1.34	.18	-.031	.167	
penalties	.034	.056	0.61	.541	-.076	.144	
volleys	.023	.065	0.36	.722	-.104	.15	
slidetackle	.054	.09	0.60	.551	-.123	.23	
Standtackle	.007	.093	0.07	.941	-.175	.189	
acceleration	-.037	.111	-0.34	.736	-.255	.18	
stamina	-.113	.072	-1.57	.117	-.255	.028	
strength	.071	.064	1.12	.262	-.053	.196	
balance	.052	.061	0.86	.391	-.067	.172	
sprintspeed	.261	.093	2.81	.005	.079	.443	***
agility	-.129	.088	-1.46	.145	-.303	.044	
jumping	.025	.05	0.50	.616	-.073	.123	
gkpos	.205	.134	1.53	.127	-.059	.468	
gkdive	.094	.132	0.72	.474	-.164	.353	
gkhandling	-.045	.132	-0.34	.736	-.305	.215	
gkkicking	.188	.126	1.49	.137	-.06	.435	
gkreflex	-.072	.131	-0.55	.582	-.329	.185	
aggression	-.002	.05	-0.03	.974	-.099	.096	
reactions	1.226	.11	11.11	0	1.009	1.442	***
attPos	-.016	.08	-0.20	.842	-.172	.14	
Interceptions	-.115	.069	-1.66	.097	-.251	.021	*
Vision	.077	.082	0.94	.347	-.084	.238	
Composure	.225	.091	2.47	.014	.046	.404	**
Constant	-132.615	27.633	-4.80	0	-186.835	-78.395	***

Mean dependent var	19.374	SD dependent var	16.773
R-squared	0.346	Number of obs	1120
F-test	15.465	Prob > F	0.000
Akaike crit. (AIC)	9094.315	Bayesian crit. (BIC)	9285.117

*** *p<.01, ** p<.05, * p<.1*

Regression model 3 all

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-.951	1.72	-0.55	.58	-4.326	2.424	
age2	.004	.033	0.11	.911	-.06	.068	
POT2	.527	.221	2.38	.017	.093	.962	**
ballcontrol	.523	.143	3.65	0	.242	.804	***
dribbling	-.208	.113	-1.83	.067	-.43	.015	*
crossing	0	.055	0.01	.995	-.108	.109	
shortpass	.115	.12	0.95	.34	-.121	.351	
longpass	.017	.075	0.23	.819	-.13	.164	
heading	.087	.054	1.60	.11	-.02	.193	
shotpower	-.117	.063	-1.86	.063	-.241	.006	*
finishing	.034	.07	0.49	.626	-.102	.17	
longshots	-.013	.064	-0.20	.839	-.139	.113	
curve	-.005	.059	-0.09	.93	-.12	.11	
freekick	.076	.045	1.69	.09	-.012	.165	*
penalties	-.007	.05	-0.14	.887	-.105	.091	
volleys	.038	.058	0.66	.51	-.076	.152	
slidetackle	-.001	.081	-0.01	.99	-.159	.157	
Standtackle	.112	.083	1.35	.177	-.051	.275	

acceleration	.191	.099	1.92	.055	-.004	.385	*
stamina	-.147	.064	-2.27	.023	-.273	-.02	**
strength	.162	.057	2.84	.005	.05	.274	***
balance	.071	.054	1.31	.191	-.036	.178	
sprintspeed	.117	.083	1.41	.159	-.046	.28	
agility	-.157	.079	-1.98	.048	-.312	-.002	**
jumping	-.006	.044	-0.14	.887	-.094	.081	
gkpos	.232	.119	1.94	.052	-.002	.467	*
gkdive	.064	.118	0.54	.587	-.167	.295	
gkhandling	.043	.119	0.37	.715	-.189	.276	
gkkicking	.064	.113	0.57	.571	-.157	.285	
gkreflex	.001	.117	0.01	.994	-.229	.231	
aggression	-.068	.045	-1.52	.128	-.156	.02	
reactions	1.326	.099	13.42	0	1.132	1.52	***
attPos	-.049	.071	-0.69	.49	-.189	.091	
Interceptions	-.113	.062	-1.81	.071	-.235	.01	*
Vision	.02	.073	0.28	.782	-.123	.164	
Composure	.404	.082	4.93	0	.243	.564	***
Constant	-144.395	25.395	-5.69	0	-194.224	-94.566	***

Mean dependent var	17.333	SD dependent var	16.585
R-squared	0.466	Number of obs	1114
F-test	26.141	Prob > F	0.000
Akaike crit. (AIC)	8792.209	Bayesian crit. (BIC)	8977.791

**** p<.01, ** p<.05, * p<.1*

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
(1) age	1.000																																			
(2) age2	0.996	1.000																																		
(3) POT2	-0.869	-0.846	1.000																																	
(4) ballcontrol	0.018	0.005	-0.144	1.000																																
(5) dribbling	-0.063	-0.073	-0.068	0.948	1.000																															
(6) crossing	0.042	0.030	-0.169	0.776	0.814	1.000																														
(7) shortpass	0.093	0.077	-0.233	0.875	0.796	0.722	1.000																													
(8) longpass	0.130	0.118	-0.228	0.630	0.549	0.622	0.830	1.000																												
(9) heading	0.112	0.106	-0.166	0.460	0.333	0.159	0.449	0.244	1.000																											
(10) shotpower	0.226	0.219	-0.303	0.621	0.630	0.520	0.512	0.314	0.261	1.000																										
(11) finishing	0.078	0.073	-0.151	0.736	0.775	0.563	0.522	0.227	0.289	0.767	1.000																									
(12) longshots	0.118	0.108	-0.204	0.782	0.808	0.697	0.642	0.436	0.232	0.827	0.869	1.000																								
(13) curve	0.079	0.069	-0.188	0.809	0.838	0.834	0.703	0.541	0.172	0.682	0.729	0.824	1.000																							
(14) freekick	0.175	0.167	-0.238	0.689	0.695	0.702	0.638	0.535	0.093	0.672	0.652	0.797	0.826	1.000																						
(15) penalties	0.174	0.172	-0.213	0.675	0.673	0.506	0.519	0.263	0.330	0.684	0.824	0.759	0.684	0.666	1.000																					
(16) volleys	0.148	0.142	-0.227	0.731	0.752	0.585	0.550	0.280	0.303	0.767	0.903	0.861	0.760	0.699	0.823	1.000																				
(17) slidetackle	0.026	0.017	-0.068	0.175	0.059	0.196	0.414	0.577	0.317	-0.185	-0.355	-0.147	-0.006	-0.018	-0.267	-0.293	1.000																			
(18) Standtackle	0.035	0.024	-0.083	0.222	0.102	0.221	0.463	0.613	0.336	-0.136	-0.302	-0.094	0.036	0.030	-0.215	-0.243	0.975	1.000																		
(19) acceleration	-0.207	-0.211	0.095	0.595	0.704	0.630	0.400	0.196	0.055	0.378	0.551	0.531	0.593	0.430	0.416	0.506	-0.122	-0.112	1.000																	
(20) stamina	0.058	0.042	-0.180	0.738	0.685	0.648	0.751	0.615	0.477	0.438	0.455	0.548	0.580	0.465	0.452	0.459	0.453	0.492	0.465	1.000																
(21) strength	0.222	0.215	-0.225	-0.037	-0.151	-0.262	0.054	0.003	0.595	0.079	-0.081	-0.121	-0.224	-0.221	-0.017	-0.067	0.231	0.245	-0.334	0.152	1.000															
(22) balance	-0.11	-0.11	0.032	0.571	0.647	0.639	0.469	0.359	-0.12	0.355	0.484	0.544	0.615	0.532	0.402	0.483	-0.03	-0.01	0.714	0.425	-0.49	1.000														

(23) sprintspeed	-0.202	-0.207	0.086	0.565	0.649	0.556	0.378	0.148	0.233	0.370	0.519	0.465	0.506	0.329	0.388	0.460	-0.080	-0.066	0.883	0.484	-0.107	0.521	1.000													
(24) agility	-0.102	-0.107	-0.002	0.630	0.733	0.686	0.481	0.325	-0.089	0.430	0.594	0.624	0.687	0.579	0.476	0.578	-0.126	-0.104	0.830	0.459	-0.488	0.823	0.667	1.000												
(25) jumping	0.165	0.164	-0.166	-0.001	-0.053	-0.111	0.032	-0.029	0.474	0.045	-0.013	-0.066	-0.121	-0.157	-0.006	0.010	0.158	0.146	0.000	0.207	0.430	-0.078	0.112	-0.071	1.000											
(26) gkpos	0.183	0.192	-0.085	-0.821	-0.773	-0.586	-0.714	-0.484	-0.617	-0.367	-0.524	-0.541	-0.561	-0.442	-0.505	-0.502	-0.315	-0.348	-0.515	-0.686	-0.075	-0.395	-0.553	-0.433	-0.006	1.000										
(27) gkdive	0.185	0.193	-0.094	-0.818	-0.765	-0.568	-0.715	-0.484	-0.625	-0.358	-0.513	-0.531	-0.548	-0.435	-0.497	-0.489	-0.325	-0.355	-0.502	-0.684	-0.083	-0.388	-0.540	-0.418	-0.074	0.960	1.000									
(28) gkhandling	0.191	0.199	-0.100	-0.814	-0.761	-0.567	-0.717	-0.492	-0.621	-0.354	-0.506	-0.526	-0.541	-0.426	-0.486	-0.482	-0.336	-0.369	-0.490	-0.688	-0.082	-0.381	-0.528	-0.408	-0.070	0.958	0.963	1.000								
(29) gkkicking	0.178	0.188	-0.085	-0.811	-0.762	-0.578	-0.710	-0.488	-0.614	-0.353	-0.506	-0.529	-0.552	-0.432	-0.485	-0.491	-0.328	-0.359	-0.496	-0.680	-0.075	-0.391	-0.530	-0.422	-0.069	0.954	0.955	0.953	1.000							
(30) gkreflex	0.169	0.178	-0.080	-0.825	-0.773	-0.575	-0.722	-0.487	-0.618	-0.368	-0.524	-0.544	-0.559	-0.450	-0.514	-0.505	-0.316	-0.349	-0.498	-0.687	-0.071	-0.394	-0.534	-0.427	-0.064	0.963	0.961	0.960	0.956	1.000						
(31) aggression	0.146	0.135	-0.214	0.398	0.280	0.253	0.509	0.487	0.578	0.175	0.044	0.154	0.188	0.150	0.106	0.091	0.681	0.713	0.046	0.596	0.452	0.040	0.130	0.001	0.313	-0.493	-0.500	-0.505	-0.497	-0.493	1.000					
(32) reactions	0.513	0.504	-0.599	0.282	0.205	0.231	0.396	0.366	0.199	0.363	0.217	0.262	0.282	0.281	0.231	0.290	0.144	0.177	0.025	0.318	0.208	0.084	0.030	0.138	0.204	0.037	0.035	0.037	0.037	0.033	0.299	1.000				
(33) attPos	0.061	0.053	-0.165	0.832	0.866	0.719	0.648	0.358	0.331	0.746	0.908	0.869	0.810	0.689	0.776	0.865	-0.171	-0.121	0.616	0.600	-0.099	0.564	0.575	0.652	-0.006	-0.620	-0.606	-0.602	-0.605	-0.619	0.172	0.252	1.000			
(34) Interceptions	0.083	0.072	-0.128	0.210	0.086	0.217	0.456	0.621	0.310	-0.137	-0.312	-0.099	0.038	0.036	-0.215	-0.246	0.952	0.955	-0.129	0.482	0.239	-0.021	-0.092	-0.102	0.152	-0.309	-0.318	-0.330	-0.324	-0.314	0.694	0.222	-0.134	1.000		
(35) Vision	0.189	0.182	-0.275	0.634	0.665	0.676	0.648	0.606	-0.034	0.630	0.613	0.711	0.742	0.701	0.559	0.631	-0.041	0.010	0.373	0.455	-0.208	0.512	0.258	0.575	-0.171	-0.261	-0.254	-0.250	-0.254	-0.267	0.088	0.418	0.678	0.029	1.000	
(36) Composure	0.307	0.301	-0.404	0.655	0.588	0.493	0.686	0.582	0.357	0.528	0.472	0.521	0.573	0.520	0.470	0.523	0.199	0.246	0.278	0.554	0.154	0.327	0.263	0.372	0.121	-0.394	-0.404	-0.395	-0.399	-0.405	0.406	0.635	0.535	0.263	0.584	1.000

Appendix C: GK

//Goalkeepers
// Summarize variables for GK
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping gkpos gkdive gkhandling gkkicking gkreflex aggression reactions attPos Interceptions Vision Composure if GK == 1
// regression model 1 for GK
reg Fee3 age age2 con2 POT2 gkreflex gkdive gkpos gkhandling reactions gkkicking strength jumping Composure Vision shotpower agility sprintspeed balance shortpass longpass stamina aggression if GK == 1
//store model 1 for GK
est store m1GK
// regressions model 2 for GK
reg Fee3 age age2 POT2 gkreflex gkdive gkpos gkhandling reactions gkkicking strength Composure shotpower agility balance longpass stamina if GK == 1
// store model 2 for GK
est store m2GK
// regression model 3 for GK
reg Mv3 age age2 POT2 gkreflex gkdive gkpos gkhandling reactions gkkicking strength jumping Composure Vision shotpower agility sprintspeed balance shortpass longpass stamina aggression if GK == 1
//store model 3 for GK

```
est store m3GK
// regression model 4 for GK
reg Mv3 age age2 POT2 gkreflex gkpos gkhandling reactions strength Composure
shotpower balance shortpass longpass if GK == 1
// store model 4 for GK
est store m4GK
// create a table with the 4 models for GK
estout m1GK m2GK m3GK m4GK, cells(b(star fmt(3)) )   legend label varlabels(_cons
constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for GK
corr con2 POT2 gkreflex gkdive gkpos gkhandling reactions gkkicking strength jumping
Composure Vision shotpower agility sprintspeed balance shortpass longpass stamina
aggression if GK == 1
```

Sum Goalkeepers

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	50	15.945	13.803	5	80
Mv3	50	12.634	12.048	.5	65
con2	50	1.975	1.064	0	5
age	50	26.08	3.922	18	35
age2	50	695.24	207.914	324	1225
POT2	50	4.22	4.037	0	15
ballcontrol	50	23.72	7.445	10	43
dribbling	50	16.98	4.6	10	32
crossing	50	15.06	4.283	9	25
shortpass	50	36.06	9.933	17	63
longpass	50	34.88	9.387	19	55
heading	50	14.2	4.071	8	26
shotpower	50	48.38	14.368	14	64
finishing	50	12.84	3.851	5	19
longshots	50	14.32	3.972	4	20
curve	50	15.72	4.638	9	28
freekick	50	15.16	3.593	8	21
penalties	50	21.6	6.161	11	42
volleys	50	14.08	3.901	7	20
slidetackle	50	14.66	3.623	9	24
Standtackle	50	15.22	3.222	10	21
acceleration	50	46.16	8.148	26	59
stamina	50	34.48	6.961	16	45
strength	50	65.72	8.818	50	81
balance	50	44.04	9.973	24	61
sprintspeed	50	45.88	8.339	26	57
agility	50	46.8	11.114	21	70
jumping	50	65.32	11.155	34	83
gkpos	50	77.28	4.969	65	86
gkdive	50	79.5	4.528	69	90
gkhandling	50	77.02	5.145	62	90
gkkicking	50	73.62	5.66	54	85
gkreflex	50	81.26	4.89	65	90
aggression	50	27.56	7.459	12	43
reactions	50	74.2	5.855	63	84
attPos	50	12.14	4.155	4	20
Interceptions	50	18.52	4.395	9	25
Vision	50	51.34	11.412	21	68
Composure	50	56.02	10.163	26	68

Model 1 Goalkeepers

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-9.23	8.074	-1.14	.263	-25.796	7.336	
age2	.136	.137	0.99	.329	-.145	.417	
con2	.231	1.783	0.13	.898	-3.428	3.889	
POT2	-1.32	1.433	-0.92	.365	-4.261	1.622	
gkreflex	-1.194	.665	-1.80	.084	-2.559	.17	*
gkdive	1.821	.772	2.36	.026	.237	3.405	**
gkpos	1.667	1.116	1.49	.147	-.622	3.956	
gkhandling	-1.063	1.029	-1.03	.311	-3.174	1.048	
reactions	1.342	.425	3.16	.004	.469	2.214	***
gkkicking	.54	.494	1.09	.284	-.473	1.554	
strength	-.504	.218	-2.32	.028	-.95	-.057	**
jumping	-.016	.207	-0.08	.94	-.439	.408	
Composure	-.304	.21	-1.45	.159	-.734	.126	
Vision	-.101	.188	-0.54	.595	-.486	.284	
shotpower	-.494	.161	-3.07	.005	-.824	-.164	***
agility	-.368	.211	-1.74	.093	-.801	.066	*
sprintspeed	-.044	.393	-0.11	.912	-.851	.763	
balance	.243	.246	0.99	.332	-.262	.747	
shortpass	-.12	.285	-0.42	.677	-.704	.464	
longpass	.418	.26	1.61	.12	-.116	.952	

stamina	-.299	.35	-0.85	.4	-1.017	.419
aggression	-.076	.269	-0.28	.779	-.628	.475
Constant	24.055	122.866	0.20	.846	-228.045	276.154

Mean dependent var	15.945	SD dependent var	13.803
R-squared	0.724	Number of obs	50
F-test	3.223	Prob > F	0.002
Akaike crit. (AIC)	384.965	Bayesian crit. (BIC)	428.941

*** p<.01, ** p<.05, * p<.1

Variance inflation factor m1GK

	VIF	1/VIF
gkpos	12.863	.078
gkhandling	11.543	.087
gkdive	5.83	.172
gkreflex	5.378	.186
sprintspeed	3.627	.276
gkkicking	3.583	.279
shortpass	3.495	.286
reactions	3.174	.315
balance	2.942	.34
POT2	2.793	.358
longpass	2.642	.379
stamina	2.608	.383
jumping	2.59	.386
shotpower	2.463	.406
agility	2.375	.421
Composure	2.201	.454
Vision	2.116	.473
aggression	1.928	.519
strength	1.777	.563
con2	1.646	.608
Mean VIF	3.879	.

