Exploring perceptions on how Virtual Reality (VR) could serve as an alternative tool for football players to engage in self-development

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Abbreviations

ABQ = Athlete Burnout Questionnaire

ACC = Accomplishment

ACC = Accomplishment

ACL = Anterior Cruciate Ligament

APSQ = Athlete Psychological Strain Questionnaire

APSQ = Athlete Psychological Strain Questionnaire

AR = Augmented Reality

ARSQ = Athlete Received Support Questionnaire

ARSQ = Athlete Received Support Questionnaire

ASSQ = Athlete Social Support Questionnaire

BRUMS = Brunel Mood Scale

BSSS = Berlin Social Support Scale

DASS = Depression, Anxiety, and Stress Scale

DGBL – Digital Game-Based Learning

EN = Engagement

EN = Engagement

EPPP = Elite Players Performance Plan

FA = Football Association

FIFA = Fédération Internationale de Football Association

FIFPRO = International Federation of Professional Footballers

FS = Flourishing Scale

GBL – Game-Based Learning

GHQ-28 = General Health Questionnaire – 28

H = Health

HAP = Happiness

HMD = Head-Mounted Displays

ISBB = Inventory of Socially Supportive Behaviours

ISEL = Interpersonal Support Evaluation List

ISSB = Inventory of Socially Supportive Behaviours

K10 = Kessler Psychological Distress Scale

LCD = Liquid Crystal Displays

LON = Loneliness

MEG = My Energy Game

MNG = Meaning

MNG = Meaning

MR = Mixed Reality

MSPSS = Multidimensional Scale of Perceived Social Support

MTQ = Mental Toughness Questionnaire

NE = Negative Emotion

OLED = Organic Light Emitting Diodes

OWB = Overall Well-Being

PASS-Q = Perceived Available Support in Sports Questionnaire

PASS-Q = Perceived Available Support in Sports Questionnaire

PE = Positive Emotion

PE = Positive Emotions

PFA = Players Football Association

REL = Relationships

REL = Relationships

RESTQ = The Recovery-Stress Questionnaire

RPWB = Ryffs Psychological Well-Being Scale

SAAS – Software as a Service

SAS = Sort Anxiety Scale

SDT = Self-Determination Theory

Sport MHC-SF = Sports Mental Health Continuum Short Form

SSQ = Social Support Questionnaire

SSSIA = Social Support Survey for Injured Athletes

SWLS = Satisfaction with Life Scale

TAM = Technology Acceptance Model

TAM2 = Technology Acceptance Model 2

TAM3 = Technology Acceptance Model 3

US = The United States of America

VAR = Video Assistant Referee

VR = Virtual Reality

XR = Extended Reality

Preface

This project is submitted in accordance with the requirements of the University of Derby for the Doctor of Philosophy degree. It is a record of an original piece of work that I have completed under the guidance of Dr. Hooton and Dr. Chandler. This thesis has not been submitted to any other institution before, and all previous work used within the write-up (published or unpublished) has been acknowledged and referenced.

L. Richardson (09/03/25)

Abstract

This research explored the perceptions of football players and practitioners regarding the use of Virtual Reality (VR) as a tool for self-development within the sport, having the potential to improve well-being. Footballers undergo a range of normative and non-normative transitions throughout their careers, possibly negatively impacting well-being and performance. Engaging in self-development can help overcome these challenging periods more effectively via improved self-awareness and self-esteem. However, the literature suggests that engaging in self-development might not be utilised to its full potential as there seems to be a hesitation to talk openly about ways to improve oneself (beyond physical performance) and a stigma around help-seeking behaviour. VR could be a powerful way to help tackle these challenges, given that it can create experiences that captivate and engage users in ways that surpass traditional means. The focus of VR in football has surrounded its efficacy as a tool to improve physical performance. To date, there is no research on VR as a tool for self-development in football. As a result, this PhD aimed to contribute to knowledge by exploring the use of VR as a tool for self-development in football.

Given that using VR as a tool for self-development in football was an unexplored area, this research took an exploratory stance. As such, the thesis was underpinned by a pragmatic research philosophy as it is not bound by a single philosophical stance and offered flexibility to address the research phenomenon most effectively. Therefore, a mixed-method approach was utilised, avoiding strict subjectivity or objectivity to facilitate a deeper exploration of the phenomenon. The quantitative aspect was underpinned by survey research to help capture general perceptions of the phenomenon, whereas the qualitative studies utilised a hermeneutic phenomenological approach. This helped provide more in-depth insights by providing a middle ground between a description and interpretation from which to explore perceptions both football players and practitioners had towards using VR as a tool for self-development in football. To address any disparities between the quantitative and qualitative data, this research adopted a convergent approach, whereby data was collected concurrently, analysed separately, and then merged.

Three essential themes were derived from this research: *'A call for action'*, *'While there is promise, it won't be for everyone'*, and *'Bridging the gap: Gimmick to something of value'*. In the main, football players want more support and feel like the effectiveness of receiving support and the delivery methods by which they are provided support need improvement. Players and

practitioners responded well to using a VR prototype designed to help support with self-development, and they felt the concept had promise. However, some still struggled to understand how the concept would work. Moreover, the perception was that not everyone in the sport would be willing to use it. Practitioners, in particular, felt the concept would be best positioned at academy levels, given the familiarity players at this level have with technology. Future research is suggested to focus on the efficacy of VR as a tool for self-development.

Acknowledgements

Completing this project has been a massive privilege and a huge personal achievement. While there have been some challenging moments throughout the past few years, I am very grateful for the support I have received. I want to take this opportunity to reflect and thank those who have supported and motivated me throughout my PhD journey.

The Opposition

I have encountered difficult moments over the past few years, with the most significant being the loss of a beloved pet. I want to dedicate this work to someone who was more than just a dog, but a family member and my best friend.

The Goalkeepers

Dr Cowen, Dr Rumbold, Dr Zhang, and Professor Turner, I want to thank you all for your assistance at various stages of this project. Your support and guidance have been crucial in helping me complete this work. I truly appreciate your time and effort.

The Defender

Miss Lawley, it was a pleasure working with you over the past 18 months. I appreciate your support during difficult periods of data collection when it looked impossible to reach the end goal.

The Midfielder and Team Captain

Mr Rubio, Amigo mío, no puedo agradecerte lo sufficiente toda la aynda y el apoyo que me has prestando en los últimos años. Siempre estaré aquí para lo que neccesites en el future. Hopefully Google Translate has helped me out there, haha (learning Spanish is definitely on the list of things to do). I can't thank you enough for all your support over the past four years. You have been the perfect playmaker, providing numerous opportunities I never thought I would experience. As a mentor and friend, I am eternally grateful.

The Strikers

Dr Hooton and Dr Chandler, I would like to take this opportunity to express my deepest gratitude for all the help you have provided me throughout my academic journey. Your mentorship (which extends towards completing a master's program) has helped steer me to be on the cusp of gaining one of the highest educational achievements (a position that I never thought I'd be in). I'm sure our working relationship and collaboration will extend beyond the

completion of this project, and I look forward to any opportunities we find ourselves working on together in future.

The Fans

Mum, Dad, Alison, Daniel, Grandma, and Grandad, you have all provided the perfect foundation to do something with my life, and I can't thank you enough. Your unconditional love and support throughout this journey (despite never knowing exactly what I'm doing) do not go unnoticed. You have all been the best fans, cheering me on to reach my goals through the good and bad times.

Chapter 1 – Introduction

1.1 Setting the Scene

From an early age, I had a dream shared by many young boys of growing up and becoming a professional footballer. I always wanted to play for my local club, Derby County (The Rams), emulating historical greatness set by the likes of Roy McFarland and Steve Bloomer:

And your line-up for the Rams this afternoon…
In goal, Number 1, Jacob Zetterström
Number 3, Craig Forsyth
Number 24, Ryan Nyambe
Number 6, Sondre Langås
Number 35, Curtis Nelson
Number 32, Ebou Adams
Number 4, David Ozoh
Number 17, Kenzo Goudmijn
Number 11, Nathanial Mendez-Laing
Number 15, Lars-Jørgen Salvesen
And…Number 18, Liam Richardson [The crowd cheers – RICHO, RICHO, RICHO]

When I was around 14 years old, this dream was slowly becoming a reality as I gained my first exposure to academy football, notably with Derby County. However, at the end of what seemed like a regular training session, I was informed that I was unsuccessful in gaining a youth contract. While it was an upsetting experience, I continued playing football on the weekends until my desire to become a professional footballer became less appealing due to a change in motivation for what I wanted to do in life. Nevertheless, my love for football persisted, and I always wanted to complete a piece of work that could incorporate this passion. When deciding on a topic to pursue a PhD in, I reflected on the time I left the academy of Derby County with nothing but a handshake and no support for transitioning away from an environment where I spent countless hours immersed in thoughts of football.

Exploring anecdotal reports and academic literature, I discovered that my experience was not unique. Out of the 1.5 million boys who play organised youth football in England, only 180 will be signed by a Premier League team, equating to a 0.012% success rate (Calvin, 2017). The impact being released from an academy can have on a player has been well-documented,

with depression, reduced confidence, and diminished self-worth being reported in some cases (McGlinchey, 2022; Blakelock et al., 2016). For players who still perform at an academy level, the pressure of maintaining high levels of performance and behaviours to maintain their place within the system has also been reported to have the potential to negatively impact their well-being due to grappling with feelings of anxiety and depression (Abraham, 2022). Moreover, if a player graduates from an academy or reaches professional football via other means (such as being scouted from a semi-professional club), pressure could amplify as the sport can go from being a hobby to a job which is labelled as micro-political, cut-throat, competitive, and at times uncaring (Kerai et al., 2019). Taking all this into account, engaging with self-development could be vital to support players at different stages within their careers, as understanding oneself can help deal with personal or professional dilemmas more effectively via improved self-awareness and self-esteem (Miles, 2022). Consequently, players could be better positioned to deal with transitional periods, which could positively impact their well-being. This is because players can use their strengths, values, and characteristics to inform decision-making and foster a sense of purpose and direction (Miles, 2022; Belin, 2023).

However, literature suggests that engaging with self-development might not be utilised to its full potential within sports (particularly football), as there seems to be a hesitation to talk openly about ways to improve oneself (beyond physical performance) and a stigma around help-seeking behaviours (Kvillemo et al., 2020; Kola-Palmer et al., 2020; Miller et al., 2023; Breslin et al., 2017). This prompts the question of whether using tools that make athletes feel comfortable could improve the way players engage with self-development. One tool which comes to mind is technology, given today's technology-driven world (VanderLinden, 2024; Limani, 2022).