Model 2 GK

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-8.646	5.768	-1.50	.143	-20.381	3.089	
age2	.127	.097	1.31	.199	-.071	.325	
POT2	-1.233	1.126	-1.09	.282	-3.524	1.058	
gkreflex	-1.216	.576	-2.11	.042	-2.387	-.045	**
gkdive	1.915	.659	2.91	.007	.574	3.255	***
gkpos	1.743	.902	1.93	.062	-.092	3.578	*
gkhandling	-1.146	.815	-1.41	.169	-2.804	.512	
reactions	1.351	.373	3.62	.001	.592	2.111	***
gkkicking	.415	.386	1.08	.29	-.37	1.201	
strength	-.524	.183	-2.87	.007	-.896	-.153	***
Composure	-.338	.174	-1.94	.061	-.693	.016	*
shotpower	-.498	.135	-3.69	.001	-.773	-.224	***
agility	-.412	.157	-2.62	.013	-.732	-.092	**
balance	.195	.175	1.11	.274	-.162	.551	
longpass	.306	.162	1.88	.068	-.025	.636	*
stamina	-.368	.27	-1.36	.183	-.917	.182	
Constant	17.579	92.368	0.19	.85	-170.346	205.504	

Mean dependent var	15.945	SD dependent var	13.803
R-squared	0.716	Number of obs	50
F-test	5.202	Prob > F	0.000
Akaike crit. (AIC)	374.415	Bayesian crit. (BIC)	406.919

*** p<.01, ** p<.05, * p<.1

Model 3 GK

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	3.546	7.757	0.46	.651	-12.343	19.435	
age2	-.082	.131	-0.63	.535	-.351	.186	
POT2	1.4	1.375	1.02	.318	-1.418	4.217	
gkreflex	-.585	.633	-0.93	.363	-1.881	.71	
gkdive	.202	.722	0.28	.781	-1.277	1.681	
gkpos	1.681	1.041	1.62	.118	-.451	3.814	
gkhandling	.585	.938	0.62	.538	-1.337	2.507	
reactions	.388	.408	0.95	.35	-.448	1.223	
gkkicking	.173	.477	0.36	.72	-.805	1.15	
strength	.139	.206	0.67	.507	-.284	.561	
jumping	-.095	.193	-0.49	.629	-.491	.302	
Composure	.156	.201	0.78	.443	-.255	.567	
Vision	-.094	.181	-0.52	.607	-.464	.276	
shotpower	-.202	.149	-1.35	.187	-.507	.104	
agility	-.074	.202	-0.37	.716	-.487	.339	
sprintspeed	.072	.379	0.19	.852	-.705	.848	

balance	.205	.237	0.86	.395	-.28	.689	
shortpass	-.32	.275	-1.17	.254	-.882	.242	
longpass	.172	.249	0.69	.495	-.338	.682	
stamina	-.047	.338	-0.14	.891	-.739	.645	
aggression	-.153	.259	-0.59	.56	-.683	.377	
Constant	-208.022	118.646	-1.75	.09	-451.058	35.014	*

Mean dependent var	12.634	SD dependent var	12.048
R-squared	0.650	Number of obs	50
F-test	2.472	Prob > F	0.013
Akaike crit. (AIC)	381.335	Bayesian crit. (BIC)	423.399

*** p<.01, ** p<.05, * p<.1

Model 4 GK

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	6.455	5.152	1.25	.218	-3.995	16.904	
age2	-.135	.087	-1.55	.131	-.311	.042	
POT2	1.724	.977	1.76	.086	-.257	3.705	*
gkreflex	-.505	.5	-1.01	.32	-1.52	.51	
gkpos	1.867	.726	2.57	.014	.394	3.34	**
gkhandling	.472	.691	0.68	.499	-.929	1.873	
reactions	.362	.31	1.17	.25	-.266	.991	
strength	.188	.169	1.12	.272	-.154	.53	
Composure	.16	.163	0.99	.331	-.17	.491	
shotpower	-.178	.114	-1.56	.126	-.408	.053	
balance	.114	.152	0.75	.459	-.195	.423	
shortpass	-.315	.218	-1.45	.157	-.757	.127	
longpass	.139	.203	0.69	.497	-.273	.552	
Constant	-247.268	83.11	-2.98	.005	-415.824	-78.713	***

Mean dependent var	12.634	SD dependent var	12.048
R-squared	0.635	Number of obs	50
F-test	4.822	Prob > F	0.000
Akaike crit. (AIC)	367.350	Bayesian crit. (BIC)	394.119

*** p<.01, ** p<.05, * p<.1

Table of regressions models for goalkeepers

	m1GK	m2GK	m3GK	m4GK
age	-9.230	-8.646	3.546	6.455
age2	0.136	0.127	-0.082	-0.135
con2	0.231			
POT2	-1.320	-1.233	1.400	1.724
gkreflex	-1.194	-1.216*	-0.585	-0.505
gkdive	1.821*	1.915**	0.202	
gkpos	1.667	1.743	1.681	1.867*
gkhandling	-1.063	-1.146	0.585	0.472
reactions	1.342**	1.351***	0.388	0.362
gkkicking	0.540	0.415	0.173	
strength	-0.504*	-0.524**	0.139	0.188
jumping	-0.016		-0.095	
Composure	-0.304	-0.338	0.156	0.160
Vision	-0.101		-0.094	
shotpower	-0.494**	-0.498***	-0.202	-0.178
agility	-0.368	-0.412*	-0.074	
sprintspeed	-0.044		0.072	
balance	0.243	0.195	0.205	0.114
shortpass	-0.120		-0.320	-0.315
longpass	0.418	0.306	0.172	0.139
stamina	-0.299	-0.368	-0.047	
aggression	-0.076		-0.153	
constant	24.055	17.579	-208.022	-247.268**

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) con2	1.000																			
(2) POT2	0.151	1.000																		
(3) gkreflex	-0.045	-0.481	1.000																	
(4) gkdive	0.063	-0.503	0.828	1.000																
(5) gkpos	-0.002	-0.624	0.844	0.824	1.000															
(6) gkhandling	-0.076	-0.625	0.797	0.768	0.891	1.000														
(7) reactions	-0.012	-0.515	0.631	0.645	0.657	0.639	1.000													
(8) gkkicking	-0.036	-0.352	0.500	0.511	0.619	0.523	0.572	1.000												
(9) strength	-0.220	-0.393	0.270	0.317	0.298	0.298	0.434	0.227	1.000											
(10) jumping	-0.018	-0.190	0.267	0.291	0.291	0.318	0.193	0.174	0.032	1.000										
(11) Composure	-0.200	-0.373	0.514	0.545	0.541	0.419	0.327	0.416	0.246	0.022	1.000									
(12) Vision	-0.074	-0.238	0.163	0.229	0.288	0.304	0.263	0.543	0.113	0.044	0.226									1.000
(13) shotpower	-0.141	-0.187	0.119	0.202	0.165	-0.045	0.141	0.433	0.035	0.114	0.420	0.197	1.000							
(14) agility	-0.222	-0.200	0.229	0.335	0.209	0.315	0.298	0.069	0.001	0.442	0.083	0.227	-0.001	1.000						
(15) sprintspeed	-0.242	-0.285	0.284	0.321	0.285	0.367	0.321	0.172	0.176	0.602	0.194	0.208	0.060	0.613	1.000					
(16) balance	-0.169	-0.227	0.136	0.226	0.249	0.210	0.088	0.241	0.137	0.657	0.106	0.226	0.185	0.368	0.626					1.000
(17) shortpass	0.006	0.081	0.206	0.237	0.205	0.204	0.098	0.387	0.164	0.182	0.205	0.464	0.222	0.111	0.287	0.343	1.000			
(18) longpass	0.029	0.060	0.033	0.048	0.048	0.158	-0.015	0.268	0.028	0.130	0.052	0.473	0.046	0.036	0.148	0.247	0.689	1.000		
(19) stamina	-0.034	-0.402	0.358	0.486	0.506	0.386	0.367	0.446	0.331	0.319	0.273	0.280	0.152	0.249	0.443	0.426	0.278	0.097		1.000
(20) aggression	-0.221	-0.273	0.121	0.157	0.183	0.198	0.135	0.222	0.122	0.139	0.227	0.190	0.017	0.105	0.392	0.267	-0.042	0.078	0.470	1.000

Appendix D: CB

STATA commands CB
// Summarize variables for CB
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if CB == 1
// regression model 1 for CB
reg Fee3 con2 age age2 strength Standtackle aggression Interceptions slidetackle jumping heading reactions Composure stamina sprintspeed shortpass ballcontrol longpass acceleration if CB == 1
//store model 1 for CB
est store m1CB
// regressions model 2 for CB
reg Fee3 con2 age age2 strength tackle Interceptions jumping reactions ballcontrol longpass acceleration if CB == 1
// store model 2 for CB
est store m2CB
// regression model 3 for CB
reg Mv3 age age2 strength Standtackle aggression Interceptions slidetackle jumping heading reactions composure stamina sprintspeed shortpass ballcontrol longpass acceleration if CB == 1
//store model 3 for CB
est store m3CB
// regression model 4 for CB
reg Mv3 age age2 strength tackle jumping heading reactions stamina sprintspeed ballcontrol longpass acceleration if CB == 1
// store model 4 for CB
est store m4CB
// create a table with the 4 models for CB
estout m1CB m2CB m3CB m4CB, cells(b(star fmt(3))) legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for CB
corr Fee2 con2 age age2 strength Standtackle aggression Interceptions slidetackle jumping heading reactions Composure stamina sprintspeed shortpass ballcontrol longpass acceleration if CB == 1

Sum CB

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	163	20.473	16.118	5	87
Mv3	163	16.696	14.713	.8	75
con2	163	2.418	1.105	0	4.917
age	163	23.626	3.045	18	32
age2	163	567.393	150.972	324	1024
POT2	163	5.822	3.18	0	13
ballcontrol	163	66.166	6.182	52	81
dribbling	163	58.626	9.356	33	76
crossing	163	46.043	13.56	21	78
shortpass	163	69.767	6.106	45	81
longpass	163	65.38	9.137	32	86
heading	163	75.871	5.442	58	87
shotpower	163	56.933	12.603	23	87
finishing	163	36.288	10.137	18	66
longshots	163	38.362	14.267	12	84
curve	163	42.687	12.125	20	75
freekick	163	35.761	12.279	10	77
penalties	163	44.012	10.185	19	77
volleys	163	35.589	10.644	14	71
slidetackle	163	76.264	4.852	61	90
Standtackle	163	78.442	4.793	66	89
acceleration	163	65.288	9.783	30	90
stamina	163	70.871	6.605	38	89
strength	163	80.902	5.615	67	94
balance	163	56.245	11.011	27	79
sprintspeed	163	70.258	10.194	34	96
agility	163	58.479	10.481	29	78
jumping	163	76.055	8.847	32	93
aggression	163	76.577	6.713	56	92
reactions	163	73.086	6.251	55	87
attPos	163	41.515	11.637	12	76
Interceptions	163	76.374	5.36	60	91
Vision	163	51.227	11.93	22	80

Composure	163	71.049	6.807	55	89

Model 1 CB

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.661	.91	2.92	.004	.862	4.46	***
age	3.535	4.062	0.87	.386	-4.494	11.564	
age2	-.114	.083	-1.39	.167	-.278	.049	
strength	.413	.225	1.83	.069	-.032	.858	*
Standtackle	-.598	.475	-1.26	.21	-1.536	.341	
aggression	.137	.196	0.70	.486	-.25	.523	
Interceptions	.494	.385	1.28	.201	-.267	1.254	
slidetackle	1.139	.431	2.64	.009	.287	1.991	***
jumping	.315	.128	2.45	.015	.061	.569	**
heading	-.01	.279	-0.04	.971	-.562	.542	
reactions	.916	.312	2.94	.004	.3	1.532	***
Composure	-.044	.241	-0.18	.857	-.52	.433	
stamina	-.058	.17	-0.34	.735	-.393	.278	
sprintspeed	.072	.167	0.43	.667	-.258	.402	
shortpass	.206	.316	0.65	.515	-.418	.83	
ballcontrol	.368	.268	1.37	.173	-.163	.898	
longpass	-.201	.185	-1.09	.278	-.566	.164	
acceleration	-.342	.19	-1.80	.074	-.718	.034	*
Constant	-217.295	52.618	-4.13	0	-321.299	-113.291	***

Mean dependent var	20.473	SD dependent var	16.118
R-squared	0.556	Number of obs	163
F-test	10.028	Prob > F	0.000
Akaike crit. (AIC)	1273.386	Bayesian crit. (BIC)	1332.167

Variance inflation factor

	VIF	1/VIF
age2	193.889	.005
age	191.113	.005
Standtackle	6.475	.154
slidetackle	5.467	.183
Interceptions	5.31	.188
reactions	4.743	.211
shortpass	4.642	.215
acceleration	4.328	.231
sprintspeed	3.621	.276
longpass	3.551	.282
ballcontrol	3.434	.291
Composure	3.366	.297
heading	2.883	.347
aggression	2.154	.464
strength	1.998	.5
jumping	1.613	.62
stamina	1.569	.637
con2	1.264	.791
Mean VIF	24.523	.

Model 2 CB

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.404	.868	2.77	.006	.689	4.12	***
age	4.301	3.903	1.10	.272	-3.41	12.011	
age2	-.128	.079	-1.61	.109	-.284	.029	
strength	.423	.191	2.21	.029	.045	.8	**
tackle	.756	.372	2.03	.044	.021	1.492	**
Interceptions	.279	.358	0.78	.437	-.428	.986	
jumping	.322	.12	2.69	.008	.085	.559	***
reactions	.93	.278	3.35	.001	.381	1.479	***
ballcontrol	.496	.22	2.26	.025	.062	.929	**
longpass	-.145	.146	-0.99	.322	-.433	.143	
acceleration	-.269	.117	-2.29	.023	-.501	-.037	**
Constant	-226.762	51.841	-4.37	0	-329.19	-124.334	***

Mean dependent var	20.473	SD dependent var	16.118
R-squared	0.537	Number of obs	163
F-test	15.909	Prob > F	0.000
Akaike crit. (AIC)	1266.373	Bayesian crit. (BIC)	1303.498

*** p<.01, ** p<.05, * p<.1*

Linear regression

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	2.812	3.182	0.88	.378	-3.477	9.102	
age2	-.087	.065	-1.34	.182	-.215	.041	
strength	.661	.175	3.78	0	.315	1.007	***
Standtackle	-.513	.371	-1.38	.169	-1.246	.221	
aggression	-.056	.153	-0.37	.715	-.358	.246	
Interceptions	.121	.302	0.40	.688	-.475	.717	
slidetackle	1.407	.339	4.16	0	.738	2.076	***

jumping	.349	.101	3.46	.001	.15	.549	***
heading	.223	.22	1.02	.311	-.211	.657	
reactions	.795	.243	3.27	.001	.314	1.275	***
Composure	.047	.189	0.25	.802	-.325	.42	
stamina	-.302	.133	-2.28	.024	-.564	-.04	**
sprintspeed	-.114	.13	-0.88	.382	-.37	.143	
shortpass	.17	.248	0.69	.494	-.32	.661	
ballcontrol	.293	.211	1.39	.167	-.124	.709	
longpass	-.13	.145	-0.89	.373	-.416	.157	
acceleration	.163	.149	1.09	.276	-.131	.456	
Constant	-234.984	41.076	-5.72	0	-316.169	-153.799	***

Mean dependent var	16.696	SD dependent var	14.713
R-squared	0.668	Number of obs	163
F-test	17.178	Prob > F	0.000
Akaike crit. (AIC)	1194.274	Bayesian crit. (BIC)	1249.961

*** p<.01, ** p<.05, * p<.1*

Linear regression

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	3.423	3.128	1.09	.276	-2.758	9.604	
age2	-.097	.063	-1.53	.127	-.223	.028	
strength	.638	.168	3.80	0	.307	.969	***
tackle	.976	.283	3.44	.001	.416	1.535	***
jumping	.357	.102	3.50	.001	.156	.559	***
heading	.185	.22	0.84	.401	-.249	.619	
reactions	.8	.212	3.77	0	.381	1.22	***
stamina	-.287	.128	-2.24	.027	-.54	-.034	**
sprintspeed	-.124	.128	-0.98	.331	-.376	.128	
ballcontrol	.446	.176	2.54	.012	.099	.793	**
longpass	-.069	.117	-0.59	.553	-.301	.162	
acceleration	.184	.145	1.26	.208	-.104	.471	
Constant	-243.607	41.088	-5.93	0	-324.793	-162.421	***

Mean dependent var	16.696	SD dependent var	14.713
R-squared	0.647	Number of obs	163
F-test	22.873	Prob > F	0.000
Akaike crit. (AIC)	1194.549	Bayesian crit. (BIC)	1234.768

*** p<.01, ** p<.05, * p<.1*

	m1CB	m2CB	m3CB	m4CB
con2	2.661**	2.404**		
age	3.535	4.301	2.812	3.423
age2	-0.114	-0.128	-0.087	-0.097
strength	0.413	0.423*	0.661***	0.638***
Standtackle	-0.598		-0.513	
aggression	0.137		-0.056	
Intercepti~s	0.494	0.279	0.121	
slidetackle	1.139**		1.407***	
jumping	0.315*	0.322**	0.349***	0.357***
heading	-0.010		0.223	0.185
reactions	0.916**	0.930**	0.795**	0.800***
Composure	-0.044		0.047	
stamina	-0.058		-0.302*	-0.287*
sprintspeed	0.072		-0.114	-0.124
shortpass	0.206		0.170	
ballcontrol	0.368	0.496*	0.293	0.446*
longpass	-0.201	-0.145	-0.130	-0.069
acceleration	-0.342	-0.269*	0.163	0.184
tackle		0.756*		0.976***
constant	-217.295***	-226.762***	-234.984***	-243.607***

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Fee2	1.000																		
(2) con2	0.210	1.000																	
(3) age	-0.058	-0.276	1.000																
(4) age2	-0.057	-0.269	0.997	1.000															
(5) strength	0.228	-0.164	0.250	0.247	1.000														
(6) Standtackle	0.502	0.043	0.348	0.357	0.370	1.000													
(7) aggression	0.375	-0.003	0.392	0.391	0.422	0.555	1.000												
(8) Interceptions	0.505	-0.001	0.450	0.459	0.279	0.805	0.490	1.000											
(9) slidetackle	0.530	-0.018	0.387	0.392	0.307	0.862	0.623	0.758	1.000										
(10) jumping	0.298	0.057	0.118	0.120	-0.121	0.276	0.220	0.291	0.312	1.000									
(11) heading	0.440	-0.080	0.378	0.382	0.513	0.672	0.556	0.633	0.618	0.268	1.000								
(12) reactions	0.548	-0.051	0.415	0.422	0.232	0.750	0.527	0.823	0.729	0.288	0.660	1.000							
(13) Composure	0.457	0.048	0.341	0.351	0.311	0.684	0.469	0.709	0.621	0.274	0.562	0.733	1.000						
(14) stamina	0.267	0.126	-0.016	-0.019	0.049	0.206	0.249	0.200	0.253	0.329	0.172	0.306	0.391	1.000					
(15) sprintspeed	0.144	0.056	-0.185	-0.182	-0.128	0.218	0.071	0.120	0.267	0.342	-0.014	0.097	0.155	0.303	1.000				
(16) shortpass	0.360	-0.036	0.089	0.087	0.146	0.378	0.117	0.465	0.336	0.166	0.338	0.490	0.558	0.357	0.194	1.000			
(17) ballcontrol	0.383	-0.011	0.103	0.105	-0.008	0.347	0.164	0.491	0.412	0.272	0.239	0.459	0.573	0.403	0.315	0.757	1.000		
(18) longpass	0.267	-0.097	0.230	0.235	0.148	0.364	0.188	0.502	0.380	0.055	0.333	0.507	0.535	0.306	0.128	0.803	0.673	1.000	
(19) acceleration	0.109	0.179	-0.210	-0.211	-0.299	0.153	0.015	0.135	0.216	0.408	-0.123	0.067	0.143	0.329	0.819	0.175	0.322	0.087	1.000

Appendix E: FB

/STATA commands Fullbacks
// Summarize variables for fullbacks
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if fullback == 1
// regression model 1 for fullbacks
reg Fee3 con2 age age2 sprintspeed acceleration stamina crossing agility ballcontrol Standtackle dribbling balance reactions slidetackle shortpass Interceptions aggression jumping Composure strength attPos curve shotpower longpass Vision heading if fullback == 1
//store model 1 for fullbacks
est store m1FB
// regressions model 2 for fullbacks
reg Fee3 con2 age age2 acceleration stamina Standtackle reactions slidetackle aggression Composure if fullback == 1
// store model 2 for fullbacks
est store m2FB
// regression model 3 for fullbacks
reg Mv3 age age2 sprintspeed acceleration stamina crossing agility ballcontrol Standtackle dribbling balance reactions slidetackle shortpass Interceptions aggression jumping Composure strength attPos curve shotpower longpass Vision heading if fullback == 1
//store model 3 for fullbacks
est store m3FB
// regression model 4 for fullbacks
reg Mv3 age age2 acceleration ballcontrol Standtackle dribbling reactions Interceptions jumping shotpower longpass if fullback == 1
// store model 4 for fullbacks
est store m4FB
// create a table with the 4 models for fullbacks
estout m1FB m2FB m3FB m4FB, cells(b(star fmt(3))) legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for fullbacks
corr Fee2 con2 age age2 sprintspeed acceleration stamina crossing agility ballcontrol Standtackle dribbling balance reactions slidetackle shortpass Interceptions aggression jumping Composure strength attPos curve shotpower longpass Vision heading if fullback == 1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	131	16.789	11.068	5.2	65.3
Mv3	128	14.12	10.006	.4	55
con2	131	2.415	1.139	0	4.833
age	131	23.29	2.902	17	31
age2	131	550.786	137.932	289	961
POT2	131	5.702	4.121	0	20
ballcontrol	131	74.519	4.94	60	87
dribbling	131	73.992	5.354	54	87
crossing	131	75.214	6.297	58	89
shortpass	131	73.13	4.95	60	82
longpass	131	65.947	7.689	45	85
heading	131	62.725	7.816	42	84
shotpower	131	66.191	11.689	36	88
finishing	131	51.382	11.791	20	73
longshots	131	56.55	12.107	28	83
curve	131	66.351	11.071	31	88
freekick	131	50.534	15.149	21	90
penalties	131	50.672	11.205	22	81
volleys	131	48.962	11.323	21	73
slidetackle	131	73.16	5.841	56	90
Standtackle	131	74.198	4.871	61	85
acceleration	131	79.771	6.236	62	92
stamina	131	79.748	6.848	58	94
strength	131	67.313	8.923	32	89
balance	131	73.336	8.098	41	92
sprintspeed	131	80	7.032	58	93
agility	131	74.947	6.332	59	89
jumping	131	70.565	8.712	49	92
aggression	131	71.336	7.769	46	88
reactions	131	73.221	5.877	53	84
attPos	131	66.366	8.366	41	81
Interceptions	131	71.824	5.81	57	84
Vision	131	64.763	9.145	41	82
Composure	131	70.275	6.494	53	87

Model 1 FB

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.889	.753	3.84	0	1.395	4.383	***
age	-1.98	4.751	-0.42	.678	-11.401	7.441	
age2	.02	.098	0.21	.836	-.174	.215	
sprintspeed	.09	.237	0.38	.705	-.379	.559	
acceleration	.311	.31	1.01	.317	-.303	.926	
stamina	-.333	.187	-1.77	.079	-.704	.039	*
crossing	-.156	.259	-0.60	.549	-.67	.358	
agility	-.212	.257	-0.83	.411	-.722	.298	
ballcontrol	-.242	.431	-0.56	.576	-1.097	.613	
Standtackle	.595	.436	1.37	.175	-.269	1.459	
dribbling	-.199	.352	-0.57	.573	-.896	.499	
balance	.15	.17	0.88	.379	-.187	.488	
reactions	.57	.346	1.65	.103	-.116	1.256	
slidetackle	.366	.332	1.10	.273	-.293	1.024	
shortpass	-.218	.418	-0.52	.602	-1.047	.61	
Interceptions	.211	.32	0.66	.512	-.424	.845	
aggression	-.213	.167	-1.27	.206	-.544	.119	
jumping	.087	.119	0.73	.464	-.148	.323	
Composure	.374	.209	1.78	.077	-.042	.789	*
strength	-.065	.162	-0.40	.689	-.386	.256	
attPos	.174	.199	0.87	.384	-.221	.569	
curve	.114	.127	0.90	.37	-.137	.365	
shotpower	.066	.114	0.58	.566	-.16	.291	
longpass	.154	.206	0.75	.455	-.254	.563	
Vision	-.137	.187	-0.73	.464	-.507	.233	
heading	-.054	.192	-0.28	.778	-.435	.326	
Constant	-57.509	53.814	-1.07	.288	-164.225	49.208	

Mean dependent var	16.789	SD dependent var	11.068
R-squared	0.449	Number of obs	131
F-test	3.266	Prob > F	0.000
Akaike crit. (AIC)	976.440	Bayesian crit. (BIC)	1054.070

*** p<.01, ** p<.05, * p<.1*

Model 2 FB

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.749	.707	3.89	0	1.35	4.148	***
age	-2.883	4.149	-0.69	.488	-11.098	5.332	
age2	.041	.086	0.48	.634	-.129	.211	
acceleration	.192	.135	1.42	.159	-.076	.459	
stamina	-.221	.157	-1.41	.162	-.533	.09	
Standtackle	.337	.363	0.93	.354	-.381	1.056	
reactions	.423	.244	1.73	.085	-.06	.905	*
slidetackle	.463	.275	1.68	.095	-.082	1.008	*
aggression	-.11	.121	-0.91	.363	-.35	.129	
Composure	.393	.174	2.26	.026	.048	.738	**
Constant	-52.556	46.246	-1.14	.258	-144.121	39.008	

Mean dependent var	16.789	SD dependent var	11.068
R-squared	0.410	Number of obs	131
F-test	8.333	Prob > F	0.000
Akaike crit. (AIC)	953.545	Bayesian crit. (BIC)	985.172

*** p<.01, ** p<.05, * p<.1*

model 3 FB

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-5.533	4.27	-1.30	.198	-14.003	2.938	
age2	.097	.088	1.11	.271	-.077	.271	
sprintspeed	-.096	.196	-0.49	.624	-.484	.292	
acceleration	.579	.258	2.24	.027	.066	1.091	**
stamina	.001	.154	0.01	.995	-.305	.307	
crossing	-.054	.214	-0.25	.8	-.479	.371	
agility	-.165	.214	-0.77	.442	-.589	.259	
ballcontrol	.42	.363	1.16	.25	-.299	1.139	
Standtackle	.424	.358	1.19	.238	-.285	1.134	
dribbling	-.307	.293	-1.05	.298	-.889	.275	
balance	-.081	.142	-0.57	.567	-.363	.2	
reactions	.58	.286	2.02	.046	.012	1.148	**
slidetackle	-.082	.279	-0.29	.77	-.634	.471	
shortpass	.066	.347	0.19	.851	-.623	.754	
Interceptions	.286	.266	1.08	.285	-.242	.815	
aggression	-.013	.14	-0.10	.924	-.29	.263	
jumping	.099	.098	1.02	.312	-.094	.293	
Composure	.035	.173	0.20	.841	-.308	.378	
strength	-.097	.136	-0.71	.477	-.367	.173	
attPos	-.02	.164	-0.12	.903	-.346	.306	
curve	.024	.106	0.23	.819	-.185	.234	
shotpower	.097	.095	1.02	.311	-.092	.285	
longpass	.183	.169	1.08	.282	-.153	.519	
Vision	-.061	.156	-0.39	.698	-.37	.249	
heading	.048	.162	0.30	.768	-.274	.37	
Constant	-48.242	48.077	-1.00	.318	-143.602	47.118	

Mean dependent var	14.120	SD dependent var	10.006
R-squared	0.543	Number of obs	128
F-test	4.839	Prob > F	0.000
Akaike crit. (AIC)	903.762	Bayesian crit. (BIC)	977.914

*** p<.01, ** p<.05, * p<.1

Model 4 FB

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-5.909	3.799	-1.56	.123	-13.433	1.616	
age2	.103	.078	1.32	.191	-.052	.257	
acceleration	.341	.13	2.63	.01	.085	.598	***
ballcontrol	.447	.303	1.48	.142	-.152	1.047	
Standtackle	.367	.235	1.56	.121	-.098	.833	
dribbling	-.408	.241	-1.69	.094	-.886	.07	*
reactions	.569	.23	2.48	.015	.114	1.025	**
Interceptions	.301	.236	1.28	.204	-.166	.768	
jumping	.077	.085	0.91	.366	-.091	.246	
shotpower	.076	.07	1.09	.277	-.062	.214	
longpass	.185	.124	1.49	.14	-.062	.431	
Constant	-48.536	42.523	-1.14	.256	-132.759	35.687	

Mean dependent var	14.120	SD dependent var	10.006
R-squared	0.529	Number of obs	128
F-test	11.822	Prob > F	0.000
Akaike crit. (AIC)	879.619	Bayesian crit. (BIC)	913.844

*** p<.01, ** p<.05, * p<.1

Table of models FB

	m1FB	m2FB	m3FB	m4FB
	b	b	b	b
con2	2.889***	2.749***		
age	-1.980	-2.883	-5.533	-5.909
age2	0.020	0.041	0.097	0.103
sprintspeed	0.090		-0.096	
acceleration	0.311	0.192	0.579*	0.341**
stamina	-0.333	-0.221	0.001	
crossing	-0.156		-0.054	
agility	-0.212		-0.165	
ballcontrol	-0.242		0.420	0.447
Standtackle	0.595	0.337	0.424	0.367
dribbling	-0.199		-0.307	-0.408*
balance	0.150		-0.081	
reactions	0.570	0.423*	0.580*	0.569*
slidetackle	0.366	0.463*	-0.082	
shortpass	-0.218		0.066	
Intercepti~s	0.211		0.286	0.301
aggression	-0.213	-0.110	-0.013	
jumping	0.087		0.099	0.077
Composure	0.374	0.393*	0.035	
strength	-0.065		-0.097	
attPos	0.174		-0.020	
curve	0.114		0.024	
shotpower	0.066		0.097	0.076
longpass	0.154		0.183	0.185
Vision	-0.137		-0.061	
heading	-0.054		0.048	
constant	-57.509	-52.556	-48.242	-48.536