Based on my encounters with technology and analysis of anecdotal reports and academic literature, technology is predicted to play a significant part in people's lives for years to come (Granic et al., 2014; Limani, 2022; VanderLinden, 2024). A piece of technology that is growing in popularity is Virtual Reality (VR), as it creates experiences that can captivate and engage users in ways that surpass traditional mediums (Hamad & Jia, 2022). Before starting this PhD, my only understanding of VR related to an episode of South Park[1]. Within this episode, they used various references to mock VR and customer services, with Figure 1 showcasing an image in which the characters were trying to help their friend stuck in the Metaverse[2] (Parker, 2014).

[1] An American animated sitcom created by Trey Parker and Matt Stone and developed by Brian Graden (South Park, 2024). The episode which is being referenced was from Season 18, Episode 7 ("Grounded Vinaloop").
[2] The Metaverse refers to the convergence of physical and virtual spaces accessed through computers, and enabled by immersive technologies such as Virtual Reality, Augmented Reality, and Mixed Reality (Tucci & Moore, 2024).

A part within the episode that always stuck with me was when two of the main characters found themselves in a confusing situation, whereby neither knew if they were in the real world or a virtual one. I found this to be very intriguing in terms of the immersive power of VR. This episode aired in 2014, and technology (such as VR) has progressed significantly. As such, the potential of VR in various areas can pose an exciting line of inquiry.

Figure 1: South Park showing the power of Virtual Reality (Parker, 2014)

As will be discussed in Chapter Three, literature is available on personal development/self-development in football. However, despite advancements in sports science, technology, education, and training research, the potential of VR as a tool for self-development in football remains largely unexplored. This can be considered a topic of interest, given (a) today's technology-driven world, (b) the power of VR, and (c) the fact that engagement with self-development within football might not be utilised to its full potential, with hesitation to talk openly about ways to improve oneself beyond physical performance (Kvillemo et al., 2020; Miller et al., 2023; Breslin et al., 2017). These three points are what this thesis is built on, with the rest of this chapter (in addition to Chapters Two and Three) providing further insight into why this investigation can provide an original contribution to knowledge.

1.2 Economic Power and Development within Football

Football, or 'the beautiful game', has a global appeal with over five billion fans worldwide and an estimated 250 million players across 200 countries (Statista Research Department, 2024). Many reports unanimously agree that football is one of the most popular sports, with its popularity and rate of economic power showing no signs of slowing down (Omuya, 2023).

1.2.1 Economic Strength

Following the FIFA World Cup in 2022, revenue within European football grew by 16% in the 2022/23 season to €35.3 billion (Deloitte's Sports Business Group, 2024). The Premier League (England), Bundesliga (Germany), La Liga (Spain), Serie A (Italy), and Ligue 1 (France) are acknowledged as the top five leagues in the world, with the Premier League (the pinnacle of English football) solidifying its position as the dominant force within the footballing market. This is partly due to the league recording a 12% increase in total revenues from the 2021/22 season, reaching an all-time high income of £5.5 billion (Deloitte's Sports Business Group, 2023). This growth is likely the result of fans being allowed back into stadiums to watch games following the Coronavirus Pandemic. Nevertheless, the development of the English game has continued to increase since 2021, as revenues within the 2022/23 Premier League season surpassed £6 billion[3] (Deloitte's Sports Business Group, 2023).

When writing this chapter, Saudi Arabia is emerging as a sleeping giant in the economic footballing landscape. Since the beginning of 2021, Saudi Arabia has allocated over £4.9 billion towards sports deals, and in the 2023 summer transfer window, set a world record by spending close to €905 million on players (Michaelson, 2023). The success of Saudi Arabia's goal of becoming the sixth dominant league in the world remains uncertain, with many believing it could be a replica of when the Chinese Super League invested heavily with a similar goal of joining the top five leagues in the world (Duerden, 2023). Notwithstanding this, the substantial investment from Saudi Arabia, coupled with the sustained growth of Europe's leading leagues, indicates that the current financial value of football is likely far from reaching its potential. This is important to be aware of as it could suggest that football (on the whole) has the financial backing to invest in new ideas or develop current concepts.

1.2.2 Growth of Women's Football

The Fédération Internationale de Football Association (FIFA) reports that over 13 million girls and women worldwide participate in organised football (FIFA, 2021). This is likely due to significant growth in its visibility and economic power, particularly in Europe and North America (FIFA, 2021). The United States (US) has been at the forefront of developing the women's game, as evidenced by the equal pay agreement of World Cup earnings between their men's and women's international teams (BBC Sport, 2022; Hernandez, 2022). However, women's football has seen significant growth in England, with a 30% increase in registered

[3] When writing this chapter and submitting the thesis, the researcher was unable to find any published information indicating total revenues from the 2023/24 season.

teams, and a 15% improvement in female youth teams aged 5-18 since October 2021 (Football Association [FA], 2022). This increase has also resulted in increased viewing figures and attendance (Department for Culture, Media, & Sport, 2023), which can be attributed to the international team's success in the FIFA Women's World Cup in 2019 and 2023, as well as them winning the UEFA Women's European Championship in 2022 (McEvoy, 2022). The growth of women's football is important to consider, as any tool looking to be implemented within football needs to consider its impact on both the men's and women's game.

1.2.3 Technology in Football

Football has developed in various ways over the past few years, and although its rules are unlikely to see any significant changes, the incorporation of cutting-edge technology promises an exciting future for the sport. FIFA is the governing body of football worldwide and offers a range of objectives ('mission statements') to track its progress in making football more accessible and continuing its global development (FIFA, 2020). Before starting this PhD, FIFA outlined mission statements from 2020 to 2023, which can be outlined in Table 1 on the page below (FIFA, 2020).

Table 1: FIFA's vision (2020-2023)

Goal Number	Mission statement	Description
1	Modernise the regulatory framework	Concerns the rules and regulations of the sport and the fact that they need to be both evolutionary and transparent in their modernisation.
2	Grow revenues for re-investment	Recognition that sustainable investment in, and development of, football is key to its long-term growth.
3	Make FIFA more efficient	Attract and further develop a diverse and highly qualified workforce
4	Keep our competitions iconic	Set a benchmark and provide inspiration for all audience groups via the delivery of global sporting events
5	Deliver sustainable tournaments	Lay out the building blocks for FIFA competitions to become more global, and for events to have a greater geographical reach and be more universal in their inclusivity, audience, and impact.
6	Increase global competitiveness	Bridge the disparities in football across the world and investigate ways to broaden the globality of its tournaments by increasing participation
7	Maximise our development impacts	Lay out building blocks for further growth through many examples of reinforced governance structures and development of professionals and systems operating within them
8	Push women's football	Look at options to restructure the calendar to globalise both exposure and playing opportunities while generating revenues that can be re-invested in developing the sphere and increasing its professionalism, at the same time respecting its specificities
9	Harness technology in football	Enhance the implementation of existing tools and systems and continue to reshape the way the sport is both presented and perceived, also unlocking greater efficiency of footballs administration
10	Protect positive values in football	Improve the chances that core principles remain strong around the world and throughout
11	Make football work for society	Implement internal restructures and engage in a range of joint projects to address global challenges

FIFA, 2020

Goal nine shows FIFA's ambition to harness technology to improve football, both on and off the pitch (FIFA, 2020). In an increasingly digitalised world, Goal nine is likely to receive more attention in the coming years. This is evident in FIFA's updated mission statements for 2023-2027, as FIFA details its commitment to harnessing technology to improve the game through research, development, and innovation (FIFA, 2023). Some examples of technology that have already been incorporated into football and are receiving attention (positive and negative) include Video Assistant Referee (VAR), goal-line technology, and electric performance and

tracking systems (FIFA, 2023). A piece of technology growing in popularity within football is VR, which falls under the umbrella of Extended Reality.

1.3 Extended Reality

Extended Reality (XR) has rapidly improved since its creation in the 1950s (Marr, 2021; Shaikh et al., 2023). XR captures the user's movements and gestures and translates them into a virtual environment through motion tracking. This is made possible through sensors embedded either internally or externally in wearable Head-Mounted Displays (HMD), motion controllers, body trackers, or haptic suits (Herur-Ramen et al., 2021). XR technology can replicate challenging real-life environments while mitigating the risks of injury, damage, and expense. As a result, XR can be found in various settings, such as psychology, medicine, and the military (LeNoury et al., 2022). Within sports, the implementation of XR has been used to a lesser degree, although its popularity is increasing due to its capability to develop high-performance programmes which can help improve athletes' performances (Zhao et al., 2022; Onrix, 2023).

XR is used as an umbrella term that describes Augmented reality, Mixed Reality, and Virtual Reality, each pressing a unique potential to improve specific skills (Marr, 2021; Shaikh et al., 2023). Despite having their own unique characteristics, the distinction between the three can become blurry, likely due to marketing strategies and recent technological advancements (LeNoury et al., 2022). As a result, it is more accurate to conceptualise XR on a spectrum (as shown in Figure 2), which highlights a transition from entirely virtual modalities that obscure the real world to modalities where virtual and real worlds seamlessly blend while maintaining an awareness of each other (LeNoury et al., 2022).