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations FB

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(1) Fee2	1.000																										
(2) con2	0.316	1.000																									
(3) age	0.038	0.020	1.000																								
(4) age2	0.025	0.006	0.997	1.000																							
(5) sprintspeed	0.091	0.010	-0.162	-0.171	1.000																						
(6) acceleration	0.142	0.030	-0.159	-0.166	0.790	1.000																					
(7) stamina	0.214	0.191	0.452	0.432	0.157	0.170	1.000																				
(8) crossing	0.305	0.169	0.527	0.511	0.025	0.113	0.536	1.000																			
(9) agility	0.103	-0.029	-0.004	-0.005	0.401	0.675	0.211	0.149	1.000																		
(10) ballcontrol	0.367	0.088	0.438	0.427	0.022	0.199	0.431	0.730	0.345	1.000																	
(11) Standtackle	0.433	0.093	0.426	0.406	-0.026	-0.049	0.557	0.523	0.037	0.605	1.000																
(12) dribbling	0.279	0.045	0.237	0.224	0.299	0.490	0.338	0.553	0.563	0.787	0.365	1.000															
(13) balance	0.099	-0.010	0.082	0.091	0.170	0.464	0.201	0.185	0.670	0.328	0.006	0.421	1.000														
(14) reactions	0.436	0.109	0.532	0.511	0.002	0.065	0.564	0.726	0.195	0.764	0.707	0.571	0.115	1.000													
(15) slidetackle	0.442	0.102	0.411	0.393	-0.018	-0.014	0.472	0.463	0.045	0.542	0.864	0.296	0.041	0.636	1.000												
(16) shortpass	0.392	0.098	0.516	0.500	-0.010	0.097	0.522	0.733	0.185	0.806	0.720	0.603	0.252	0.817	0.650	1.000											
(17) Interceptions	0.415	0.100	0.542	0.522	-0.120	-0.127	0.525	0.569	-0.012	0.618	0.801	0.356	0.002	0.798	0.767	0.743	1.000										
(18) aggression	0.167	0.054	0.353	0.345	0.111	0.096	0.420	0.241	0.035	0.298	0.445	0.228	0.104	0.405	0.496	0.354	0.432	1.000									
(19) jumping	0.177	0.022	0.316	0.307	-0.061	-0.133	0.310	0.086	-0.123	0.111	0.384	-0.063	-0.036	0.278	0.443	0.203	0.422	0.399	1.000								
(20) Composure	0.402	0.043	0.437	0.428	-0.039	0.077	0.463	0.590	0.176	0.663	0.517	0.558	0.189	0.709	0.488	0.648	0.596	0.381	0.182	1.000							
(21) strength	0.109	0.131	0.220	0.201	0.127	-0.121	0.300	0.100	-0.348	0.038	0.404	-0.036	-0.321	0.230	0.329	0.182	0.328	0.547	0.366	0.239	1.000						
(22) attPos	0.243	0.034	0.306	0.299	0.185	0.319	0.461	0.551	0.347	0.670	0.254	0.698	0.348	0.545	0.202	0.561	0.345	0.333	0.025	0.534	-0.057	1.000					
(23) curve	0.222	0.072	0.432	0.433	-0.096	0.036	0.342	0.662	0.217	0.620	0.287	0.510	0.270	0.488	0.227	0.558	0.366	0.228	0.021	0.558	0.003	0.559	1.000				
(24) shotpower	0.212	0.086	0.462	0.452	0.106	0.084	0.439	0.539	0.115	0.485	0.316	0.414	0.053	0.491	0.313	0.491	0.414	0.441	0.205	0.495	0.280	0.577	0.607	1.000			
(25) longpass	0.307	0.068	0.532	0.521	-0.167	-0.017	0.518	0.689	0.070	0.667	0.531	0.451	0.239	0.654	0.487	0.758	0.600	0.355	0.242	0.638	0.163	0.567	0.591	0.514	1.000		
(26) Vision	0.236	0.075	0.429	0.419	-0.006	0.192	0.466	0.658	0.324	0.693	0.323	0.615	0.387	0.623	0.247	0.680	0.481	0.228	0.065	0.595	-0.010	0.727	0.682	0.575	0.708	1.000	
(27) heading	0.219	0.097	0.268	0.261	-0.030	-0.228	0.346	0.270	-0.394	0.244	0.586	-0.054	-0.334	0.373	0.578	0.424	0.534	0.422	0.414	0.233	0.538	0.097	0.064	0.198	0.363	0.076	1.000

Appendix F: CM

STATA commands CM
// Summarize variables for CM
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if midfield == 1
// regression model 1 for CM
reg Fee3 con2 age age2 POT2 dribbling ballcontrol agility acceleration stamina shortpass sprintspeed balance Composure reactions Vision shotpower attPos longpass longshots curve crossing finishing strength jumping aggression volleys freekick penalties if midfield == 1
//store model 1 for CM
est store m1mid
// regressions model 2 for CM
reg Fee3 con2 age age2 POT2 dribbling ballcontrol stamina shortpass sprintspeed reactions Vision shotpower attPos longshots crossing finishing jumping freekick penalties if midfield == 1
// store model 2 for CM
est store m2mid
// regression model 3 for CM
reg Mv3 age age2 POT2 dribbling ballcontrol agility acceleration stamina shortpass sprintspeed balance Composure reactions Vision shotpower attPos longpass longshots

```
curve crossing finishing strength jumping aggression volleys freekick penalties if midfield == 1
//store model 3 for CM
est store m3mid
// regression model 4 for CM
reg Mv3 age age2 POT2 dribbling ballcontrol stamina shortpass sprintspeed Composure reactions Vision shotpower longpass longshots curve freekick if midfield == 1
// store model 4 for CM
est store m4mid
// create a table with the 4 models for CM
estout m1mid m2mid m3mid m4mid, cells(b(star fmt(3)) )   legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for CM
corr  con2 age age2 dribbling ballcontrol agility acceleration stamina shortpass sprintspeed balance Composure reactions Vision shotpower attPos longpass longshots curve crossing finishing strength jumping aggression volleys freekick penalties if midfield == 1
```

SUM midfield

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	289	19.039	15.312	5	121
Mv3	288	18.158	15.011	.6	85
con2	289	2.109	1.12	0	5.333
age	289	23.273	2.915	16	31
age2	289	550.118	138.935	256	961
POT2	289	5.931	4.5	0	22
ballcontrol	289	78.107	4.971	63	91
dribbling	289	78.232	5.066	58	90
crossing	289	68.99	8.017	39	92
shortpass	289	76.097	6.486	53	92
longpass	289	70.799	9.091	38	89
heading	289	56.073	11.045	22	84
shotpower	289	73.574	7.535	49	90
finishing	289	66.336	8.192	36	86
longshots	289	69.592	8.316	38	86
curve	289	69.197	9.804	35	86
freekick	289	61.18	12.777	25	92
penalties	289	60.772	10.26	30	89
volleys	289	61.768	10.112	34	85
slidetackle	289	53.734	18.606	18	88
Standtackle	289	58.388	18.801	11	88
acceleration	289	77.163	9.355	50	96
stamina	289	76.273	8.825	48	95
strength	289	65.128	10.953	30	94
balance	289	75.346	9.495	37	95
sprintspeed	289	75.824	9.724	47	96
agility	289	77.754	8.21	54	94
jumping	289	65.062	11.111	34	94
aggression	289	64.692	13.539	32	90
reactions	289	73.619	6.799	50	91
attPos	289	71.277	6.902	32	90
Interceptions	289	56.941	19.671	12	86
Vision	289	73.592	7.105	45	91
Composure	289	74.055	7.241	50	92

Model 1 mid

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.459	.693	3.55	0	1.094	3.824	***
age	3.215	3.885	0.83	.409	-4.434	10.864	
age2	-.065	.075	-0.87	.386	-.214	.083	
POT2	1.244	.456	2.73	.007	.346	2.142	***
dribbling	-.279	.335	-0.83	.406	-.938	.381	
ballcontrol	1.142	.436	2.62	.009	.284	2	***
agility	-.114	.187	-0.61	.542	-.482	.254	
acceleration	.059	.216	0.27	.784	-.366	.485	
stamina	-.203	.127	-1.60	.112	-.453	.047	
shortpass	.542	.36	1.50	.134	-.167	1.252	
sprintspeed	.343	.172	1.99	.047	.004	.681	**
balance	.036	.115	0.31	.753	-.19	.262	
Composure	.04	.188	0.21	.833	-.331	.41	
reactions	.475	.246	1.93	.055	-.01	.96	*
Vision	.256	.245	1.05	.296	-.225	.738	
shotpower	.35	.184	1.90	.059	-.013	.713	*
attPos	.281	.199	1.41	.159	-.111	.673	
longpass	-.157	.205	-0.77	.444	-.561	.246	
longshots	-.278	.169	-1.64	.101	-.61	.055	
curve	-.028	.142	-0.20	.845	-.307	.251	
crossing	-.171	.155	-1.10	.271	-.477	.134	
finishing	-.22	.157	-1.40	.163	-.531	.09	
strength	-.016	.106	-0.16	.877	-.224	.191	
jumping	.077	.079	0.96	.336	-.08	.233	
aggression	.051	.085	0.59	.553	-.117	.219	
volleys	-.08	.117	-0.69	.492	-.31	.149	

freekick	.121	.101	1.19	.234	-.079	.32	
penalties	.122	.101	1.21	.227	-.076	.321	
Constant	-210.754	55.57	-3.79	0	-320.179	-101.33	***

Mean dependent var	19.039	SD dependent var	15.312
R-squared	0.414	Number of obs	289
F-test	6.555	Prob > F	0.000
Akaike crit. (AIC)	2299.924	Bayesian crit. (BIC)	2406.250

*** p<.01, ** p<.05, * p<.1

Model 2 mid

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.489	.679	3.67	0	1.153	3.825	***
age	3.07	3.72	0.83	.41	-4.253	10.393	
age2	-.062	.072	-0.86	.39	-.204	.08	
POT2	1.275	.438	2.91	.004	.413	2.136	***
dribbling	-.3	.313	-0.96	.338	-.915	.316	
ballcontrol	1.119	.413	2.71	.007	.306	1.933	***
stamina	-.173	.118	-1.47	.142	-.405	.058	
shortpass	.41	.278	1.48	.141	-.137	.958	
sprintspeed	.362	.116	3.13	.002	.134	.59	***
reactions	.477	.236	2.02	.044	.012	.943	**
Vision	.253	.223	1.14	.257	-.186	.692	
shotpower	.373	.161	2.31	.022	.055	.69	**
attPos	.301	.192	1.57	.118	-.077	.68	
longshots	-.298	.161	-1.85	.066	-.616	.019	*
crossing	-.197	.139	-1.41	.159	-.471	.077	
finishing	-.267	.148	-1.81	.072	-.558	.024	*
jumping	.06	.072	0.83	.409	-.083	.202	
freekick	.091	.089	1.03	.304	-.083	.266	
penalties	.114	.095	1.20	.233	-.074	.302	
Constant	-207.439	53.09	-3.91	0	-311.964	-102.914	***

Mean dependent var	19.039	SD dependent var	15.312
R-squared	0.409	Number of obs	289
F-test	9.805	Prob > F	0.000
Akaike crit. (AIC)	2284.205	Bayesian crit. (BIC)	2357.534

*** p<.01, ** p<.05, * p<.1

Model 3 mid

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	.74	3.265	0.23	.821	-5.689	7.169	
age2	-.011	.063	-0.17	.863	-.135	.114	
POT2	1.332	.378	3.52	.001	.587	2.077	***
dribbling	-.436	.281	-1.55	.122	-.99	.118	
ballcontrol	1.218	.372	3.28	.001	.486	1.95	***
agility	-.102	.156	-0.66	.512	-.409	.204	
acceleration	.158	.18	0.88	.382	-.197	.512	
stamina	-.226	.106	-2.13	.034	-.434	-.017	**
shortpass	.73	.299	2.44	.015	.141	1.318	**
sprintspeed	.196	.143	1.37	.171	-.085	.478	
balance	.028	.096	0.29	.773	-.161	.216	
Composure	.206	.158	1.31	.193	-.105	.517	
reactions	.831	.207	4.01	0	.422	1.239	***
Vision	.173	.204	0.85	.398	-.229	.575	
shotpower	.206	.151	1.36	.175	-.092	.504	
attPos	.049	.166	0.29	.769	-.278	.376	
longpass	-.283	.172	-1.65	.1	-.622	.055	
longshots	-.12	.139	-0.86	.389	-.393	.154	
curve	-.119	.118	-1.01	.314	-.351	.113	
crossing	.018	.129	0.14	.892	-.237	.272	
finishing	.071	.131	0.54	.591	-.188	.329	
strength	.025	.088	0.29	.775	-.148	.198	
jumping	.049	.066	0.74	.46	-.081	.179	
aggression	.007	.071	0.10	.919	-.133	.147	
volleys	.035	.097	0.36	.721	-.157	.226	
freekick	.116	.084	1.37	.171	-.05	.282	
penalties	.009	.084	0.11	.915	-.157	.175	
Constant	-213.608	46.354	-4.61	0	-304.885	-122.331	***

Mean dependent var	18.158	SD dependent var	15.011
R-squared	0.575	Number of obs	288
F-test	13.037	Prob > F	0.000
Akaike crit. (AIC)	2186.014	Bayesian crit. (BIC)	2288.577

*** p<.01, ** p<.05, * p<.1

Model 4 mid

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-.011	3.151	-0.00	.997	-6.215	6.192	
age2	.004	.061	0.07	.946	-.116	.124	

POT2	1.268	.355	3.57	0	.569	1.968	***
dribbling	-.388	.261	-1.48	.139	-.902	.127	
ballcontrol	1.176	.362	3.25	.001	.463	1.89	***
stamina	-.206	.098	-2.11	.036	-.398	-.014	**
shortpass	.723	.285	2.53	.012	.161	1.285	**
sprintspeed	.302	.091	3.32	.001	.123	.48	***
Composure	.225	.152	1.48	.141	-.075	.525	
reactions	.857	.193	4.43	0	.476	1.237	***
Vision	.192	.192	1.00	.318	-.185	.569	
shotpower	.253	.131	1.92	.056	-.006	.512	*
longpass	-.3	.16	-1.88	.062	-.616	.015	*
longshots	-.066	.127	-0.52	.605	-.316	.184	
curve	-.109	.106	-1.03	.303	-.317	.099	
freekick	.103	.076	1.34	.181	-.048	.253	
Constant	-200.452	44.213	-4.53	0	-287.497	-113.407	***

Mean dependent var	18.158	SD dependent var	15.011
R-squared	0.570	Number of obs	288
F-test	22.485	Prob > F	0.000
Akaike crit. (AIC)	2167.246	Bayesian crit. (BIC)	2229.516

*** *p<.01, *** *p<.05, * *p<.1*

Table of models midfield

	m1mid	m2mid	m3mid	m4mid
con2	2.459***	2.489***		
age	3.215	3.070	0.740	-0.011
age2	-0.065	-0.062	-0.011	0.004
POT2	1.244**	1.275**	1.332***	1.268***
dribbling	-0.279	-0.300	-0.436	-0.388
ballcontrol	1.142**	1.119**	1.218**	1.176**
agility	-0.114		-0.102	
acceleration	0.059		0.158	
stamina	-0.203	-0.173	-0.226*	-0.206*
shortpass	0.542	0.410	0.730*	0.723*
sprintspeed	0.343*	0.362**	0.196	0.302**
balance	0.036		0.028	
Composure	0.040		0.206	0.225
reactions	0.475	0.477*	0.831***	0.857***
Vision	0.256	0.253	0.173	0.192
shotpower	0.350	0.373*	0.206	0.253
attPos	0.281	0.301	0.049	
longpass	-0.157		-0.283	-0.300
longshots	-0.278	-0.298	-0.120	-0.066
curve	-0.028		-0.119	-0.109
crossing	-0.171	-0.197	0.018	
finishing	-0.220	-0.267	0.071	
strength	-0.016		0.025	
jumping	0.077	0.060	0.049	
aggression	0.051		0.007	
volleys	-0.080		0.035	
freekick	0.121	0.091	0.116	0.103
penalties	0.122	0.114	0.009	
constant	-210.754***	-207.439***	-213.608***	-200.452***

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations Midfield

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(1) con2	1.000																										
(2) age	-0.050	1.000																									
(3) age2	-0.065	0.996	1.000																								
(4) dribbling	0.056	0.342	0.333	1.000																							
(5) ballcontrol	0.058	0.544	0.533	0.799	1.000																						
(6) agility	0.102	0.017	0.011	0.537	0.291	1.000																					
(7) acceleration	0.109	-0.144	-0.150	0.381	0.024	0.751	1.000																				
(8) stamina	0.049	0.380	0.366	0.197	0.423	0.028	-0.067	1.000																			
(9) shortpass	0.047	0.527	0.522	0.389	0.745	-0.089	-0.381	0.510	1.000																		
(10) sprintspeed	0.110	-0.143	-0.152	0.300	-0.028	0.576	0.852	0.021	-0.390	1.000																	
(11) balance	0.086	-0.020	-0.023	0.363	0.240	0.667	0.500	0.083	0.050	0.278	1.000																
(12) Composure	0.044	0.468	0.467	0.599	0.767	0.211	-0.0	0.466	0.664	-0.0	0.201	1.000															