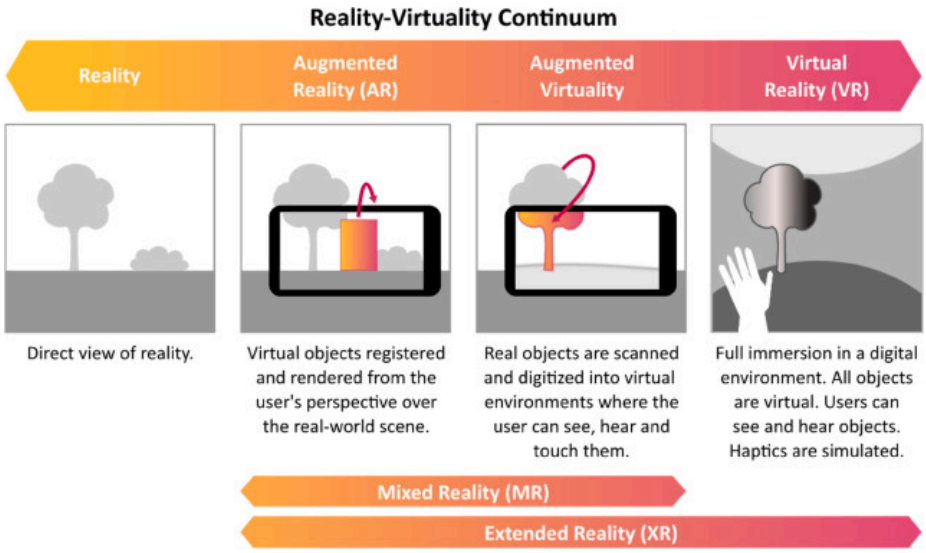

Figure 2: Extended Reality Simplified (Giorgio et al., 2023)

1.3.1 Augmented Reality

Augmented reality (AR) provides an immersive experience within a real-world environment whereby computer-generated information enhances or adds existing objects to the real world (Shaikh et al., 2023). The virtual sensory information portrayed within the real world (via handheld devices or glasses) can either be additive (introducing stimuli to the natural environment's ongoing activities) or masking (Concealing some aspects of the surroundings) (LeNoury et al., 2022). While AR enables users to interact with the real world, a limitation is its inability to allow users to physically engage or alter the position and properties of virtual objects, thus limiting realism (LeNoury et al., 2022). Furthermore, the virtual objects within the real-world setting do not intersect, meaning a virtual ball will not adjust its velocity upon impacting with a real-world object and instead pass through it without recognition (LeNoury et al., 2022).

1.3.2 Mixed Reality

Mixed reality (MR) uses a 3D platform which facilitates the interaction of computers, humans, and the environment (Shaikh et al., 2023). Like AR, MR overlays virtual objects into the real world but enables users to physically interact with these virtual elements (Shaikh et al., 2023; LeNoury et al., 2022). This results in a reality where both real and virtual objects coexist and interact with each other at the same time. Consequently, there could be a slight delay in the movements of virtual objects when users interact with them, potentially diminishing the accuracy of actions (LeNoury et al., 2022). Moreover, the haptic feedback within MR (such as vibrations) differs from the real-world sensations and the realism and brightness of virtual objects may be suboptimal (LeNoury et al., 2022).

1.3.3 Virtual Reality

Virtual Reality (VR) is a computer-simulated reality that enables users to immerse themselves in an artificial world, which may be wholly imaginary or a replica of the real world (Shaikh et al., 2023; Zhao et al., 2022). Typically, users wear HMD equipment with a stereoscopic screen to see animated images of a simulated environment, creating the sensation of 'telepresence' (being present in a virtual environment) (Sherman & Craig, 2003). This experience is influenced by motion sensors that detect the user's actions and adapt the screen to match these movements in real time (Sherman & Craig, 2003). Our personal experiences largely shape our perception of the world; as such, we tend to trust what we see, hear, and feel within our surroundings (Cipresso et al., 2018). VR aims to leverage these principles by incorporating an

optical system that projects an image onto a screen in front of the user's eyes (Chang et al., 2020). As shown in Figure 3, this consists of various components, including a light source (the display), receivers (user's eyes), and an optical element (lens). The light source typically involves micro-displays like Organic Light Emitting Diodes (OLED) or Liquid Crystal Displays (LCD). The optical elements collect light from the sources, creating a 3D virtual world rendering (Chang et al., 2020).

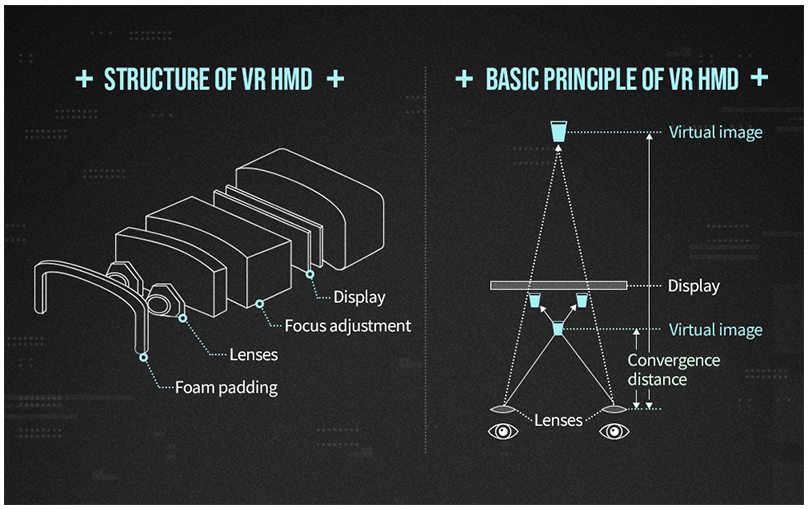

Figure 3: Structure and principles of Virtual reality (Sk Hynix Newsroom, 2019)

Although the concept of VR dates back to 1965, the introduction of affordable HMDs (such as the Oculus Rift in 2016) has brought VR to the forefront, with peer-reviewed papers as early as 2014 (Giorgio et al., 2023; Reinhard et al., 2020; Elmqaddem, 2019). VR systems vary depending on their purpose and the technology employed, but generally fall into three categories: non-immersive, semi-immersive, and fully immersive (Heizenrader, 2019). Non-immersive VR typically involves a 3D simulated environment accessed through a computer screen and controlled through a keyboard, mouse, or other device. However, non-immersive VR lacks direct interaction with the environment and simulates the experience of playing a video game on a console (Heizenrader, 2019).

Semi-immersive VR offers a partial virtual experience accessed through a computer screen in the form of a headset or glasses. This type of VR primarily focuses on the visual 3D aspect without incorporating physical movements, with examples seen in flight simulators (Sultan, 2024). Finally, fully immersive VR provides the highest level of engagement of the three by completely immersing the user in a 3D world (Sultan, 2024). This fully immersive experience incorporates key senses such as light and sound (and, in some cases, touch) (Elmqaddem, 2019). Users wear specialised equipment such as headsets, glasses, or gloves within fully immersive

VR environments, allowing a fully interactive environment (Richlan et al., 2023; Shaikh et al., 2023).

Regardless of the differences between AR, MR, and VR, all have benefits and potential applications in various settings. For the remainder of this thesis, the researcher will focus primarily on VR and refer to fully immersive VR. The justification for this is primarily influenced by the prototype used in this research, which was created in a fully immersive VR environment. As highlighted in Table 2 (on the page below), there is a range of VR headsets available within the market, each with its own strengths and limitations. For this PhD, the focus was on the Meta Quest 2 device, which was used for the prototype. The Meta Quest 2 is cost-effective and has access to 'development mode', which allows developers to create and share their content with millions of Oculus users globally (Meta, 2024).

Table 2: List of the best Virtual Reality headsets in 2023

Name	Cost (Approx.)[4]	Strengths	Limitations	Image
Meta Quest 2	£247.22	Doesn't require cables. Sharp display Powerful processor Accurate motion tracking Optional PC tethering via an accessory cable.	Has a short battery life	
PlayStation VR2	£494.45	Excellent graphics and sound Strong launch library Useful eye-tracking technology Lightweight build Easy to set up	Not compatible with all PlayStation VR games	
Value Index VR Kit	£823.26	Immersive, finger-tracking controllers High 120Hx refresh rate delivers smooth motion. Lots of VR software available on PC via SteamVR	Expensive Occasionally frustrating tethered design	

[4] The value will vary depending on website or retailer.

HTC Vive Pro 2	£658.44	The best resolution for VR gaming Smooth motion tracking Works with Value Index Controllers	Expensive Doesn't include necessary base stations or controllers	
Meta Quest Pro	£824.07	Improved design with a more comfortable fit than the Quest 2 Coll eye – and face – tracking technology Colour pass-through camera Rechargeable headset and controllers Doesn't require a PC to operate.	Expensive Meta Horizon's metaverse is often empty and sometimes buggy. Short battery life	
HP Reverb G2 VR Headset with controller	£580.00	High resolution for the price Comfortable headset and controllers Works reliability with SteamVR	Camera-based tracking has occasional hiccups. Much more expensive than the Oculus Quest, even when factoring the optional cable for PC tethering. Windows Mixed Reality platform is mostly inactive.	

1.4 The World is Catching On

VR has mainly been associated with the gaming industry, although there is growing interest in its application within various domains, such as education, training, healthcare, retail, and entertainment (Thompson, 2024). Even though the adoption of VR is still not at its full potential, one of the most significant areas of growth has been its adoption within health and well-being, with the VR and AR market within these areas expected to reach nearly $9.7 billion by 2027 (Balsubramanian, 2022). Furthermore, the education and training sector represents another promising avenue for VR, expected to reach $13 billion by 2026 (Vardomataski, 2022). Considering that self-development can positively influence well-being (Nutley, 2024) and will involve education and training to help advance skills, the question arises as to whether VR could act as an ideal platform. A company aiming to capitalise on this phenomenon is 'My Energy Game'.

1.4.1 My Energy Game

My Energy Game (MEG) is a newly established sports psychology company focusing on sports psychological interventions using VR. MEG aims to support football players by getting them to work on their self-development (using VR) to facilitate positive well-being. The aims and objectives of MEG align with Goal Nine of FIFA's 2020-2023 vision (Harnessing technology in football) but also meet Goal Seven (Maximising our development impact), Goal Ten (Protect positive values in football), and Goal 11 (make football work for society). This is because MEG aims to develop players, protect positive values within sport (i.e. looking after players and those within the game), and address a global challenge regarding the difficulties players have with coping with transitions (within and outside the game[5]).

Established in 2021, MEG's target population are footballers aged 16 to 40 at elite, amateur, and academy levels. The minimum age is 16 because this is the age where adolescents would typically be offered a two-year scholarship and become full-time (McGlinchey, 2022). The maximum age of 40 considers the development of football (in terms of diet, conditioning, and rehabilitation), whereby players can perform for longer. On average, players retire between the ages of 34 and 36, with female players more likely to retire between 32 and 34 (Jobs in Football, 2024). This PhD has used a prototype created by MEG to explore the 'potential' of VR as a tool for self-development within football by gaining the perceptions of both players and practitioners on this phenomenon. Chapters Two and Three outline reasons why this PhD did

[5] Explored further in Chapter Two.

not assess the 'actual' impact, in addition to the justification to focus on 'perceptions' as opposed to the 'efficacy' of the prototype. However, as will become more evident in the following two sub-headings, one reason why the 'actual' impact was not investigated is due to the tool used within this research being classed as a prototype, making it difficult to measure its impact towards self-development for footballers.