							39			64																					
(13) reactions	0.0	0.5	0.5	0.5	0.7	0.1	-	0.6	0.7	-	0.1	0.7	1.0																	
	64	97	87	64	81	35	0.0	01	66	0.0	33	44	00																	
							83			67																					
(14) Vision	0.0	0.5	0.5	0.5	0.7	0.0	-	0.3	0.8	-	0.1	0.7	0.7	1.0																
	50	18	10	31	71	94	0.1	91	24	0.2	04	39	58	00																
							88			39																					
(15) shotpower	-	0.4	0.4	0.4	0.4	0.1	0.0	0.4	0.3	0.1	0.0	0.4	0.5	0.4	1.0															
	0.0	42	28	37	90	17	86	06	85	58	60	69	19	39	00															
	11																													
(16) attPos	0.0	0.4	0.4	0.5	0.5	0.3	0.2	0.3	0.3	0.2	0.1	0.5	0.6	0.5	0.5	1.0														
	33	49	40	65	91	01	47	80	98	62	39	53	42	26	47	00														
(17) longpass	0.0	0.4	0.4	0.2	0.5	-	-	0.4	0.8	-	-	0.5	0.6	0.7	0.2	0.2	1.0													
	04	57	53	15	78	0.2	0.5	29	87	0.4	0.0	77	41	46	94	54	00													
						30	11			93	56																			
(18) longshots	0.1	0.4	0.4	0.4	0.5	0.1	0.0	0.3	0.4	0.0	0.0	0.4	0.5	0.5	0.7	0.5	0.3	1.0												
	04	75	59	31	21	53	60	87	39	63	96	55	46	37	62	82	62	00												
(19) curve	0.0	0.4	0.3	0.5	0.6	0.3	0.1	0.1	0.4	0.1	0.2	0.5	0.5	0.5	0.5	0.4	0.3	0.5	1.0											
	43	11	98	49	05	35	41	88	42	07	49	39	17	78	18	99	43	66	00											
(20) crossing	0.0	0.4	0.4	0.5	0.5	0.3	0.2	0.2	0.3	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.2	0.4	0.7	1.0										
	54	94	80	43	43	41	56	30	87	24	52	38	63	58	36	17	63	90	12	00										
(21) finishing	0.0	0.2	0.2	0.4	0.4	0.3	0.3	0.2	0.1	0.3	0.1	0.3	0.3	0.3	0.4	0.7	0.0	0.5	0.4	0.4	1.0									
	49	86	82	99	11	72	31	00	58	72	42	55	81	49	92	12	41	65	21	06	00									
(22) strength	-	0.2	0.2	0.0	0.2	-	-	0.4	0.3	-	-	0.2	0.3	0.2	0.4	0.1	0.3	0.2	0.0	0.0	0.0	1.0								
	0.0	92	86	35	18	0.4	0.3	37	54	0.1	0.3	68	47	60	37	76	64	63	50	30	50	00								
	27					23	38			46	64																			
(23) jumping	-	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.1	0.1	0.0	0.1	0.2	0.0	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.3	1.0							
	0.0	00	98	97	02	73	48	60	10	53	44	98	05	62	72	21	32	94	29	42	55	46	00							
	28																													
(24) aggression	-	0.2	0.2	-	0.2	-	-	0.5	0.5	-	-	0.3	0.4	0.3	0.3	0.1	0.5	0.2	0.1	0.0	-	0.5	0.2	1.0						
	0.0	95	90	0.0	84	0.2	0.3	35	40	0.2	0.0	95	83	97	47	63	35	47	02	48	0.1	30	70	00						
	25			12		86	74			93	97										12									
(25) volleys	0.0	0.4	0.4	0.5	0.5	0.2	0.1	0.2	0.3	0.1	0.1	0.4	0.5	0.4	0.5	0.5	0.2	0.6	0.6	0.5	0.5	0.1	0.2	0.0	1.0					
	46	52	46	11	31	42	59	71	63	69	14	77	21	37	92	95	44	22	00	78	60	76	11	81	00					
(26) freekick	0.0	0.4	0.4	0.3	0.4	0.1	-	0.1	0.4	-	0.1	0.4	0.4	0.5	0.4	0.3	0.4	0.5	0.7	0.5	0.3	0.0	-	0.1	0.5	1.0			
	76	21	15	53	55	52	0.0	45	40	0.0	24	33	15	63	77	40	13	66	15	59	24	40	0.0	34	04	00				
							72			99													22						
(27) penalties	0.0	0.4	0.4	0.3	0.4	0.1	0.0	0.1	0.3	0.0	0.1	0.3	0.3	0.4	0.4	0.4	0.2	0.4	0.5	0.4	0.4	0.0	0.0	0.0	0.5	0.5	1.0			
	11	22	25	45	10	86	48	42	30	01	39	92	91	37	07	06	34	33	25	50	64	85	08	41	47	77	00			

Appendix G: CDM

STATA commands CDM
// Summarize variables for CDM
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if CDM == 1
// regression model 1 for CDM
reg Fee3 con2 age age2 POT2 stamina aggression shortpass Standtackle Interceptions strength ballcontrol longpass reactions Composure slidetackle jumping dribbling shotpower Vision agility acceleration sprintspeed balance heading attPos longshots crossing if CDM == 1
//store model 1 for CDM
est store m1CDM
// regressions model 2 for CDM
reg Fee3 con2 age age2 POT2 shortpass Standtackle ballcontrol Composure slidetackle dribbling agility acceleration sprintspeed balance heading attPos longshots if CDM == 1
// store model 2 for CDM
est store m2CDM
// regression model 3 for CDM
reg Mv3 age age2 POT2 stamina aggression shortpass Standtackle Interceptions strength ballcontrol longpass reactions Composure slidetackle jumping dribbling shotpower Vision agility acceleration sprintspeed balance heading attPos longshots crossing if CDM == 1
//store model 3 for CDM
est store m3CDM
// regression model 4 for CDM
reg Mv3 age age2 POT2 stamina aggression Standtackle strength ballcontrol Composure dribbling shotpower balance attPos if CDM == 1
// store model 4 for CDM
est store m4CDM
// create a table with the 4 models for CDM
estout m1CDM m2CDM m3CDM m4CDM, cells(b(star fmt(3))) legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for CDM
corr Fee2 con2 age age2 stamina aggression shortpass Standtackle Interceptions strength ballcontrol longpass reactions Composure slidetackle jumping dribbling shotpower Vision agility acceleration sprintspeed balance heading attPos longshots crossing if CDM == 1

SUM CDM

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	82	16.587	11.598	5.5	70.65

Mv3	82	15.628	13.117	1.1	80
con2	82	2.139	1.093	0	3.917
age	82	24.195	3.133	18	31
age2	82	595.098	153.972	324	961
POT2	82	5.012	3.958	0	21
ballcontrol	82	75.122	4.826	63	84
dribbling	82	71.317	5.18	55	82
crossing	82	61.329	8.192	40	79
shortpass	82	77.244	5.03	60	86
longpass	82	74.549	5.531	59	87
heading	82	65.232	9.734	42	83
shotpower	82	71.159	9.554	48	88
finishing	82	55.488	11.936	26	77
longshots	82	63.244	12.754	28	85
curve	82	59.78	11.043	31	78
freekick	82	55.354	12.739	31	81
penalties	82	57.171	11.311	32	91
volleys	82	51.598	11.707	22	78
slidetackle	82	72.793	5.465	59	87
Standtackle	82	76.854	5.536	63	90
acceleration	82	67.707	7.458	48	86
stamina	82	81.012	7.294	60	93
strength	82	75.683	8.402	56	91
balance	82	67.232	11.728	31	91
sprintspeed	82	67.549	8.404	42	88
agility	82	69.366	8.844	43	88
jumping	82	71.366	9.437	43	91
aggression	82	77.695	6.942	59	93
reactions	82	74.232	5.476	56	87
attPos	82	63.671	9.039	31	81
Interceptions	82	75.963	5.953	58	89
Vision	82	70.28	6.529	49	82
Composure	82	73.683	7.518	44	89

Model 1 CDM

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	3.69	1.181	3.12	.003	1.321	6.058	***
age	-5.087	6.578	-0.77	.443	-18.276	8.102	
age2	.066	.126	0.52	.604	-.187	.318	
POT2	-.421	.873	-0.48	.631	-2.171	1.328	
stamina	-.157	.251	-0.63	.533	-.66	.346	
aggression	-.104	.313	-0.33	.741	-.732	.523	
shortpass	.356	.651	0.55	.586	-.948	1.661	
Standtackle	.776	.765	1.01	.315	-.759	2.31	
Interceptions	-.281	.474	-0.59	.556	-1.231	.67	
strength	.177	.269	0.66	.514	-.363	.717	
ballcontrol	.74	.701	1.05	.296	-.666	2.145	
longpass	.252	.484	0.52	.604	-.718	1.222	
reactions	.366	.467	0.78	.437	-.571	1.303	
Composure	.225	.327	0.69	.494	-.431	.882	
slidetackle	.556	.438	1.27	.21	-.323	1.434	
jumping	.066	.213	0.31	.757	-.361	.493	
dribbling	-.965	.466	-2.07	.043	-1.9	-.03	**
shotpower	.113	.238	0.47	.637	-.364	.59	
Vision	-.144	.404	-0.36	.723	-.953	.665	
agility	-.365	.312	-1.17	.247	-.99	.26	
acceleration	-.361	.344	-1.05	.297	-1.05	.327	
sprintspeed	.277	.23	1.20	.234	-.184	.738	
balance	.315	.21	1.50	.14	-.106	.736	
heading	-.27	.233	-1.16	.252	-.737	.197	
attPos	.225	.217	1.04	.305	-.21	.659	
longshots	-.195	.164	-1.19	.24	-.524	.134	
crossing	-.048	.195	-0.24	.808	-.439	.344	
Constant	-27.459	94.228	-0.29	.772	-216.375	161.457	

Mean dependent var	16.587	SD dependent var	11.598
R-squared	0.570	Number of obs	82
F-test	2.656	Prob > F	0.001
Akaike crit. (AIC)	620.344	Bayesian crit. (BIC)	687.732

*** *p<.01*, ** *p<.05*, * *p<.1*

Model 2 CDM

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	3.753	1.047	3.58	.001	1.661	5.845	***
age	-4.547	5.879	-0.77	.442	-16.291	7.198	
age2	.065	.113	0.57	.569	-.161	.291	
POT2	-.075	.709	-0.11	.916	-1.49	1.341	
shortpass	.514	.434	1.18	.241	-.353	1.381	
Standtackle	.552	.52	1.06	.293	-.488	1.592	
ballcontrol	.882	.587	1.50	.138	-.29	2.054	
Composure	.263	.257	1.02	.31	-.25	.776	
slidetackle	.51	.356	1.43	.156	-.2	1.221	
dribbling	-.966	.418	-2.31	.024	-1.802	-.13	**
agility	-.453	.263	-1.72	.09	-.977	.072	*

acceleration	-.372	.291	-1.28	.205	-.953	.209	
sprintspeed	.368	.197	1.87	.066	-.026	.761	*
balance	.316	.188	1.68	.097	-.059	.691	*
heading	-.184	.18	-1.02	.311	-.543	.176	
attPos	.195	.185	1.05	.296	-.175	.566	
longshots	-.114	.104	-1.09	.279	-.322	.094	
Constant	-38.427	80.422	-0.48	.634	-199.088	122.235	

Mean dependent var	16.587	SD dependent var	11.598
R-squared	0.548	Number of obs	82
F-test	4.556	Prob > F	0.000
Akaike crit. (AIC)	604.602	Bayesian crit. (BIC)	647.923

*** p<.01, ** p<.05, * p<.1

Model 3 CDM

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-6.905	6.779	-1.02	.313	-20.491	6.681	
age2	.077	.129	0.59	.554	-.182	.336	
POT2	-1.087	.898	-1.21	.231	-2.887	.713	
stamina	-.261	.257	-1.01	.316	-.776	.255	
aggression	.168	.323	0.52	.606	-.48	.815	
shortpass	-.054	.658	-0.08	.935	-1.372	1.264	
Standtackle	1.607	.786	2.04	.046	.032	3.183	**
Interceptions	-.348	.477	-0.73	.468	-1.303	.607	
strength	.296	.277	1.07	.291	-.26	.852	
ballcontrol	1.004	.709	1.42	.163	-.418	2.425	
longpass	.215	.497	0.43	.668	-.781	1.211	
reactions	.33	.482	0.68	.496	-.636	1.296	
Composure	.305	.335	0.91	.367	-.366	.976	
slidetackle	.123	.443	0.28	.783	-.766	1.011	
jumping	.066	.22	0.30	.765	-.374	.506	
dribbling	-.637	.48	-1.33	.19	-1.6	.326	
shotpower	-.304	.243	-1.25	.216	-.791	.183	
Vision	-.205	.414	-0.50	.622	-1.035	.625	
agility	-.17	.319	-0.53	.597	-.809	.469	
acceleration	-.084	.353	-0.24	.814	-.792	.625	
sprintspeed	-.045	.237	-0.19	.851	-.52	.43	
balance	.201	.215	0.94	.354	-.229	.631	
heading	-.241	.239	-1.01	.319	-.721	.239	
attPos	.457	.222	2.06	.045	.012	.902	**
longshots	-.058	.168	-0.35	.731	-.394	.278	
crossing	-.038	.2	-0.19	.849	-.44	.363	
Constant	-35.767	97.219	-0.37	.714	-230.597	159.064	

Mean dependent var	15.628	SD dependent var	13.117
R-squared	0.636	Number of obs	82
F-test	3.694	Prob > F	0.000
Akaike crit. (AIC)	624.983	Bayesian crit. (BIC)	689.964

*** p<.01, ** p<.05, * p<.1

Model 4 CDM

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-4.785	5.567	-0.86	.393	-15.893	6.323	
age2	.048	.108	0.45	.655	-.167	.264	
POT2	-.646	.668	-0.97	.337	-1.979	.687	
stamina	-.289	.198	-1.46	.15	-.685	.107	
aggression	.225	.24	0.94	.353	-.255	.704	
Standtackle	1.427	.384	3.72	0	.661	2.194	***
strength	.209	.203	1.03	.308	-.197	.615	
ballcontrol	1.15	.503	2.29	.025	.147	2.153	**
Composure	.322	.258	1.25	.217	-.193	.836	
dribbling	-.716	.407	-1.76	.083	-1.528	.095	*
shotpower	-.358	.167	-2.14	.036	-.691	-.025	**
balance	.119	.116	1.02	.31	-.113	.351	
attPos	.328	.183	1.79	.077	-.037	.694	*
Constant	-76.18	74.398	-1.02	.309	-224.639	72.279	

Mean dependent var	15.628	SD dependent var	13.117
R-squared	0.614	Number of obs	82
F-test	8.318	Prob > F	0.000
Akaike crit. (AIC)	603.785	Bayesian crit. (BIC)	637.479

*** p<.01, ** p<.05, * p<.1

Table of models CDM

m1CDM	m2CDM	m3CDM	m4CDM
b	b	b	b
con2	3.690**	3.753***	

age	-5.087	-4.547	-6.905	-4.785
age2	0.066	0.065	0.077	0.048
POT2	-0.421	-0.075	-1.087	-0.646
stamina	-0.157		-0.261	-0.289
aggression	-0.104		0.168	0.225
shortpass	0.356	0.514	-0.054	
Standtackle	0.776	0.552	1.607*	1.427***
Intercepti~s	-0.281		-0.348	
strength	0.177		0.296	0.209
ballcontrol	0.740	0.882	1.004	1.150*
longpass	0.252		0.215	
reactions	0.366		0.330	
Composure	0.225	0.263	0.305	0.322
slidetackle	0.556	0.510	0.123	
jumping	0.066		0.066	
dribbling	-0.965*	-0.966*	-0.637	-0.716
shotpower	0.113		-0.304	-0.358*
Vision	-0.144		-0.205	
agility	-0.365	-0.453	-0.170	
acceleration	-0.361	-0.372	-0.084	
sprintspeed	0.277	0.368	-0.045	
balance	0.315	0.316	0.201	0.119
heading	-0.270	-0.184	-0.241	
attPos	0.225	0.195	0.457*	0.328
longshots	-0.195	-0.114	-0.058	
crossing	-0.048		-0.038	
constant	-27.459	-38.427	-35.767	-76.180