1.4.1.1 The Whole

The performance tool would begin by welcoming users via a guide/advisor called 'Many Feathers'[6], which introduces the game concept and guides users through the experience. Following this introduction, users would use a performance profiling tool (commonly used within sports psychology) to aid athletes and practitioners in exploring strengths and weaknesses within important physical, psychological, technical, and tactical factors (Bird et al., 2021). After completing this assessment/needs analysis, users would enter a locker room, where they can create their avatars to signify their own identity within the game (Gaydos & Devane, 2019). Furthermore, users would have the chance within the locker room to connect with teammates, which has the potential to provide users with avenues of support, motivation, and engagement to assist in progressing and working on themselves (Wenger, 1998).

Users would then be able to pick one of the five pillars outlined in Table 3 on the page below (which draws on the insights from various research in sports psychology), each presenting different areas/games that players can work through. For instance, one of the prototype games is based around the 'Build-On' pillar, which focuses on the coach-athlete relationship and understanding feedback (Mason et al., 2020). After completing the game, players would be prompted to reflect on what they have learned (i.e., using a voice note) to support player reflection and learning (Huntley et al., 2023). This would then allow the negotiation of meaning, which is established via an inherent relationship between participation and the duality of meaning (Wenger, 1998). Finally, players would walk through a tunnel towards a training ground or football match, signifying the end of the game. This is important because it can be seen as a player recognising that they have readied themselves for the training session or match. This can encourage ongoing engagement with the game as every time they complete a self-development task, the user is 'ready to perform'.

[6] The idea behind 'Many Feathers' comes from native Indian cultures, whereby gaining a feather is a sign of clear energy, increased understanding, and achievement. The game intends to incorporate the use of 'gaining a feather' to signify to users that they have completed a task that is helping them to improve.

Table 3: Five pillars of My Energy Game

Pillar	Definition
Step-In	Becoming aware of one's body and mind and how the combination of both affects your energy
Dial-In	Be able to connect with one's mind (thoughts) without letting it overwhelm oneself
Warm-up	Take care and not feel obligated to defend yourself. Establish habits which allow an individual to be the best version of oneself and be comfortable in one's own skin
Build-On	Set up a healthy boundary between one's energy and the energy of others. Having deep and meaningful conversations demonstrated by one's words and actions
Level-Out	Take the learning gained to sustain balance through life

1.4.1.2 The Parts

The prototype consisted of two games centred around the 'Build-On' pillar[7]. The first game focuses on the 'athlete-coach relationship', while the second looks at 'communication with others and reflective practice'. Given that both tasks were at a prototype stage and did not show the complete process of the game, the potential to measure them as a tool for self-development was a challenge. Furthermore, if one were to comprehend the effectiveness of each task towards self-development, researchers would need to complete observations over an extended period (which fell outside the remit of this PhD). This provides some context as to why this PhD was exploratory in nature and did not focus on the 'actual' impact or 'efficacy' of the prototype. The PhD used the prototype to help provide a better understanding for players and practitioners to grasp the concept of VR being used in this fashion to facilitate a more detailed discussion. This also explains why the PhD focused on 'perceptions' as the tool/concept is still underdeveloped. This demonstrates how the PhD made an original contribution to knowledge by exploring the use of VR as a tool for self-development in football.

1.5 Aims and objectives

Chapters Two and Three explore the literature in depth, offering a more comprehensive understanding of using VR in the realm of self-development within football. As a result, the aims and objectives will be revisited at this point to reinforce their relevance in light of the literature which was analysed. However, the researcher deemed it beneficial to outline the aims and objectives at this stage to provide the research with some context. This PhD aimed to explore the perceptions players and practitioners in football have on the use of VR as a tool for self-development within the sport. This was achieved by the following objectives:

1. Acquire insights towards received and wanted support for players and the general well-being of those working within football

[7] The specifics of these games will be outlined in Chapter Six.

2. Explore initial perspectives of footballers and practitioners regarding the integration of technology (specifically Virtual reality) to support the delivery of self-development and well-being
3. Observe football players' reactions to a Virtual Reality prototype aiming to support players with self-development
4. Observe practitioners' reactions to a Virtual Reality prototype aiming to support players with their self-development
5. Explore the perspectives of football players regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology
6. Explore the perspectives of practitioners regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

1.6 Structure of the Thesis

Following this introductory chapter, attention turns towards a range of underpinning theories used to guide this research before evaluating the literature in Chapter Three. Following the literature review, the methodology used to inform this research is outlined. However, the methods are discussed in more detail in the chapters for each of the completed studies. Chapter Five showcases the first study whereby the researcher used a survey to explore the prevalence of well-being issues in footballers and the relationship between received and wanted support towards the prevalence of well-being issues. Furthermore, this study looks at the well-being of practitioners before exploring players' and practitioners' opinions and experiences towards VR and the initial acceptance of VR as a tool for self-development in the sport. Chapter Six outlines the first of the two qualitative studies and focuses on observing football players' reactions to a VR prototype aiming to support players in engaging with self-development. Moreover, this study explores football players' perceptions of the integration of VR for this purpose (based on their experience). Chapter Seven is the second qualitative study, which was almost identical to the one completed in Chapter Six. However, the key difference is that Chapter Seven focuses on practitioners' perspectives. Chapter Eight then synthesises the findings from all three studies, providing recommendations for future research.

1.7 Chapter Conclusion

Literature suggests that engaging with self-development might not be utilised to its full potential within sports (particularly football), as there seems to be a hesitation to talk openly about ways to improve oneself (beyond physical performance) and a stigma around help-seeking

behaviours (Kvillemo et al., 2020; Kola-Palmer et al., 2020; Thomas et al., 2023; Breslin et al., 2017). This prompts the question of whether using tools that make athletes feel comfortable could improve the way players engage with self-development. With technology becoming an essential component in everyday life, it is worth considering whether its implementation towards self-development may be of benefit. VR is growing in popularity and has the potential to be a useful tool to engage players due to its interactive and immersive nature. Building on this line of enquiry, the following chapter will draw upon the underpinning theories that can provide the foundation for why VR within the context of self-development for football players is a pertinent area of investigation.

Chapter 2 – Underpinning Theory

2.1 Introduction

Technology is becoming more popular in sports, influencing areas such as data analysis, television experiences, sports medicine, and injury prevention (Oosthuizen & Hunter, 2024). The role technology is playing in sports psychology is gaining increased attention, offering a unique opportunity to complement traditional methods and enhance performance from both physical and tactical standpoints (Watson & Halbrook, 2014; Watson & Coker-Cranney, 2018). To understand how technology can be integrated into football as a tool for self-development, it is essential to delve into relevant theories that helped guide this research and provide a framework for critically evaluating literature in Chapter Three. Therefore, this chapter will explore theories within the areas of transitions, self-development, and Game-Based Learning.

As briefly touched upon in Chapter One, footballers may undergo various challenges/transitions in their career, which have the potential to impact their performance and well-being in a negative way. By identifying some of the common transitions football players may face, in addition to athlete career development models to highlight challenges athletes face at different career stages, a foundation can be set for outlining the importance of engaging in self-development. Examining how the Self-Determination Theory and Maslow's Hierarchy of Needs contribute to effective self-development can aid in understanding how to enhance footballers' capabilities to navigate challenges during common transitions. Armed with this understanding, it becomes possible to explore prevalent theories that help to know how athletes typically confront transitions, providing insights to determine appropriate time frames to offer athletes/footballers support. After exploring these theories, the chapter will then draw on Game-Based Learning, which delves into the possible application of technology (grounded in gaming principles) as an approach for footballers to engage with self-development. This may then help footballers improve their coping mechanisms during transitions, which has the potential to positively impact well-being.

2.2 Transitions

Exploring career transitions of athletes is an area of interest within academic research, as all athletes encounter numerous transitions while striving to achieve a successful career (Tonge, 2021; Nesti, 2010). Traditionally, the primary focus of athletic transitions has surrounded retirement, although, over the past 15 to 20 years, there has been a shift to adopting a life-span

approach (Pummell et al., 2008; Wylleman et al., 2004). Attributed to this is the understanding that a 'whole person' or 'whole career' approach needs to be taken as athletes' careers are often shaped by factors occurring both within and outside of their sport (Wylleman & Lavelle, 2004; Alferman & Stambulova, 2007; Lyons, 2018). Transitions that occur within the trajectory of an athletic career act as pivotal phases, and understanding them can help identify what athletes require to cope with the specific demands that come with the particular transition (Wylleman et al., 2004; Stambulova et al., 2009).

'Transition' is a broad term, but can be defined by Schlossberg (1981, p.5) as *"an event or non-event which results in a change in assumptions about oneself and the world, and this requires a corresponding change in one's behaviour and relationships".* Nesti et al. (2012) suggest that the word 'transition' may imply a seamless and uneventful period. Therefore, they recommend using the word 'critical moment'. While it is astute to suggest that a crisis may occur during a transition, this is not always the case. Therefore, using the term 'transition' can be seen as more appropriate as it encapsulates a process of experimental growth and development through change (good or bad), wherein individuals construct and reconstruct their identity (Batchelor et al., 2020; Hauge & Law, 2021).

Transitions can be categorised into anticipated, unanticipated, and non-events. An anticipated transition is foreseeable and usually follows a predetermined schedule (such as finishing school). Whereas unanticipated transitions are unexpected and unplanned (like going through a breakup or encountering the sudden loss of a loved one) (Schlossberg, 1989). A non-event transition is similar to an anticipated one, although they never actually materialise. Non-events can be classed as follows: 'Personal', which surround aspirations (e.g. not having children when one has always wanted to become a parent); 'Ripple', which is a result of another event not occurring (e.g., a spouse not receiving an expected promotion); 'Resultant', caused by the occurrence of another event (e.g., an adult choosing not to have children, resulting in them not becoming a grandparent); 'Delayed', which involves the anticipation of an event that sill may happen in the future (e.g., getting pregnant after giving up trying) (Schlossberg, 1989; Schlossberg et al., 1995).

Goodman et al. (2006) characterise transitions into three distinct stages: moving in, moving through, and moving out (as outlined in Figure 4 on the page below). In the initial stage, Goodman and others suggest that individuals enter a new situation to which they familiarise themselves. Once settled within this new setting, individuals must learn to balance their commitments with other aspects of their lives as they navigate the transition. Once complete, an individual is deemed to have moved out of the transition (Goodman et al., 2006).