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations CDM

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(1) Fee2	1.000																										
(2) con2	0.315	1.000																									
(3) age	0.064	-0.293	1.000																								
(4) age2	0.062	-0.297	0.997	1.000																							
(5) stamina	0.294	0.119	0.293	0.280	1.000																						
(6) aggression	0.210	-0.133	0.610	0.605	0.549	1.000																					
(7) shortpass	0.371	-0.172	0.481	0.462	0.300	0.284	1.000																				
(8) Standtackle	0.462	-0.076	0.627	0.613	0.590	0.680	0.682	1.000																			
(9) Interceptions	0.372	-0.127	0.563	0.545	0.589	0.629	0.667	0.867	1.000																		
(10) strength	0.280	0.026	0.339	0.333	0.404	0.372	0.286	0.482	0.444	1.000																	
(11) ballcontrol	0.320	-0.232	0.459	0.448	0.326	0.330	0.805	0.656	0.542	0.357	1.000																
(12) longpass	0.298	-0.241	0.420	0.404	0.145	0.163	0.878	0.529	0.535	0.244	0.764	1.000															
(13) reactions	0.431	-0.149	0.528	0.517	0.543	0.621	0.680	0.818	0.789	0.411	0.701	0.551	1.000														
(14) Composure	0.343	-0.221	0.523	0.508	0.448	0.459	0.744	0.729	0.672	0.495	0.736	0.670	0.749	1.000													
(15) slidetackle	0.460	0.003	0.519	0.514	0.557	0.660	0.501	0.824	0.697	0.321	0.554	0.422	0.686	0.523	1.000												
(16) jumping	0.192	0.060	0.473	0.462	0.615	0.536	0.185	0.571	0.470	0.442	0.185	0.044	0.455	0.343	0.551	1.000											
(17) dribbling	0.152	-0.147	0.288	0.265	0.293	0.219	0.664	0.528	0.433	0.333	0.831	0.641	0.547	0.663	0.374	0.168	1.000										
(18) shotpower	0.191	-0.188	0.504	0.506	0.166	0.455	0.434	0.518	0.390	0.508	0.564	0.408	0.480	0.409	0.464	0.315	0.432	1.000									
(19) Vision	0.231	-0.245	0.330	0.310	0.256	0.207	0.757	0.504	0.507	0.339	0.780	0.759	0.603	0.724	0.413	0.197	0.734	0.416	1.000								
(20) agility	-0.112	-0.007	-0.129	-0.138	0.151	0.030	0.013	-0.053	-0.072	-0.430	0.074	-0.045	0.043	0.014	0.039	0.111	0.189	-0.110	0.093	1.000							
(21) acceleration	-0.068	0.091	-0.216	-0.224	0.214	0.164	-0.183	-0.022	-0.046	-0.101	-0.099	-0.294	0.044	-0.021	0.011	0.220	0.095	-0.073	-0.135	0.698	1.000						
(22) sprintspeed	0.097	0.153	-0.227	-0.231	0.233	0.065	-0.191	0.024	-0.016	0.235	-0.009	-0.238	0.099	0.033	0.004	0.188	0.141	0.077	-0.114	0.330	0.712	1.000					
(23) balance	-0.069	-0.076	-0.060	-0.069	0.097	0.154	-0.042	0.009	-0.023	-0.469	-0.067	-0.120	0.052	-0.046	0.060	0.128	0.056	-0.120	-0.016	0.838	0.650	0.236	1.000				
(24) heading	0.297	0.096	0.373	0.383	0.385	0.342	0.270	0.547	0.468	0.689	0.349	0.176	0.448	0.428	0.452	0.455	0.216	0.435	0.164	-0.428	-0.183	0.097	-0.463	1.000			
(25) attPos	0.208	-0.167	0.513	0.514	0.333	0.349	0.547	0.496	0.470	0.492	0.660	0.488	0.572	0.643	0.364	0.245	0.589	0.584	0.572	0.023	0.039	0.118	-0.073	0.473	1.000		
(26) longshots	0.091	-0.184	0.434	0.426	0.064	0.324	0.523	0.468	0.389	0.288	0.592	0.533	0.473	0.442	0.394	0.201	0.547	0.776	0.586	0.070	-0.040	-0.010	0.038	0.207	0.537	1.000	
(27) crossing	0.097	-0.184	0.283	0.273	0.212	0.244	0.512	0.333	0.262	0.148	0.551	0.468	0.324	0.476	0.379	0.104	0.495	0.426	0.530	0.210	0.045	-0.016	0.128	0.184	0.480	0.474	1.000

Appendix H: CAM

STATA commands CAM
// Summarize variables for CAM
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if CAM == 1
// regression model 1 for CAM
reg Fee3 con2 age age2 POT2 agility dribbling ballcontrol acceleration balance sprintspeed shortpass Vision shotpower Composure stamina curve attPos reactions longshots longpass finishing crossing freekick volleys penalties jumping strength if CAM == 1
//store model 1 for CAM
est store m1CAM
// regressions model 2 for CAM
reg Fee3 con2 age age2 POT2 balance shotpower Composure attPos longshots crossing freekick jumping strength if CAM == 1
// store model 2 for CAM
est store m2CAM

```
// regression model 3 for CAM
reg Mv3 age age2 POT2 agility dribbling ballcontrol acceleration balance sprintspeed shortpass Vision shotpower Composure stamina curve attPos reactions longshots longpass finishing crossing freekick volleys penalties jumping strength if CAM == 1
//store model 3 for CAM
est store m3CAM
// regression model 4 for CAM
reg Mv3 age age2 POT2 agility ballcontrol acceleration balance shortpass shotpower stamina curve longshots finishing freekick penalties strength if CAM == 1
// store model 4 for CAM
est store m4CAM
// create a table with the 4 models for CAM
estout m1CAM m2CAM m3CAM m4CAM, cells(b(star fmt(3)) )   legend label
varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for CAM
corr Fee2 con2 age age2 agility dribbling ballcontrol acceleration balance sprintspeed shortpass Vision shotpower Composure stamina curve attPos reactions longshots longpass finishing crossing freekick volleys penalties jumping strength if CAM == 1
```

SUM CAM

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	70	16.717	12.564	5.4	80
Mv3	69	17.44	17.399	1.3	90
con2	70	1.831	.997	0	3.917
age	70	23.8	3.156	18	30
age2	70	576.257	151.801	324	900
POT2	70	5.543	4.519	0	18
ballcontrol	70	78.986	5.168	60	91
dribbling	70	79.043	5.484	59	92
crossing	70	70.529	7.965	52	87
shortpass	70	76.471	5.101	64	90
longpass	70	71.071	6.998	53	89
heading	70	55.029	12.127	30	78
shotpower	70	74.757	7.228	49	89
finishing	70	71.029	6.334	43	83
longshots	70	72.557	8.075	48	89
curve	70	73.514	9.805	47	90
freekick	70	68.043	11.61	35	87
penalties	70	66.843	8.592	41	90
volleys	70	66.929	9.185	38	86
slidetackle	70	41.357	14.199	16	76
Standtackle	70	47.571	14.398	15	75
acceleration	70	78.157	6.383	61	90
stamina	70	74.271	8.944	48	94
strength	70	61.114	10.496	40	85
balance	70	77.186	9.046	42	93
sprintspeed	70	76.7	6.366	53	89
agility	70	80.129	6.926	58	92
jumping	70	61.929	10.686	32	86
aggression	70	58.643	11.318	38	81
reactions	70	73.043	6.121	53	87
attPos	70	73.457	6.185	55	86
Interceptions	70	46.143	14.166	20	74
Vision	70	76.114	5.671	61	90
Composure	70	74.686	6.24	64	89

model 1 CAM

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.556	1.543	1.66	.105	-.558	5.671	
age	4.582	8.646	0.53	.599	-12.866	22.03	
age2	-.105	.173	-0.61	.545	-.454	.243	
POT2	1.49	.874	1.70	.096	-.274	3.253	*
agility	-.351	.509	-0.69	.494	-1.377	.675	
dribbling	.718	.561	1.28	.208	-.415	1.851	
ballcontrol	-.677	.786	-0.86	.395	-2.264	.911	
acceleration	.075	.533	0.14	.889	-1.001	1.15	
balance	-.215	.211	-1.02	.314	-.641	.211	
sprintspeed	.233	.397	0.59	.561	-.569	1.035	
shortpass	-.229	.701	-0.33	.745	-1.645	1.186	
Vision	.73	.617	1.18	.243	-.515	1.975	
shotpower	-.544	.348	-1.56	.126	-1.247	.159	
Composure	.469	.387	1.21	.232	-.312	1.25	
stamina	.101	.198	0.51	.614	-.298	.499	
curve	.252	.335	0.75	.457	-.425	.928	
attPos	.761	.471	1.62	.113	-.189	1.711	
reactions	-.122	.442	-0.28	.784	-1.014	.77	
longshots	.691	.415	1.66	.104	-.147	1.529	
longpass	.184	.362	0.51	.614	-.547	.914	
finishing	-.121	.451	-0.27	.789	-1.031	.788	

crossing	.287	.443	0.65	.52	-.606	1.181	
freekick	-.334	.213	-1.56	.125	-.764	.097	
volleys	.104	.247	0.42	.677	-.396	.603	
penalties	.074	.211	0.35	.727	-.351	.499	
jumping	.351	.164	2.14	.038	.02	.682	**
strength	-.555	.238	-2.33	.025	-1.035	-.075	**
Constant	-183.962	119.726	-1.54	.132	-425.579	57.656	

Mean dependent var	16.717	SD dependent var	12.564
R-squared	0.628	Number of obs	70
F-test	2.625	Prob > F	0.002
Akaike crit. (AIC)	538.757	Bayesian crit. (BIC)	601.715

*** p<.01, ** p<.05, * p<.1*

model 2 CAM

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	3.147	1.175	2.68	.01	.794	5.5	***
age	5.305	7.256	0.73	.468	-9.231	19.84	
age2	-.13	.142	-0.91	.367	-.415	.156	
POT2	1.374	.709	1.94	.058	-.046	2.794	*
balance	-.265	.146	-1.81	.076	-.558	.028	*
shotpower	-.591	.288	-2.05	.045	-1.168	-.013	**
Composure	.738	.234	3.15	.003	.269	1.207	***
attPos	.83	.292	2.84	.006	.245	1.416	***
longshots	.672	.335	2.01	.05	.001	1.343	**
crossing	.839	.253	3.31	.002	.332	1.347	***
freekick	-.306	.145	-2.12	.039	-.596	-.016	**
jumping	.39	.129	3.02	.004	.131	.648	***
strength	-.502	.156	-3.23	.002	-.814	-.191	***
Constant	-180.337	99.463	-1.81	.075	-379.584	18.911	*

Mean dependent var	16.717	SD dependent var	12.564
R-squared	0.591	Number of obs	70
F-test	6.216	Prob > F	0.000
Akaike crit. (AIC)	517.432	Bayesian crit. (BIC)	548.910

*** p<.01, ** p<.05, * p<.1*

Model 3 CAM

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	5.637	9.947	0.57	.574	-14.437	25.711	
age2	-.109	.198	-0.55	.584	-.508	.29	
POT2	1.853	.975	1.90	.064	-.115	3.821	*
agility	-1.344	.552	-2.44	.019	-2.458	-.231	**
dribbling	-.133	.587	-0.23	.822	-1.316	1.051	
ballcontrol	1.344	.867	1.55	.129	-.405	3.093	
acceleration	.639	.577	1.11	.274	-.525	1.803	
balance	.317	.229	1.39	.173	-.144	.779	
sprintspeed	.343	.429	0.80	.429	-.524	1.209	
shortpass	.589	.788	0.75	.459	-1	2.179	
Vision	.586	.736	0.80	.431	-.9	2.071	
shotpower	-.787	.379	-2.08	.044	-1.552	-.022	**
Composure	.182	.431	0.42	.675	-.687	1.051	
stamina	.275	.213	1.29	.204	-.155	.705	
curve	.683	.374	1.83	.075	-.072	1.437	*
attPos	.054	.527	0.10	.918	-1.01	1.118	
reactions	.495	.472	1.05	.3	-.457	1.448	
longshots	1.049	.454	2.31	.026	.133	1.964	**
longpass	-.295	.396	-0.74	.462	-1.095	.506	
finishing	.795	.544	1.46	.151	-.303	1.892	
crossing	.101	.506	0.20	.843	-.921	1.122	
freekick	-.352	.23	-1.53	.133	-.815	.112	
volleys	-.118	.266	-0.45	.659	-.655	.418	
penalties	-.441	.238	-1.85	.071	-.922	.039	*
jumping	.227	.179	1.27	.211	-.134	.589	
strength	-.624	.26	-2.40	.021	-1.149	-.1	**
Constant	-342.016	146.258	-2.34	.024	-637.176	-46.856	**

Mean dependent var	17.440	SD dependent var	17.399
R-squared	0.765	Number of obs	69
F-test	5.261	Prob > F	0.000
Akaike crit. (AIC)	543.044	Bayesian crit. (BIC)	603.365

*** p<.01, ** p<.05, * p<.1*

Model 4 Cam

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	3.802	8.812	0.43	.668	-13.881	21.486	
age2	-.08	.174	-0.46	.646	-.429	.269	
POT2	1.269	.875	1.45	.153	-.487	3.025	
agility	-1.759	.415	-4.23	0	-2.593	-.926	***
ballcontrol	1.454	.607	2.40	.02	.236	2.671	**
acceleration	1.121	.345	3.25	.002	.428	1.814	***
balance	.35	.197	1.78	.081	-.045	.745	*

shortpass	.955	.497	1.92	.06	-.042	1.952	*
shotpower	-.772	.35	-2.21	.032	-1.473	-.07	**
stamina	.369	.173	2.14	.037	.023	.715	**
curve	.764	.304	2.51	.015	.154	1.374	**
longshots	.872	.392	2.22	.03	.085	1.658	**
finishing	.946	.418	2.26	.028	.107	1.786	**
freekick	-.36	.203	-1.77	.082	-.768	.048	*
penalties	-.324	.204	-1.58	.119	-.734	.086	
strength	-.615	.182	-3.38	.001	-.981	-.25	***
Constant	-268.633	128.313	-2.09	.041	-526.113	-11.154	**

Mean dependent var	17.440	SD dependent var	17.399
R-squared	0.734	Number of obs	69
F-test	8.969	Prob > F	0.000
Akaike crit. (AIC)	531.612	Bayesian crit. (BIC)	569.592

*** p<.01, ** p<.05, * p<.1*

Table of models for CAM

	m1CAM	m2CAM	m3CAM	m4CAM
con2	2.556	3.147**		
age	4.582	5.305	5.637	3.802
age2	-0.105	-0.130	-0.109	-0.080
POT2	1.490	1.374	1.853	1.269
agility	-0.351		-1.344*	-1.759***
dribbling	0.718		-0.133	
ballcontrol	-0.677		1.344	1.454*
acceleration	0.075		0.639	1.121**
balance	-0.215	-0.265	0.317	0.350
sprintspeed	0.233		0.343	
shortpass	-0.229		0.589	0.955
Vision	0.730		0.586	
shotpower	-0.544	-0.591*	-0.787*	-0.772*
Composure	0.469	0.738**	0.182	
stamina	0.101		0.275	0.369*
curve	0.252		0.683	0.764*
attPos	0.761	0.830**	0.054	
reactions	-0.122		0.495	
longshots	0.691	0.672*	1.049*	0.872*
longpass	0.184		-0.295	
finishing	-0.121		0.795	0.946*
crossing	0.287	0.839**	0.101	
freekick	-0.334	-0.306*	-0.352	-0.360
volleys	0.104		-0.118	
penalties	0.074		-0.441	-0.324
jumping	0.351*	0.390**	0.227	
strength	-0.555*	-0.502**	-0.624*	-0.615**
constant	-183.962	-180.337	-342.016*	-268.633*

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations CAM

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(1) Fee2	1.000																										
(2) con2	0.178	1.000																									
(3) age	-0.127	0.043	1.000																								
(4) age2	-0.138	0.026	0.998	1.000																							
(5) agility	-0.019	-0.150	0.215	0.216	1.000																						
(6) dribbling	0.353	0.066	0.370	0.358	0.472	1.000																					
(7) ballcontrol	0.360	-0.056	0.505	0.496	0.361	0.847	1.000																				
(8) acceleration	0.006	-0.079	-0.016	-0.012	0.657	0.240	0.092	1.000																			
(9) balance	0.012	-0.116	0.033	0.046	0.565	0.318	0.269	0.238	1.000																		
(10) sprintspeed	0.158	0.033	-0.171	-0.181	0.221	0.100	-0.022	0.705	-0.115	1.000																	
(11) shortpass	0.410	-0.069	0.377	0.361	0.126	0.618	0.774	-0.102	0.054	0.011	1.000																
(12) Vision	0.419	-0.075	0.472	0.463	0.206	0.614	0.808	-0.141	0.225	-0.124	0.837	1.000															
(13) shotpower	0.241	0.096	0.375	0.361	0.216	0.586	0.664	0.167	-0.064	0.148	0.598	0.547	1.000														
(14) Composure	0.423	-0.043	0.354	0.359	0.059	0.564	0.728	-0.070	0.191	-0.064	0.689	0.708	0.454	1.000													
(15) stamina	0.281	0.127	0.112	0.096	0.075	0.151	0.268	0.068	-0.067	0.149	0.429	0.298	0.167	0.290	1.000												
(16) curve	0.283	-0.013	0.420	0.412	0.401	0.691	0.742	0.047	0.209	-0.050	0.603	0.616	0.634	0.500	0.103	1.000											
(17) attPos	0.381	0.019	0.489	0.474	0.129	0.620	0.750	0.067	0.061	0.086	0.679	0.682	0.582	0.563	0.362	0.450	1.000										
(18) reactions	0.401	0.139	0.456	0.447	0.244	0.639	0.745	0.133	0.073	0.050	0.707	0.703	0.629	0.640	0.424	0.521	0.762	1.000									
(19) longshots	0.327	0.043	0.492	0.475	0.247	0.641	0.756	0.082	-0.020	0.036	0.685	0.687	0.839	0.535	0.266	0.670	0.725	0.692	1.000								
(20) longpass	0.376	-0.094	0.308	0.299	0.134	0.489	0.674	-0.150	0.099	-0.084	0.831	0.748	0.525	0.591	0.439	0.541	0.554	0.554	0.633	1.000							
(21) finishing	0.312	0.064	0.403	0.387	0.324	0.625	0.685	0.309	0.052	0.261	0.562	0.545	0.696	0.501	0.302	0.453	0.796	0.732	0.766	0.435	1.000						
(22) crossing	0.329	-0.053	0.491	0.483	0.293	0.692	0.750	0.058	0.181	0.054	0.746	0.781	0.645	0.535	0.188	0.795	0.561	0.613	0.714	0.656	0.512	1.000					
(23) freekick	0.137	0.058	0.387	0.382	0.280	0.493	0.535	-0.026	0.169	-0.175	0.397	0.496	0.501	0.356	-0.011	0.799	0.334	0.360	0.578	0.423	0.321	0.697	1.000				
(24) volleys	0.398	0.128	0.444	0.434	0.175	0.582	0.719	0.047	0.020	0.067	0.682	0.645	0.671	0.645	0.289	0.633	0.614	0.706	0.725	0.594	0.640	0.659	0.441	1.000			
(25) penalties	0.234	0.056	0.428	0.435	0.307	0.380	0.480	0.206	0.209	0.047	0.379	0.470	0.440	0.479	0.148	0.531	0.402	0.508	0.464	0.385	0.463	0.512	0.489	0.564	1.000		
(26) jumping	0.072	0.220	-0.015	-0.026	-0.009	-0.015	-0.016	0.208	-0.087	0.277	-0.079	-0.190	0.065	-0.041	0.264	-0.007	-0.022	-0.038	-0.031	-0.064	0.099	-0.180	-0.102	0.050	0.071	1.000	
(27) strength	0.104	0.200	0.053	0.036	-0.385	0.155	0.173	-0.058	-0.389	0.294	0.330	0.069	0.314	0.199	0.366	0.004	0.334	0.186	0.300	0.245	0.335	0.076	-0.114	0.253	-0.007	0.477	1.000