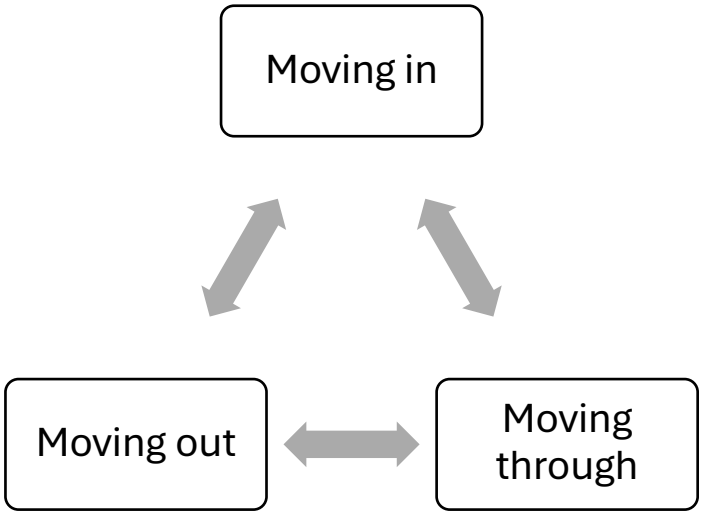

Figure 4: Stages of a transition (Goodman et al., 2006)

Everyone will encounter some kind of transition in their life, such as marriage, splitting up with a partner, birth, death, graduation, starting a new job, or moving house (Womack, 2021). Within a sporting context, examples can include changing teams, being injured, moving from amateur to professional levels, having a new manager, or retiring. Transitions are not always simple to navigate, and how we handle changes resulting from a transition can profoundly impact our lives, careers, personal growth, and overall well-being (Praharso et al., 2017). In the realm of sports, career transitions can refer to *"turning phases or shifts in athletes' development associated with a set of specific demands that athletes have to cope with to continue successfully in sport and/or other spheres of their life"* (Stambulova & Wylleman, 2014, p.607). Therefore, a transition can influence an athlete's career trajectory, which can be more challenging when multiple transitions occur concurrently (Hendricksen et al., 2023). Considering that athletes may experience a transition at some point in their careers, it can be regarded as important to comprehend some of the common transitions football players may face. This knowledge can help justify why engaging with self-development can be beneficial, as players can use their strengths, values, and characteristics to inform decision-making and foster a better sense of purpose and direction to help overcome the transition (in terms of positively influencing well-being) (Miles, 2022; Belin, 2023).

2.2.1 Common Transitions Footballers May Face

Pummel et al. (2008) took a step away from the primary focus within the literature (retirement) and delved into 'within-career' transitions. Examples of these within professional and academy football can include being dropped, moving to another club, assuming the role of team captain, grappling with common and career-threatening injuries, and dealing with family and relationship challenges (Pummel et al., 2008). These transitions will now be outlined in more

detail to provide context as to why there needs to be a focus on football players and why focusing on strategies that work on self-development can be beneficial.

2.2.1.1 Being Dropped

Football is a continual struggle of managing success and coping with setbacks, as despite displaying strong dedication and making personal sacrifices, players have limited control over their careers in both the short and long term (Roderick, 2006). The term 'dropped' has a dual meaning, with the first being non-selection (being benched) because of poor performance, injury, or disciplinary reasons. The second meaning can be interchangeable with the term 'released', which involves complete removal from the team or club (Nelly, 2022; Nelly et al., 2017). Literature examining the well-being of footballers when excluded from the squad (when no injury has occurred) is scarce. However, research by Ryall (2008) suggests that sitting on the bench and being unable to contribute towards the shared goal of winning can lead to feelings of exclusion and a sense of 'not being a part of the team'. As a result, being left out of the squad can be particularly challenging to cope with (especially when seen in the public eye) and could lead to a range of emotional responses, outlined in Figure 5.

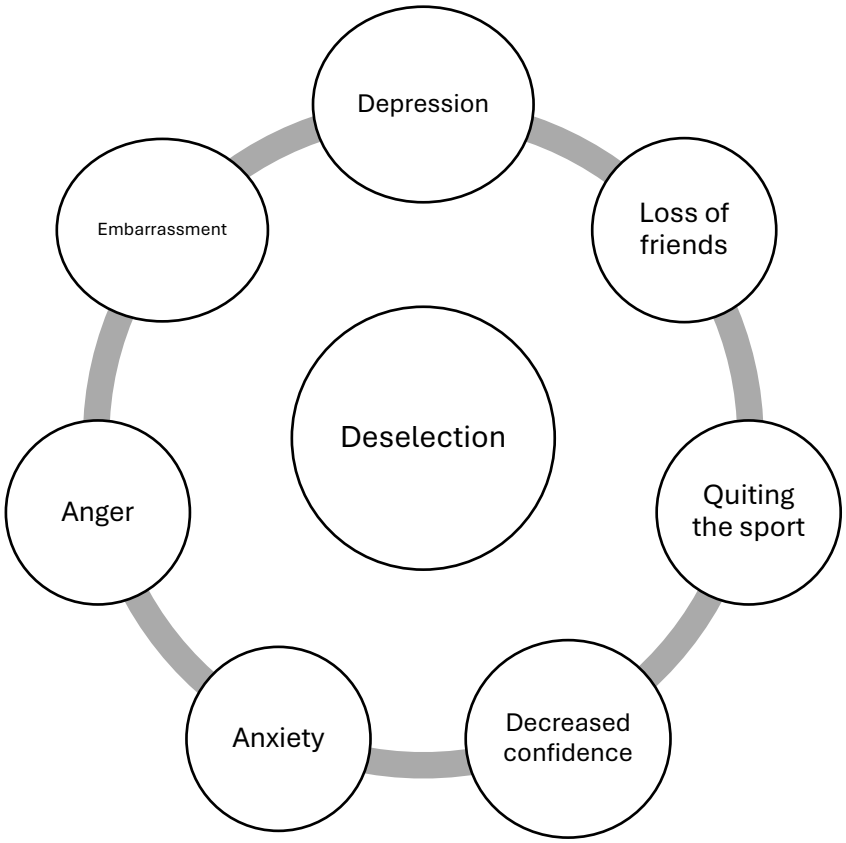

Figure 5: Common emotional responses following deselection (Neely, 2022)

Looking at the psychological impact of being released at academy levels, literature and anecdotal reports are vast. Out of the 1.5 million boys playing organised youth football in

England, an estimated 180 of them will be signed by a Premier League club, the equivalent of a 0.012% success rate (Calvin, 2017). In 2011, there were 13,612 boys enrolled in the professional football academy system in England, but nearly half of them left the system before turning 16 (Premier League, 2012). Additionally, almost 98% of players who receive an academy scholarship at 16 from an English club, no longer play in the top four tiers of English football by the time they reach the age of 18 (Calvin, 2017). Male players can join an academy starting at age nine in England, attending two to four weekly training sessions, alongside a competition at the weekend (Richardson et al., 2004). This can lead to young athletes sacrificing social and educational aspects of their lives to meet the rigorous commitments expected of academy football players. This intensity can help players develop a strong athletic identity (Edison et al., 2021), which can impact how they cope with a transition through the influence their identity can have on various psychological and emotional reactions (McGlinchey et al., 2022; Brown & Potrac, 2009). Research suggests that elite youth footballers who develop a strong athletic identity may experience emotional challenges when this identity is disrupted by being released, making it harder for them to adapt to life away from the sport (Brown & Potrac, 2009).

Since a small number of boys sign a professional contract at the age of 19, many of them may face an identity crisis and psychological issues when transitioning out of the sport (Green, 2009; Calvin, 2017). This can be due to their limited control over their sporting career and the perception of failure in achieving or fulfilling their potential (Warriner & Lavallee, 2008; Park et al., 2013). Potential consequences towards players' well-being can include depression, anxiety, an identity crisis, reduced self-worth/esteem, suicidal thoughts, and attempted suicide (Warriner & Lavallee, 2008; Wippert & Wippert, 2008; 2010). This can provide context as to why engaging with self-development can be beneficial, as working on oneself throughout a career can protect one's identity, thus positioning oneself in a better position to deal with a transition such as this (Lally, 2007).

2.2.1.2 Injuries

Injuries are an unfortunate yet recurring aspect in football (Putukian, 2019), with a study in Germany showing that during the 2014/15 Bundesliga and Bundesliga 2 seasons, 79.2% of players experienced injuries, with 62.3% occurring during training and 37.3% during matches (Klein et al., 2017). The findings indicate an incidence rate of 2.5 injuries per player per season (Klein et al., 2017). Injuries can also occur at academy levels, with fractures, sprains, and contusions being the most prevalent injuries (Schwebel & Brezausek, 2014; Peterson et al., 2017). Injuries are recognised as a major contributor to negative well-being within elite-level

football (Bate, 2019). Gouttebarge et al. (2016) showed that severe musculoskeletal injuries during a football career are linked to distress, anxiety, and sleep disturbances. For young athletes, the challenges extend beyond the threat of physical injury on the field. This is because they must grapple with growth, maturation, and development, which can impact their performance (Finch & Twomey, 2013). These changes in body development, size, muscle mass, and neuromuscular systems heighten the vulnerability to certain injuries, particularly soft tissue injuries (Finch & Twomey, 2013).

Turning attention to women's football, a well-researched concern surrounds the prevalence of Anterior Cruciate Ligament (ACL) injuries, which has led to players worrying about their playing style and longevity in the sport (Hunter, 2024). Women's football is still developing, and while investment is improving, it is far from reaching the levels observed in the men's game. As a result, when female footballers sustain an injury (especially something like a long-term injury such as an ACL), there is a high chance of female players leaving the sport/career entirely. For instance, a study in 2019 concluded that 30% of former Polish female football players terminated their careers due to long-term treatment of an injury (Grygorowicz et al., 2019).

The nature of this transition differs across academy and elite levels. This transition could be classed as a 'resultant non-event' (caused by another player's actions), a 'delayed non-event' (as it could occur in the future), a 'personal non-event' (resulting from excessive commitment leading to overuse or burnout), or a 'ripple non-event' (where a player appears healed but re-injuries themselves due to incomplete recovery). Taking the example of a ripple non-event where a player can re-injure themselves due to incomplete recovery, anxiety levels of players could elevate when they are injured out of fear of recurrent injury. Consequently, a player's performance may be impacted as they adapt their approach to evade or minimise the likelihood of repeating the action that led to their injury. An example of this comes from former professional footballer Michael Owen, who openly discussed his apprehension about straining his hamstring, which prompted him to alter his playing style (BBC Sport, 2018). However, like countless other players undergoing this situation, he remained silent and did not discuss this fear until after his playing career.