Appendix I: Wings

STATA commands wings
// Summarize variables for wings
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if wing == 1
// regression model 1 for wings
reg Fee3 con2 age age2 POT2 acceleration agility sprintspeed dribbling ballcontrol balance stamina shotpower attPos Composure reactions shortpass Vision curve finishing crossing longshots volleys longpass penalties jumping freekick strength if wing == 1
//store model 1 for wings
est store m1wing
// regressions model 2 for wings
reg Fee3 con2 age age2 POT2 sprintspeed dribbling ballcontrol shotpower attPos shortpass crossing penalties if wing == 1
// store model 2 for wings

```
est store m2wing
// regression model 3 for wings
reg Mv3 age age2 POT2 acceleration agility sprintspeed dribbling ballcontrol balance stamina shotpower attPos Composure reactions shortpass Vision curve finishing crossing longshots volleys longpass penalties jumping freekick strength if wing == 1
//store model 3 for wings
est store m3wing
// regression model 4 for wings
reg Mv3 age age2 POT2 acceleration sprintspeed dribbling ballcontrol balance stamina shotpower attPos Composure curve finishing volleys longpass penalties jumping strength if wing == 1
// store model 4 for wings
est store m4wing
// create a table with the 4 models for wings
estout m1wing m2wing m3wing m4wing, cells(b(star fmt(3)) )   legend label
varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for wings
corr Fee2 con2 age age2 acceleration agility sprintspeed dribbling ballcontrol balance stamina shotpower attPos Composure reactions shortpass Vision curve finishing crossing longshots volleys longpass penalties jumping freekick strength if wing == 1
```

SUM wing

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	83	26.773	24.786	5	117.5
Mv3	83	23.651	24.445	1	150
con2	83	2.072	1.153	0	4.5
age	83	23.217	2.871	18	33
age2	83	547.169	136.668	324	1089
POT2	83	5.169	3.907	0	13
ballcontrol	83	80.566	4.961	69	94
dribbling	83	82.169	4.859	69	95
crossing	83	72.47	6.511	59	88
shortpass	83	74.735	5.706	63	89
longpass	83	65.976	8.224	48	89
heading	83	54.361	12.566	31	88
shotpower	83	75.831	6.164	62	94
finishing	83	73.265	6.263	54	94
longshots	83	71.867	7.986	51	92
curve	83	73.687	7.689	58	90
freekick	83	63.253	10.974	40	84
penalties	83	65.458	8.138	45	88
volleys	83	68.386	8.103	44	88
slidetackle	83	33.59	11.154	14	66
Standtackle	83	37.506	11.617	14	64
acceleration	83	86.181	5.137	75	95
stamina	83	76.193	6.751	61	92
strength	83	61.855	10.817	30	81
balance	83	80.048	8.346	58	94
sprintspeed	83	84.084	5.464	72	93
agility	83	84.482	6.279	65	95
jumping	83	63.687	13.744	32	95
aggression	83	57.952	12.441	27	85
reactions	83	75.084	7.014	60	96
attPos	83	75.386	6.104	62	95
Interceptions	83	37.108	13.247	10	72
Vision	83	74.542	6.56	59	89
Composure	83	75.253	7.069	54	95

Model 1 wing

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	.218	2.221	0.10	.922	-4.233	4.669	
age	-26.938	11.368	-2.37	.021	-49.719	-4.156	**
age2	.551	.219	2.52	.015	.113	.99	**
POT2	.819	1.725	0.47	.637	-2.639	4.277	
acceleration	-.012	1.126	-0.01	.992	-2.267	2.244	
agility	.282	.784	0.36	.721	-1.29	1.853	
sprintspeed	.298	.875	0.34	.735	-1.455	2.051	
dribbling	1.255	1.316	0.95	.345	-1.383	3.894	
ballcontrol	1.716	1.314	1.31	.197	-.918	4.35	
balance	.244	.501	0.49	.628	-.76	1.248	
stamina	.172	.498	0.34	.731	-.826	1.17	
shotpower	-.566	.746	-0.76	.451	-2.061	.928	
attPos	1.198	.949	1.26	.212	-.704	3.1	
Composure	-.301	.643	-0.47	.641	-1.59	.987	
reactions	.038	.869	0.04	.966	-1.704	1.779	
shortpass	-1.314	1.308	-1.00	.319	-3.935	1.307	
Vision	.244	.888	0.27	.785	-1.536	2.024	

curve	-.188	.545	-0.35	.731	-1.28	.904
finishing	.516	.753	0.69	.496	-.993	2.024
crossing	1.068	.728	1.47	.148	-.391	2.526
longshots	-.291	.68	-0.43	.671	-1.653	1.072
volleys	.266	.521	0.51	.612	-.778	1.31
longpass	.193	.554	0.35	.73	-.919	1.304
penalties	-.219	.413	-0.53	.597	-1.046	.608
jumping	-.257	.223	-1.15	.253	-.704	.189
freekick	-.082	.413	-0.20	.843	-.91	.745
strength	.217	.316	0.69	.496	-.417	.851
Constant	-12.247	172.491	-0.07	.944	-357.926	333.432

Mean dependent var	26.773	SD dependent var	24.786
R-squared	0.592	Number of obs	83
F-test	2.957	Prob > F	0.000
Akaike crit. (AIC)	749.005	Bayesian crit. (BIC)	816.733

*** p<.01, ** p<.05, * p<.1*

Model 2 wing

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	-.524	1.837	-0.29	.776	-4.188	3.141	
age	-24.338	9.285	-2.62	.011	-42.856	-5.819	**
age2	.494	.181	2.73	.008	.133	.854	***
POT2	.796	1.365	0.58	.562	-1.926	3.518	
sprintspeed	.447	.387	1.16	.252	-.325	1.219	
dribbling	.942	.948	0.99	.324	-.948	2.832	
ballcontrol	2.029	1.1	1.84	.069	-.165	4.222	*
shotpower	-.602	.459	-1.31	.195	-1.518	.315	
attPos	1.582	.537	2.95	.004	.512	2.653	***
shortpass	-.679	.813	-0.84	.406	-2.3	.942	
crossing	.957	.526	1.82	.073	-.092	2.006	*
penalties	-.374	.302	-1.24	.22	-.977	.229	
Constant	-27.558	139.192	-0.20	.844	-305.167	250.051	

Mean dependent var	26.773	SD dependent var	24.786
R-squared	0.568	Number of obs	83
F-test	7.676	Prob > F	0.000
Akaike crit. (AIC)	723.742	Bayesian crit. (BIC)	755.187

*** p<.01, ** p<.05, * p<.1*

Model 3 wing

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-20.149	9.084	-2.22	.031	-38.347	-1.951	**
age2	.438	.175	2.51	.015	.088	.788	**
POT2	1.555	1.382	1.13	.265	-1.213	4.324	
acceleration	1.171	.898	1.30	.197	-.627	2.969	
agility	.059	.63	0.09	.925	-1.203	1.322	
sprintspeed	-.447	.701	-0.64	.526	-1.851	.957	
dribbling	2.561	1.046	2.45	.017	.466	4.657	**
ballcontrol	-.643	1.027	-0.63	.534	-2.7	1.415	
balance	.26	.403	0.65	.52	-.546	1.067	
stamina	.202	.399	0.51	.615	-.598	1.002	
shotpower	-.495	.599	-0.83	.413	-1.695	.706	
attPos	1.066	.763	1.40	.168	-.462	2.594	
Composure	-.715	.5	-1.43	.158	-1.716	.287	
reactions	-.135	.695	-0.19	.846	-1.527	1.257	
shortpass	-.294	1.05	-0.28	.78	-2.399	1.81	
Vision	.555	.713	0.78	.44	-.874	1.984	
curve	-.421	.438	-0.96	.34	-1.298	.456	
finishing	.546	.605	0.90	.37	-.666	1.758	
crossing	.518	.585	0.89	.38	-.654	1.689	
longshots	-.157	.547	-0.29	.775	-1.252	.938	
volleys	.802	.393	2.04	.046	.014	1.59	**
longpass	.345	.442	0.78	.438	-.54	1.231	
penalties	.543	.326	1.66	.102	-.11	1.196	
jumping	-.453	.177	-2.57	.013	-.807	-.099	**
freekick	-.097	.328	-0.29	.77	-.755	.561	
strength	.25	.254	0.98	.33	-.26	.759	
Constant	-146.827	138.031	-1.06	.292	-423.336	129.682	

Mean dependent var	23.651	SD dependent var	24.445
R-squared	0.724	Number of obs	83
F-test	5.653	Prob > F	0.000
Akaike crit. (AIC)	712.265	Bayesian crit. (BIC)	777.573

*** p<.01, ** p<.05, * p<.1*

Model 4 wing

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	-22.913	8.278	-2.77	.007	-39.456	-6.37	***
age2	.481	.162	2.97	.004	.158	.804	***
POT2	.887	1.107	0.80	.426	-1.326	3.1	
acceleration	1.367	.73	1.87	.066	-.092	2.826	*

sprintspeed	-.504	.634	-0.79	.43	-1.772	.764	
dribbling	2.401	.848	2.83	.006	.707	4.096	***
ballcontrol	-.468	.944	-0.50	.622	-2.353	1.418	
balance	.265	.327	0.81	.421	-.388	.918	
stamina	.151	.354	0.43	.67	-.556	.859	
shotpower	-.516	.437	-1.18	.242	-1.388	.357	
attPos	1.165	.574	2.03	.047	.017	2.312	**
Composure	-.682	.448	-1.52	.133	-1.577	.213	
curve	-.439	.36	-1.22	.227	-1.158	.28	
finishing	.463	.507	0.91	.365	-.551	1.477	
volleys	.768	.35	2.19	.032	.068	1.468	**
longpass	.562	.319	1.76	.083	-.076	1.2	*
penalties	.598	.278	2.15	.035	.043	1.153	**
jumping	-.427	.159	-2.68	.009	-.746	-.108	***
strength	.249	.224	1.11	.27	-.198	.697	
Constant	-95.971	119.17	-0.81	.424	-334.113	142.171	

Mean dependent var	23.651	SD dependent var	24.445
R-squared	0.715	Number of obs	83
F-test	8.329	Prob > F	0.000
Akaike crit. (AIC)	700.880	Bayesian crit. (BIC)	749.257

*** *p<.01*, ** *p<.05*, * *p<.1*

Table of models for wings

m1wing	m2wing	m3wing	m4wing
b	b	b	b
con2	0.218	-0.524	
age	-26.938*	-24.338*	-20.149*	-22.913**
age2	0.551*	0.494**	0.438*	0.481**
POT2	0.819	0.796	1.555	0.887
acceleration	-0.012		1.171	1.367
agility	0.282		0.059	
sprintspeed	0.298	0.447	-0.447	-0.504
dribbling	1.255	0.942	2.561*	2.401**
ballcontrol	1.716	2.029	-0.643	-0.468
balance	0.244		0.260	0.265
stamina	0.172		0.202	0.151
shotpower	-0.566	-0.602	-0.495	-0.516
attPos	1.198	1.582**	1.066	1.165*
Composure	-0.301		-0.715	-0.682
reactions	0.038		-0.135	
shortpass	-1.314	-0.679	-0.294	
Vision	0.244		0.555	
curve	-0.188		-0.421	-0.439
finishing	0.516		0.546	0.463
crossing	1.068	0.957	0.518	
longshots	-0.291		-0.157	
volleys	0.266		0.802*	0.768*
longpass	0.193		0.345	0.562
penalties	-0.219	-0.374	0.543	0.598*
jumping	-0.257		-0.453*	-0.427**
freekick	-0.082		-0.097	
strength	0.217		0.250	0.249
constant	-12.247	-27.558	-146.827	-95.971

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(1) Fee2	1.000																										
(2) con2	0.185	1.000																									
(3) age	0.202	0.027	1.000																								
(4) age2	0.228	0.026	0.996	1.000																							
(5) acceleration	0.274	0.014	-0.034	-0.028	1.000																						
(6) agility	0.351	0.121	0.123	0.116	0.644	1.000																					
(7) sprintspeed	0.192	-0.008	0.059	0.071	0.753	0.280	1.000																				
(8) dribbling	0.597	0.208	0.337	0.335	0.336	0.508	0.195	1.000																			
(9) ballcontrol	0.610	0.272	0.477	0.473	0.196	0.425	0.110	0.882	1.000																		
(10) balance	0.151	0.108	-0.001	-0.025	0.445	0.689	0.017	0.313	0.261	1.000																	
(11) stamina	0.291	0.115	0.420	0.427	0.067	0.104	0.173	0.272	0.352	-0.077	1.000																
(12) shotpower	0.316	-0.004	0.502	0.502	0.054	0.099	0.082	0.526	0.554	-0.082	0.398	1.000															
(13) attPos	0.537	0.182	0.570	0.574	0.216	0.327	0.101	0.664	0.768	0.013	0.532	0.658	1.000														
(14) Composure	0.537	0.289	0.431	0.433	0.159	0.381	0.055	0.683	0.754	0.190	0.471	0.662	0.819	1.000													
(15) reactions	0.561	0.189	0.545	0.547	0.120	0.324	0.061	0.690	0.751	0.150	0.547	0.671	0.871	0.836	1.000												
(16) shortpass	0.496	0.170	0.507	0.500	0.046	0.242	-0.034	0.749	0.828	0.232	0.383	0.573	0.703	0.778	0.743	1.000											
(17) Vision	0.508	0.194	0.501	0.497	0.067	0.289	-0.037	0.683	0.798	0.196	0.418	0.549	0.713	0.733	0.738	0.787	1.000										
(18) curve	0.333	0.134	0.473	0.457	-0.092	0.280	-0.194	0.586	0.667	0.180	0.293	0.509	0.560	0.564	0.600	0.664	0.681	1.000									
(19) finishing	0.473	0.105	0.512	0.520	0.041	0.146	0.095	0.577	0.674	-0.074	0.484	0.592	0.784	0.620	0.709	0.610	0.591	0.400	1.000								
(20) crossing	0.430	0.095	0.533	0.535	0.023	0.111	-0.048	0.522	0.625	0.039	0.324	0.638	0.745	0.518	0.674	0.650	0.735	0.625	0.545	1.000							
(21) longshots	0.341	0.076	0.550	0.550	-0.057	0.120	-0.098	0.513	0.601	-0.013	0.394	0.698	0.749	0.529	0.679	0.595	0.716	0.627	0.704	0.700	1.000						
(22) volleys	0.369	-0.032	0.523	0.515	-0.016	0.219	-0.033	0.473	0.597	0.041	0.364	0.588	0.704	0.617	0.713	0.613	0.628	0.509	0.691	0.657	0.768	1.000					
(23) longpass	0.369	0.120	0.487	0.482	-0.075	0.095	-0.132	0.503	0.628	0.046	0.299	0.510	0.613	0.524	0.665	0.647	0.747	0.643	0.573	0.698	0.706	0.643	1.000				
(24) penalties	0.252	0.057	0.330	0.339	-0.143	0.109	-0.012	0.366	0.422	-0.087	0.232	0.398	0.516	0.394	0.468	0.402	0.404	0.327	0.459	0.456	0.577	0.499	0.570	1.000			
(25) jumping	0.047	0.026	0.013	0.037	0.181	0.003	0.096	0.014	-0.038	-0.088	0.127	0.088	0.019	0.002	0.075	-0.090	-0.051	-0.027	0.258	-0.100	-0.085	0.040	-0.178	0.115	1.000		
(26) freekick	0.277	0.165	0.479	0.470	-0.092	0.092	-0.132	0.415	0.531	-0.074	0.217	0.512	0.476	0.438	0.462	0.568	0.559	0.428	0.403	0.685	0.684	0.429	0.596	0.377	-0.097	1.000	
(27) strength	0.182	-0.008	0.162	0.176	-0.120	-0.054	0.090	0.170	0.182	-0.476	0.249	0.500	0.302	0.177	0.195	0.216	0.201	0.097	0.449	0.249	0.327	0.224	0.215	0.172	0.264	0.077	1.000