Considering the impact an injury can have on football players across all levels (male and female), engaging in self-development can be beneficial in fostering a positive mindset, potentially speeding up the recovery process and increasing the likelihood of becoming more mentally strong when returning to training (Tranaeus et al., 2024). This is because engaging in self-development can allow players to improve their relationships with others, self-awareness,

communication, and reflective practice (Tranaeus et al., 2024; Podlog & Eklund, 2006;2007; Podlog & Dionigi, 2010).

2.2.1.3 Loans

A loan is a process where a footballer may temporarily move clubs while still being registered as a contracted player with their original club (Bond et al., 2020). This type of transition can be considered unanticipated, with some clubs using a loan as part of talent development initiatives (Swainston et al., 2020), while others use it as a means of supplementing talent resources (especially for clubs with limited financial capacity to compete within the transfer market) (Bond et al., 2020). If successful, a loan transition has the potential to increase the player's financial worth and improve their skills (Carmichael et al., 1999). On the other hand, players who struggle with this transition could experience a decline in well-being, performance, and career progress (Stambulova, 2003). By engaging in self-development, players can work on developing resilience, increasing confidence and self-efficacy, and developing a growth mindset, putting them in a stronger position to deal with this transition (Fletcher & Sarkar (2012; Ryff & Singer, 2008; Dweck, 2006).

2.2.1.4 Dealing with Relationship and Family Challenges

It is crucial to emphasise that when a player leaves a club (either on loan or permanently), it does not just impact athletic performance; it can also have repercussions on a player's personal life. The process of moving to a new town or residence can be daunting (Smith, 2024), with a lack of familiarisation, uncertainty, and disruption potentially triggering new or pre-existing anxiety and depression (Hammond, 2014). As part of their doctoral research, Dr Graeme Law presented key insights from football players, indicating that players and their families experience loneliness and isolation when changing football clubs. Players' families spoke about how they would refrain from forming relationships with neighbours and the emotional toll of having to leave their friends behind. The repercussions for players were evident in their performances, with some noting that the impact their move had on their families harmed their on-field performance, leading to instances of being dropped from the team (Trueman, 2018)

As outlined in Chapter One, the money in football is eye-watering, with the average wage of a Premier League player being just over £60,000 a week (equating to more than £3 million per year) (Cox, 2023). But it is not just top-flight footballers that earn significant amounts of money, as players performing within The Championship (the second tier of English football) can earn just over £4,000 per week (equating to around £200,000 per year) (Cox, 2023). For individuals who come from low-income families, being introduced to high salaries can be life-changing.

Appearing on the 'Happy Hour Podcast' in 2023, ex-professional footballer Troy Deeney provided an insightful look at how the money he was earning impacted his personal life and relationships with friends and family. Reflecting on the time spent in lockdown, Troy realised that a lot of his earnings were being distributed to different individuals: *"When we got to lockdown, and we did the thing with Watford, and we stopped getting paid for three of four months. I just used it as an opportunity because I went through my finances, and I'm like, hold on, my outgoings are X. Half of that's not even on me. Why am I covering this, why am I covering that? Family and friends, because I had the expense, I was like, 'I'll just do it'. People would kind of lean in on it. You'd be at a family function and my nan, bless her, she'd be like 'cousin over there is going through a bit of a tough time, will you go speak to him?' My nans asked, so I'll go speak to him, and he's like, 'You know, just lost my job, and I've lost this, and I've lost that, [can I] borrow five grand?' And at that point, I either say no, and then its awkward. And they're like, 'We know you've got it'. I hate it when people say, 'Can I borrow?'"*. Further in the interview, Troy provided an example where it went too far, and he had to cut ties with a friend: *"There was a friend, an old friend, that kind of used that favour of an amount of money. I wanna say four months later, 'Hi mate, hope you're alright? Just going through a bit of a tough time with gambling. Could you help me out to cover this?'. And literally, the message before it was, 'Thank you so much for lending me that money'. What he'd done, he'd been gambling, gone all around the cycle and come back to me. I was like, 'Dude, you still owe me X for this one'. [He said] 'Oh yeah, I'll get you back'. [Troy said] 'I don't want it back. Just delete my number, don't worry. We are not friends not, not for the monetary, but clearly, you think you can just use it'"* (Burnham, 2023; Happy Hour Podcast, 2023).

Troy Deeney's experience does not stand alone as ex-footballer Ian Wright spoke about his experience of giving money to his dad and step-mother (whom he had not seen in seven years) to start their own restaurant: *"He needed money because she's some good cook and he wants to open a restaurant…I don't know what it was, but I have him enough money. I feel really bad in myself because if my mum knew, she would probably be vexed"* (Kasper, 2021). The two examples show that players could lack trust in their friends and family due to the risk of being taken advantage of. Ex-professional footballer Jonathan Walters exemplifies this further by saying, *"You are close to your teammates, but there is such a turnover that it's hard to stay close to everyone. I think players have trust issues because a lot of people outside of football will try to take advantage of you."* (The 42). A roll-on effect is that players may reduce their social support, which can be an issue as a survey in 2009 found that players with insufficient perceived social support were more likely to suffer from anxiety and depression (Cadzow & Servoss, 2009). Engaging with self-development can help players work on their

communication, self-worth, and relationships with others to help players when dealing with issues such as this (Rickardsson, 2023; Powell, 2024).

2.2.1.5 Assuming the Role of Team Captain

Leadership constitutes a fundamental element of sports performance in team sports (Cotterill & Fransen, 2015). Athlete leadership is characterised as *"an athlete occupying a formal or informal role within a team, who influences a group of team members to achieve a common goal"* (Loughead et al., 2006, p.114). By its definition, athlete leadership in football pertains to the 'captain' of the team, serving as a formal leader responsible for bridging the gap between the players and coaching staff (Cotterill & Cheetham, 2016; Carson & Walsh, 2018). Earning the captaincy is often referred to as a prestigious accolade, signifying the acknowledgement of one's respect and trust to lead the team in the right direction under the umbrella of the coaching staff (Lauer & Blue, 2014). To portray this honour and the impact on a player's emotions, a tweet by an elite professional footballer (Ílkay Gündogan) shows his excitement about becoming team captain for Manchester City in 2020: *"Proud to be the captain of this amazing team and this great club. I've already worn the armband before, but to be named the official captain for the first time is a really big honour. I will continue to give everything on and off the pitch to make this a very successful season".*

Numerous studies have demonstrated that leaders within a sports team can positively impact team members' confidence, cohesion, team identity, and intrinsic motivation to achieve a team objective (Fransen et al., 2016; Fransen et al., 2015*;* Fransen et al., 2018). However, when athletes fail to fulfil their leadership role adequately, there is the potential for a detrimental impact on and off the pitch (Fransen et al., 2015; Cotterill, 2016). Upholding a leadership position is challenging (Voelker et al., 2011; Carson & Walsh, 2018), especially in sports like football, where a captain simultaneously faces several performance and organisational pressures (Camiré, 2016; Carson & Walsh, 2018). Pressure can also amplify when the team is losing, which can decrease their performance and cause a reduction in confidence and mood (Smith et al., 2018; Carson & Walsh, 2018).

There are several examples where players were stripped of their captaincy due to issues on and off the field, such as William Gallas hitting out at some of the younger members of the Arsenal squad or Joey Barton's poor behaviour on the pitch for Queens Park Rangers. One can predict that the added pressures of being captain could have influenced these outbursts. However, as Carson and Walsh (2018) suggest, this can only be a hypothesis due to a lack of research into this phenomenon. An example that can give more insight into the pressures of being a captain

and the impact it can have on performance and well-being comes from ex-professional footballer Steven Gerrard. He warned future players that they need to be *"thick-skinned"* to be captain of Liverpool and provided insights into how he felt being team captain for so long: *"On good days, you" feel on top of the world. On bad days, you" feel sad and lonely. If you can't handle the low days when shit hits the fan and everyone's out to get you, if you can't handle those days mentally, don't take the job. Every single day, even when I wasn't playing badly, I felt that pressure"* (Prince, 2016). His statements highlight that being a captain has the potential to negatively impact well-being. As a result, engaging in self-development could help players cope better with the demands of being a captain.

2.2.2 The Model of Human Adaptation

The Model of Human Adaptation, also known as Schlossberg's Transitional Model, provides a systematic approach for understanding adults (and more recently, young adults and adolescents) undergoing transitions. In addition, it provides a guide in accessing essential support for navigating routine and exceptional life transitions (DeVilbiss, 2014). Illustrated in Figure 6 (on the page below), the model identifies four factors (also known as 'The Four S's') influencing an individual's ability to cope during a transition, which include: 1) Situation (how the individual perceives the transition); 2) Self (the individuals characteristics); 3) Support (availability of various social support); 4) Strategies (such as information seeking or direct action) (Schlossberg et al., 1995; Stambulova & Wylleman, 2014).

Within this chapter, the first S ('Situation') has been alluded to with five examples of common transitional periods footballers may face within their career (being dropped, injury/illness, loans, dealing with relationship and family challenges, and assuming the role of team captain). The second S ('Self') relates to self-development as the SDT and Maslow's Hierarchy of Needs highlight that individuals can strive for self-actualisation and personal growth. In the context of this PhD, the researcher is looking at how we can use self-development ('Self') alongside the fourth S ('Strategies') to see if game-based learning through Virtual Reality could be effective in tackling and overcoming the 'Situation'. To understand this, the researcher needs to understand more about the third S ('Support') to understand what players and staff feel about using Virtual Reality as a means of working on self-development within football. This provides some justification as to why received and wanted support is discussed within the literature review.

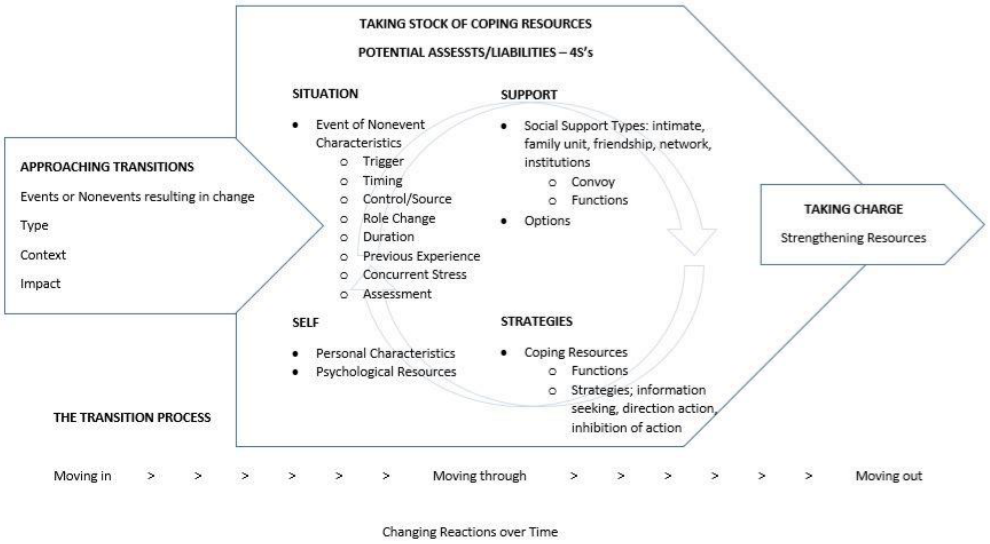

Figure 6: The Four S's (Schlossberg et al., 1995)

Although it was not initially designed for sports, the model has been successful in sports psychology (Swain, 1991; Sinclair & Orlick, 1993; O'Halloran, 2019) and has laid the groundwork for the development of other sport-specific career transitional models (as will be discussed). Nevertheless, it has also been criticised within the sports psychology literature. Critique comes from the fact that it is not specific enough within a sporting context (Pummell, 2008), making it challenging to determine the relevance of its factors for a successful transition (Taylor & Ogilvie, 1994; Pummell et al., 2018; Morris, 2013). This limitation has hindered its application in sports psychology as it is argued that sport-specific factors which impact an athlete need to be acknowledged to understand certain transitions, with research highlighting athletic retirement as a key example (Coakley, 1983; O'Halloran, 2019).

2.2.3 The Holistic Athlete Career Model

While football players can face a number of transitions which have the potential to negatively impact well-being and performance, it is important to recognise that these non-normative transitions are not the only challenges an athlete may face (Wylleman & Lavallee, 2004; Wylleman, 2019). A model that highlights this is the Holistic Athletic Career Model (Wylleman, 2019), shown in Figure 7 on the page below.

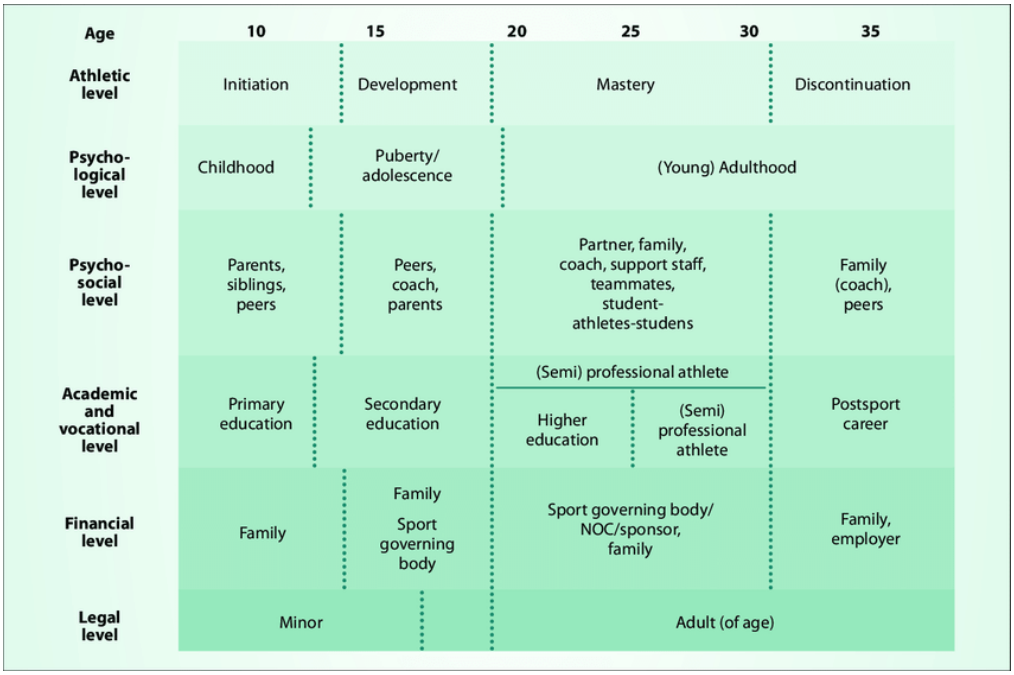

Figure 7: The Holistic Athlete Career Development Model (Wylleman, 2019)

The model marks a shift towards adopting a holistic perspective by outlining athletic and non-athletic development stages. A limitation of this model is that it makes the impression that athletes' careers are linear, although this is not necessarily the case (Stambulova & Wylleman, 2019; Wylleman, 2019). Additionally, the model suggests that discontinuation from the sport occurs after the mastery stage, which, given some of the non-normative transitions a football player can face, players may leave the sport before reaching mastery levels (Wylleman, 2019). In essence, the model can suggest that career development is a one-size-fits-all (Stambulova et al., 2020), which is not necessarily the case. Despite these limitations, the Holistic Athlete Career Development Model (Wylleman, 2019) outlines six areas that can help guide athletes throughout their careers. This can provide useful knowledge for athletes and practitioners and justifies why engaging in self-development throughout an athletic career is essential.

2.2.3.1 The Athletic Level

The athletic level describes four normative transitions athletes go through. The first is an initiation into competitive sport, typically around the ages of 5 to 12. At this stage, athletes become accustomed to the sport and start to engage in organised training and competition environments. Following this, athletes transition into the development phase, where the level of training and competition intensifies, and the focus turns to developing skills to 'win'. This transition can typically occur between the ages of 12 and 13 and can last until the athlete is around 18 or 19, when they may transition from junior to senior levels. The final transition is the discontinuation stage, where an athlete terminates training and competition in their sport

(Wylleman & Lavallee, 2004; Wylleman, 2019; Solhaug et al., 2021). This level is more associated with the continual development/improvement of an athlete's physical ability. Nevertheless, it can help provide context as to where an athlete is within their career, which is further alluded to with the Football Model of Transitional Development (highlighted later in this chapter).

2.2.3.2 The Psychological Level

The psychological level outlines three stages that athletes go through, starting with the childhood phase. This level is characterised by the understanding and responsibility athletes have for their roles. Athletes then transition into adolescence (typically at age 12), where they face a range of developmental tasks that must be managed effectively to ensure maturity. These tasks can include navigating more mature relationships and achieving emotional independence from parents and others. Finally, athletes move into the young adulthood/adulthood phase, where they continue to engage in tasks associated with managing and developing more mature relationships and furthering their self-identity (Wylleman & Lavallee, 2004; Solhaug et al., 2021). This level is linked to the athletic development stage, as athletes who manage more mature relationships and cultivate a sense of independence can advance into adulthood and achieve higher levels of performance. Essentially, this justifies the importance of engaging in self-development.

2.2.3.3 The Psychosocial Level

The psychosocial level refers to the social networks that are important for athletic development and relevant to their athletic career stage. Understanding this level is important, as it can help athletes and practitioners identify and utilise key support networks more effectively. The initial phase suggests that (concurrent with the initial stage of the 'athletic level') parents, siblings, and peers are the most influential people for athletic development. Following the transition into the development and adolescent stages, peers, coaches, and parents are key to athlete development. Concurrent with the mastery and early adulthood/adulthood stages of athletic and psychological levels, relationships athletes have with their partners and coaches are most influential. Finally, from the age of approximately 29, the relationship athletes have with their family and coaches is of primary influence (Wylleman & Lavallee, 2004; Solhaug et al., 2021). Engaging in self-development can support players build the mental, emotional, and relational tools they need to develop strong relationships and stay motivated to achieve their goals (Blake, 2019).

2.2.3.4 The Academic and Vocational Level

The athletic and vocational level highlights four transitional phases (often referred to as 'dual career transitions'): primary and secondary school; higher education and semi/professional sport stage or semi/professional athlete stage; and post-athletic career (Wylleman & Lavallee, 2004; Solhaug et al., 2021; Debois et al., 2015). Engaging in self-development at academic and vocational levels allows athletes to build skills that can be transferable to other areas of both their athletic career and post-athletic career (Hong & Fraser, 2022).

2.2.3.5 The Financial Level

The financial level outlines sources of financial support throughout an athlete's career and how this changes alongside the other transitions at the athletic, psychological, psychosocial, and academic/vocational levels (Wylleman & Lavallee, 2004; Wylleman, 2019; López-Flores et al., 2021; Solhaug et al., 2021). By engaging in self-development (specifically financial self-development), athletes can build habits and knowledge to help safeguard their future (Excel, 2024; Di Domenico et al., 2022).

2.2.3.6 The Legal Level

The final level refers to legal considerations that can impact an athlete's career (i.e. contracts, employment law, health and safety, anti-doping laws and regulations, social media presence, and intellectual property) (Wylleman & Lavallee, 2004; Wylleman, 2019; López-Flores et al., 2021; Solhaug et al., 2021). Self-development is an important aspect as it ensures they are not only physically and mentally prepared for/within their career but also can equip them with skills (i.e. improved communication, increased self-awareness, enhanced critical thinking) to handle the legal landscape within professional sports (Kazazi, 2023).

2.2.4 The Football Model of Transitional Development

While the Holistic Athlete Career Model (Wylleman, 2019) provides useful insights into the normative transitions an athlete may face within their career (thus justifying the benefits of engaging in self-development), it is not 'sport-specific'. A model that is related to the phases a football player may face within their career (that are not based on physical performance) is the Football Model of Transitional Development (Richardson et al., 2013), highlighted in Figure 8 on the page below.

Athletic Level	Academy (16-19s) Development	Post- Academy Developing Mastery	First Team Mastery
Psychological Level	Adolescence	Social insecurity and comparison	(Young) adulthood, limelight stardom
Psycho-Social Level	Peers, parents, coach, sport psychologists, educators, and welfare workers	Partner, new coaches, and family	Manager and new coaches
Environmental and Cultural Level	Process oriented, nurturing, caring, and empathetic	Competitive, lonely, isolated, uncertain, and stagnant	Outcome oriented, ruthless, masculine macho, and heightened competition
Nature of Support	Highly supportive	Benefit of social support	(Typically) crisis management

Figure 8: The Football Model of Transitional Development (Richardson et al., 2013)

The Football Model of Transitional Development (Richardson et al., 2014) indicates that the support levels of academy footballers reduce as they transition into under-23s and professional levels. Moreover, the model suggests that players at elite levels are only provided support in a crisis situation, and the environment when footballers transition out of the academy is competitive, isolating, ruthless, and masculine. This model can help provide some indication as to why working on self-development might not be utilised to its full potential within football and why there seems to be a hesitation to talk openly about ways to improve oneself (beyond physical performance) and a stigma around help-seeking behaviours (Kvillemo et al., 2020; Kola-Palmer et al., 2020; Miller et al., 2023; Breslin et al., 2017). A model that can challenge and support the Football Model of Transitional Development (Richardson et al., 2013) is the FA Four Corner Model (FA, 2020).