Appendix J: Forwards

STATA commands FORWARS
// Summarize variables for forwards
sum Fee3 Mv3 con2 age age2 POT2 ballcontrol dribbling crossing shortpass longpass heading shotpower finishing longshots curve freekick penalties volleys slidetackle Standtackle acceleration stamina strength balance sprintspeed agility jumping aggression reactions attPos Interceptions Vision Composure if atta == 1
// regression model 1
reg Fee3 con2 age age2 POT2 sprintspeed finishing shotpower attPos acceleration ballcontrol strength dribbling jumping reactions Composure agility stamina heading penalties volleys shortpass longshots balance Vision curve aggression if atta == 1
//store model 1 for forwards
est store m1ST
// regressions model 2 for forwards
reg Fee3 con2 age age2 POT2 sprintspeed ballcontrol reactions agility heading shortpass Vision curve if atta == 1
// store model 2 for forwards
est store m2ST
// regression model 3 for forwards

```
reg Mv3 age age2 POT2 sprintspeed finishing shotpower attPos acceleration ballcontrol strength dribbling jumping reactions Composure agility stamina heading penalties volleys shortpass longshots balance Vision curve aggression if atta == 1
//store model 3 for forwards
est store m3ST
// regression model 4 for forwards
reg Mv3 age age2 POT2 sprintspeed finishing shotpower ballcontrol strength reactions agility heading shortpass longshots balance Vision curve if atta == 1
// store model 4 for forwards
est store m4ST
// create a table with the 4 models for forwards
estout m1ST m2ST m3ST m4ST, cells(b(star fmt(3)) )   legend label varlabels(_cons constant) stats(r2 adjrsq df_r bic, fmt(3 3 0 1) label(R-sqr Adj.R-sqr dfres BIC))
// Correlation of variables for forwards
corr Fee2 con2 age age2 sprintspeed finishing shotpower attPos acceleration ballcontrol strength dribbling jumping reactions Composure agility stamina heading penalties volleys shortpass longshots balance Vision curve aggression if atta == 1
```

SUM forwards

Variable	Obs	Mean	Std. Dev.	Min	Max
Fee3	252	20.279	19.983	5	180
Mv3	251	17.813	19.674	.4	150
con2	252	2.076	1.082	0	4.917
age	252	24.032	3.416	17	36
age2	252	589.151	168.858	289	1296
POT2	252	5.437	4.733	0	20
ballcontrol	252	75.639	5.38	58	90
dribbling	252	74.54	5.955	51	89
crossing	252	56.917	11.965	25	84
shortpass	252	69.766	6.919	45	85
longpass	252	55.222	10.681	30	82
heading	252	71.94	9.754	30	93
shotpower	252	77.242	6.337	51	94
finishing	252	77.313	5.923	59	94
longshots	252	69.413	7.453	45	92
curve	252	63.413	11.181	33	86
freekick	252	53.262	13.9	27	85
penalties	252	70.607	7.855	42	91
volleys	252	70.556	8.65	38	90
slidetackle	252	26.234	9.811	10	65
Standtackle	252	30.976	11.521	13	67
acceleration	252	76.179	9.065	43	95
stamina	252	72.056	7.494	38	89
strength	252	75.155	10.396	41	96
balance	252	67.944	11.117	32	91
sprintspeed	252	77.988	7.654	55	94
agility	252	72.282	9.349	42	91
jumping	252	73.615	9.866	41	95
aggression	252	60.429	14.719	25	92
reactions	252	73.54	7.573	50	94
attPos	252	77.131	6.494	59	95
Interceptions	252	29.786	10.667	12	64
Vision	252	65.861	8.725	39	86
Composure	252	72.325	7.711	47	95

Model 1 forwards

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.097	1.038	2.02	.045	.051	4.144	**
age	3.454	5.007	0.69	.491	-6.413	13.32	
age2	-.085	.092	-0.93	.353	-.266	.096	
POT2	1.743	.694	2.51	.013	.375	3.111	**
sprintspeed	.728	.275	2.64	.009	.185	1.271	***
finishing	.256	.478	0.53	.593	-.687	1.198	
shotpower	.032	.341	0.09	.925	-.64	.705	
attPos	.553	.539	1.03	.306	-.509	1.615	
acceleration	-.269	.298	-0.90	.367	-.855	.318	
ballcontrol	.799	.512	1.56	.12	-.21	1.807	
strength	-.196	.189	-1.04	.301	-.568	.176	
dribbling	.206	.412	0.50	.618	-.606	1.018	
jumping	-.103	.14	-0.73	.464	-.378	.173	
reactions	.692	.354	1.96	.052	-.005	1.389	*
Composure	.039	.28	0.14	.888	-.512	.591	
agility	-.312	.254	-1.23	.221	-.813	.189	
stamina	.009	.192	0.05	.961	-.37	.389	
heading	.43	.206	2.08	.038	.023	.837	**
penalties	.195	.173	1.12	.262	-.146	.536	
volleys	-.189	.26	-0.73	.468	-.701	.323	
shortpass	-.597	.305	-1.96	.051	-1.198	.003	*
longshots	-.108	.257	-0.42	.675	-.615	.399	
balance	.067	.149	0.45	.652	-.227	.361	

Vision	.29	.21	1.38	.168	-.123	.704	
curve	.169	.153	1.10	.272	-.133	.471	
aggression	.053	.095	0.56	.575	-.134	.24	
Constant	-232.617	81.415	-2.86	.005	-393.051	-72.184	***

Mean dependent var	20.279	SD dependent var	19.983
R-squared	0.393	Number of obs	252
F-test	5.604	Prob > F	0.000
Akaike crit. (AIC)	2151.743	Bayesian crit. (BIC)	2247.038

*** p<.01, ** p<.05, * p<.1

Model 2 forwards

Fee3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
con2	2.052	.973	2.11	.036	.134	3.969	**
age	1.032	4.643	0.22	.824	-8.114	10.178	
age2	-.041	.085	-0.48	.631	-.209	.127	
POT2	1.393	.646	2.16	.032	.12	2.667	**
sprintspeed	.521	.168	3.11	.002	.191	.851	***
ballcontrol	1.19	.355	3.35	.001	.49	1.889	***
reactions	.962	.262	3.67	0	.446	1.478	***
agility	-.34	.162	-2.10	.037	-.659	-.02	**
heading	.369	.159	2.32	.021	.056	.681	**
shortpass	-.548	.287	-1.91	.058	-1.114	.019	*
Vision	.284	.194	1.46	.145	-.098	.666	
curve	.194	.137	1.41	.158	-.076	.464	
Constant	-188.299	74.734	-2.52	.012	-335.522	-41.077	**

Mean dependent var	20.279	SD dependent var	19.983
R-squared	0.373	Number of obs	252
F-test	11.873	Prob > F	0.000
Akaike crit. (AIC)	2131.728	Bayesian crit. (BIC)	2177.611

*** p<.01, ** p<.05, * p<.1

Model 3 forwards

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	4.609	4.316	1.07	.287	-3.895	13.114	
age2	-.1	.079	-1.27	.205	-.256	.055	
POT2	1.848	.592	3.12	.002	.681	3.014	***
sprintspeed	.558	.232	2.40	.017	.1	1.016	**
finishing	1.376	.404	3.41	.001	.58	2.172	***
shotpower	.529	.288	1.84	.068	-.039	1.096	*
attPos	.154	.455	0.34	.735	-.742	1.05	
acceleration	-.065	.251	-0.26	.796	-.56	.43	
ballcontrol	.589	.432	1.36	.174	-.262	1.44	
strength	-.262	.159	-1.65	.101	-.575	.051	
dribbling	.107	.348	0.31	.76	-.579	.792	
jumping	-.127	.118	-1.07	.284	-.36	.106	
reactions	.425	.296	1.43	.154	-.16	1.009	
Composure	.191	.236	0.81	.419	-.274	.655	
agility	-.517	.216	-2.39	.018	-.943	-.09	**
stamina	.028	.163	0.17	.865	-.293	.348	
heading	.297	.175	1.70	.091	-.048	.642	*
penalties	.082	.147	0.56	.575	-.207	.372	
volleys	-.002	.218	-0.01	.994	-.432	.428	
shortpass	-.247	.258	-0.96	.34	-.755	.262	
longshots	-.237	.214	-1.10	.271	-.659	.186	
balance	.18	.124	1.44	.151	-.066	.425	
Vision	.084	.177	0.47	.636	-.265	.433	
curve	.23	.129	1.78	.076	-.024	.484	*
aggression	.039	.08	0.48	.632	-.12	.197	
Constant	-302.852	70.24	-4.31	0	-441.265	-164.44	***

Mean dependent var	17.813	SD dependent var	19.674
R-squared	0.552	Number of obs	251
F-test	11.072	Prob > F	0.000
Akaike crit. (AIC)	2057.590	Bayesian crit. (BIC)	2149.251

*** p<.01, ** p<.05, * p<.1

Model 4 forwards

Mv3	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	3.541	4.089	0.87	.387	-4.516	11.597	
age2	-.081	.075	-1.08	.282	-.228	.067	
POT2	1.709	.571	2.99	.003	.584	2.833	***
sprintspeed	.503	.148	3.39	.001	.211	.795	***
finishing	1.485	.332	4.47	0	.83	2.14	***
shotpower	.545	.278	1.96	.051	-.003	1.093	*
ballcontrol	.753	.323	2.34	.02	.118	1.389	**
strength	-.247	.143	-1.73	.085	-.529	.034	*
reactions	.56	.247	2.27	.024	.074	1.046	**
agility	-.585	.178	-3.28	.001	-.936	-.234	***
heading	.235	.152	1.55	.123	-.064	.534	
shortpass	-.255	.245	-1.04	.3	-.738	.228	
longshots	-.218	.206	-1.06	.29	-.623	.187	
balance	.171	.113	1.50	.134	-.053	.394	
Vision	.147	.166	0.89	.377	-.18	.473	

curve	.271	.119	2.27	.024	.036	.506	**
Constant	-284.976	66.994	-4.25	0	-416.964	-152.989	***

Mean dependent var	17.813	SD dependent var	19.674
R-squared	0.546	Number of obs	251
F-test	17.587	Prob > F	0.000
Akaike crit. (AIC)	2042.725	Bayesian crit. (BIC)	2102.658

*** p<.01, ** p<.05, * p<.1*

	m1ST	m2ST	m3ST	m4ST
con2	2.097*	2.052*		
age	3.454	1.032	4.609	3.541
age2	-0.085	-0.041	-0.100	-0.081
POT2	1.743*	1.393*	1.848**	1.709**
sprintspeed	0.728**	0.521**	0.558*	0.503***
finishing	0.256		1.376***	1.485***
shotpower	0.032		0.529	0.545
attPos	0.553		0.154	
acceleration	-0.269		-0.065	
ballcontrol	0.799	1.190***	0.589	0.753*
strength	-0.196		-0.262	-0.247
dribbling	0.206		0.107	
jumping	-0.103		-0.127	
reactions	0.692	0.962***	0.425	0.560*
Composure	0.039		0.191	
agility	-0.312	-0.340*	-0.517*	-0.585**
stamina	0.009		0.028	
heading	0.430*	0.369*	0.297	0.235
penalties	0.195		0.082	
volleys	-0.189		-0.002	
shortpass	-0.597	-0.548	-0.247	-0.255
longshots	-0.108		-0.237	-0.218
balance	0.067		0.180	0.171
Vision	0.290	0.284	0.084	0.147
curve	0.169	0.194	0.230	0.271*
aggression	0.053		0.039	
constant	-232.617**	-188.299*	-302.852***	-284.976***

* p<0.05, ** p<0.01, *** p<0.001

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(1) Fee2	1.000																									
(2) con2	0.183	1.000																								
(3) age	-0.072	-0.074	1.000																							
(4) age2	-0.067	-0.079	0.996	1.000																						
(5) sprintspeed	0.243	0.142	-0.196	-0.190	1.000																					
(6) finishing	0.362	0.033	0.510	0.508	0.005	1.000																				
(7) shotpower	0.256	0.048	0.510	0.504	0.061	0.717	1.000																			
(8) attPos	0.353	0.017	0.591	0.587	0.017	0.892	0.731	1.000																		
(9) acceleration	0.146	0.076	-0.223	-0.216	0.821	-0.067	-0.045	-0.036	1.000																	
(10) ballcontrol	0.384	0.078	0.439	0.437	0.058	0.749	0.625	0.772	0.066	1.000																
(11) strength	0.073	0.002	0.243	0.233	-0.159	0.360	0.444	0.243	-0.425	0.069	1.000															
(12) dribbling	0.368	0.071	0.195	0.199	0.339	0.514	0.450	0.544	0.393	0.801	-0.165	1.000														
(13) jumping	0.084	0.031	0.232	0.227	0.132	0.337	0.296	0.329	0.060	0.160	0.218	0.084	1.000													
(14) reactions	0.377	-0.005	0.542	0.540	0.099	0.818	0.741	0.884	0.039	0.749	0.225	0.582	0.349	1.000												
(15) Composure	0.336	0.087	0.490	0.493	0.051	0.749	0.678	0.817	0.012	0.737	0.216	0.584	0.266	0.789	1.000											
(16) agility	0.143	0.061	-0.080	-0.075	0.536	0.088	0.053	0.144	0.752	0.316	-0.556	0.550	0.166	0.216	0.238	1.000										
(17) stamina	0.2	0.0	0.2	0.2	0.2	0.4	0.3	0.4	0.2	0.3	0.2	0.2	0.3	0.4	0.4	0.2	1.0									

	16	59	89	76	69	13	97	52	15	57	46	76	15	85	49	41	00												
(18) heading	0.1	-0.0	0.5	0.4	-0.2	0.6	0.5	0.6	-0.4	0.3	0.5	0.0	0.4	0.5	0.4	-0.3	0.2	1.0											
	95	11	00	92	58	49	04	10	18	79	67	64	39	48	49	37	76	00											
(19) penalties	0.2	-0.0	0.4	0.4	-0.0	0.5	0.5	0.5	-0.0	0.4	0.2	0.2	0.1	0.5	0.4	0.0	0.2	0.3	1.0										
	12	05	73	75	60	70	08	65	96	92	26	77	73	39	87	13	69	84	00										
(20) volleys	0.2	0.0	0.5	0.5	-0.0	0.7	0.7	0.8	-0.0	0.7	0.2	0.4	0.3	0.8	0.7	0.1	0.3	0.5	0.5	1.0									
	97	62	37	33	04	76	09	17	15	15	22	85	22	03	31	93	59	75	34	00									
(21) shortpass	0.2	0.0	0.4	0.4	0.0	0.6	0.6	0.7	0.0	0.7	0.0	0.6	0.2	0.7	0.7	0.2	0.4	0.3	0.4	0.6	1.0								
	48	28	70	63	72	59	26	22	65	73	89	86	17	18	12	89	22	56	34	40	00								
(22) longshots	0.2	-0.0	0.4	0.4	0.0	0.6	0.6	0.6	0.1	0.6	0.0	0.5	0.1	0.6	0.6	0.3	0.3	0.2	0.4	0.6	0.6	1.0							
	39	61	09	09	89	45	86	56	56	73	18	83	28	53	21	43	06	66	78	64	40	00							
(23) balance	0.0	-	-	-	0.3	-	0.0	0.1	0.5	0.1	-	0.3	0.1	0.1	0.1	0.6	0.0	-	0.0	0.1	0.2	0.2	1.0						
	67	0.0	0.0	0.0	15	0.0	06	06	63	91	0.5	54	05	06	48	90	97	0.3	10	03	03	86	00						
		79	82	77		30					10							38											
(24) Vision	0.2	0.0	0.3	0.3	0.1	0.4	0.4	0.5	0.1	0.6	0.0	0.6	0.0	0.5	0.6	0.3	0.4	0.1	0.3	0.5	0.7	0.5	0.2	1.0					
	83	26	82	79	20	93	85	47	48	62	44	34	81	69	33	31	42	87	92	39	44	60	35	00					
(25) curve	0.2	0.0	0.3	0.3	0.2	0.4	0.4	0.5	0.3	0.5	-	0.6	0.0	0.5	0.6	0.4	0.3	0.0	0.3	0.5	0.5	0.6	0.3	0.6	1.0				
	90	94	18	23	54	62	42	47	35	95	0.1	44	90	31	10	85	26	81	13	51	89	08	84	33	00				
											08																		
(26) aggression	0.1	-0.0	0.3	0.3	0.0	0.3	0.4	0.3	-0.1	0.4	0.0	0.2	0.4	0.3	-	0.3	0.4	0.2	0.4	0.2	0.2	-	0.2	0.1	1.0				
	37	24	34	29	17	78	56	65	0.0	92	71	64	91	52	55	0.0	79	30	61	33	17	26	0.1	06	39	00			
									77							97							08						