2.2.5 The FA Four Corner Model

The FA Four Corner Model (FA, 2020) refers to four key areas that help football players develop as athletes and people (Diouf et al., 2024; FA, 2020). As highlighted in Figure 9 (on the page below), it advocates the development of physical, social, technical/tactical, and psychological attributes.

Figure 9: The FA Four Corner Model (FA, 2020)

The model is specifically designed to help coaches understand that a holistic approach needs to be taken towards player development, no matter their age or ability (England Football Learning, 2020). However, research suggests that the value academy managers/coaches place on the four characteristics in practice is open to subjective interpretations (Diouf et al., 2024; Kelly & Williams, 2020). Moreover, disparities seem to exist between the views of players, coaches, practitioners, and sports scientists on what development needs best support transitions (Diouf et al., 2024). This can be thought-provoking at academy levels, given that the FA Four Corner Model has been adopted by professional academies operating under the Elite Player Performance Plan (Premier League, 2012; Diouf et al., 2024).

2.2.6 The Elite Player Performance Plan

The Premier League introduced the Elite Players Performance Plan (EPPP) in 2012 and is a long-term strategy to create an optimal talent development environment for homegrown youth footballers (Nesti, 2012; Mitchell et al., 2014; Susan, 2018). A review of the EPPP in 2022 encourages academics to take a more multi-disciplinary and holistic approach to player development, incorporating the elements highlighted in the FA Four Corner Model (Premier League, 2022; FA, 2020). This is achieved by focusing on technical, tactical, psychological, physical, and social elements of a player's environment through three development stages: 1) the Foundational Phase (under five to under 11); 2) Youth Development Phase (under 12 to under 16); and 3) Professional Development Phase (under 17 to under 21) (Nesti & Sulley, 2014; The Premier League, 2011; Webb et al., 2020). These stages can be classified into four academy categories, outlined in Table 4 below.

Table 4: Academy categorisation in England

Category	Description
1	• The academy must demonstrate the regular graduation of players into the Premier League and the wider professional game • Provide typical access up to 8500 hours of coaching • Evidence a performance pathway from under 5 to under 21 players with registration from under 9 • Category one academies must also provide the foundational, youth development, and professional development phases
2	• The academy must demonstrate the ability to graduate players into the Premier League from time to time and regulate players into the wider professional game. • Provide typical access up to 6600 hours of coaching and evidence a performance pathway from under 5 to under 21 players with registration from under 9 • Category two academies must also provide the foundation, youth development, and professional development phases
3	• The academy must demonstrate the regular graduation into the professional game and develop players capable of progression into category 2 and 1 academies. • Provide typical access up to 3600 hours of coaching • Evidence a performance pathway from under 5 to under 21 with registration from under 9 • Category three academies must also provide a part foundational phase, youth development phase, and professional development phase
4	• The academy must demonstrate the ability to graduate players into the professional game and provide typical total access of up to 3200 hours of coaching • Evidence a performance pathway from under 17 to under 21 with registration from under 17. • Category four academies must also provide the professional development phase

The Premier League 2011, Webb et al., 2020)

As illustrated within the Football Model of Transitional Development (Richardson et al., 2013) and the Holistic Athlete Career Model (Wylleman, 2019), as players progress towards mastery or post-academy levels, they are met with new challenges (transitions) to tackle (Wylleman et al., 2019; Wylleman & Lavallee, 2004; Richardson et al., 2013; Mitchell et al., 2014). The EPPP aims to recognise this by elucidating the need for programmes to incorporate psychological testing, lifestyle management, and the delivery of mental skills education (such as imagery and stress management) (Champ, 2018). However, one limitation of the EPPP is that it appears to favour larger or wealthier clubs, leading to the notion that the gap between elite levels and the rest of the football pyramid needs to be addressed (Fifield, 2022). For instance, psychological profiling and support were only made mandatory at Category 1, which means psychological support at lower-level categories is down to the discretion of the individual academy managers (Barraclough et al., 2024). On the other hand, research from McCormick et al. (2018, p.10) suggests that clubs in category one *"pay lip service to the potential of sport psychology services in order to meet the requirements of the EPPP"*. This can also be thought-provoking, given that research has suggested that coaches are not always receptive to new ideas and believe the premise of psychology is for the weak (Crawley, 2021). This is important to be aware of when exploring the perceptions of practitioners regarding the use of VR as a tool for self-development

for two reasons: 1) are they responding positively because anything being seen to help players engage in self-development is beneficial; 2) are they responding negatively because they do not value players engaging in anything other than physical/tactical training/development.

So far, a range of non-normative and normative transitions have been highlighted that can support the need to engage in self-development. Although models such as the FA Four Corner Model (FA, 2020) and EPPP (The Premier League, 2012) indicate that psychological support is important, research and anecdotal reports suggest that it is not given much attention. This information is important to keep in mind when exploring perceptions both practitioners and players have towards integrating new strategies that work on self-development.

2.3 Self-Development

Considering the different transitions that a footballer might face and the impact they can have on well-being, a rationale can be provided for engaging with self-development. This is because self-development is characterised as the process of improving skills and moulding habits, ideas, attributes, and behaviours to overcome challenges (Miles, 2022). Individuals can control their self-development, meaning they can take responsibility and accountability for outcomes (Deci & Ryan, 2008; Cherry, 2024). This corresponds with the notion of self-determination, as individuals possess the ability to make choices confidently and experience a heightened sense of control in their lives by experiencing autonomy, competence, and relatedness (Cherry, 2024; Koole et al., 2019; Deci & Ryan, 2008). Fostering a sense of independence can promote positive well-being, and the mechanisms through which this (along with principles of autonomy, competence, and relatedness) can be achieved are elucidated through the Self-determination Theory.

2.3.1 Self-Determination Theory

The Self-Determination Theory (SDT) is a broad framework for understanding human motivation and personality, suggesting that individuals inherently strive for personal growth and development (Deci & Ryan, 2008; Ntoumanis & Mallet, 2014; Standage & Ryan, 2020). Furthermore, the theory asserts that confronting challenges and embracing new experiences is crucial for shaping a coherent sense of self (Deci & Ryan, 2008; Cherry, 2024b). To foster psychological growth (which is essential for motivation, growth, and psychological well-being), the SDT postulates the existence of three basic psychological needs: autonomy, competence, and relatedness (Johnson & Finney, 2010; Bratko et al., 2022; Menard et al., 2017).

Although academic perspectives on autonomy may vary across professional disciplines, they all converge on the central theme of choice and personal ownership over one's behaviours (Deci & Ryan, 2000; Ntoumanis & Mallett, 2014). Higher levels of autonomy have been shown to improve performance and stimulate creativity in organisational settings (Chiniara & Bentein, 2016; Trépanier et al., 2013). Competence refers to the need to feel effective and achieve valued outcomes. This is significant because when individuals believe they possess the necessary skills for success, they will feel capable of interacting effectively in their surroundings and taking action to achieve goals or overcome challenges (Ntoumanis & Mallet, 2014). Finally, relatedness encompasses the desire to feel accepted and experience meaningful connections with others (Deci & Ryan, 2000; Ntoumanis & Mallett, 2014).

These three psychological needs will vary from person to person and change over time (Goemaere et al., 2019). This can relate to disparities in well-being (Tian et al., 2013; Reis et al., 2000; Goemaere et al., 2019), sleep quality (Goemaere et al., 2019), performance (Greguras & Diefendorff, 2009; Goemaere et al., 2019), and work motivation (Olafsen et al., 2018; Goemaere et al., 2019). Nevertheless, when athletes perceive control over their behaviours (autonomy), achieve success (competence), and feel acceptance (Relatedness), they exhibit active participation and sustained effort in different activities during both training and competition. This, in turn, is associated with more favourable physical and psychological outcomes (Ntoumanis & Mallett, 2014; Bartholomew et al., 2011).

When talking about improving footballers, much of the emphasis surrounds tactics and physical performance (Pettersen et al., 2023). As a result, when players seek to work on areas away from tactical/physical performance, the element of 'fun' could be diminished (McDougall et al., 2015). Consequently, players trying to engage in self-development may lack feelings of competence as the task or activity they are doing may not be engaging or fun, impacting their ability to achieve a sense of effectiveness or mastery. Furthermore, when players undergo a transition, they may lack relatedness and autonomy as they may feel like they are not in control of the situation. Considering this, there is justification towards exploring the role technology (such as VR) can play in promoting feelings of autonomy, competence, and relatedness when players engage in self-development tasks. In essence, this is an element of what this PhD aims to understand.

The SDT has a broad scope and application, having been utilised in diverse fields such as education (Katz et al., 2014), sports (Hagger & Chatzisarantis, 2007), and healthcare (Deci & Ryan, 2012). A limitation of the SDT is that it assumes all humans are inherently motivated to improve, which might not be accurate for individuals resistant to change or improvement (Ryan

& Deci, 2017). The SDT has evolved, giving rise to six mini theories (Appendix 1) which overlap and explain a set of motivationally based phenomena which has emerged through research (Vansteenkiste et al., 2014; Ryan & Deci, 2019). Consequently, it can increase the complexity of the SDT (Ryan & Deci, 2017). The extensive framework of the SDT also results in moderate falsifiability, making it challenging to disprove the entire theory with evidence due to its intricate nature and numerous constructs within the theory itself (Ryan & Deci, 2017). Despite these limitations, the SDT remains valuable for understanding how to foster awareness and facilitate personal growth, which is why it has been incorporated within this PhD as an underpinning theory.

2.3.2 Maslow's Hierarchy of Needs

Another theory which contributes to our understanding and conceptualisation of self-development is Maslow's Hierarchy of Needs. Illustrated in Figure 10, this motivational theory presents a five-tier model outlining human needs (McLeod, 2024; Hopper, 2024).

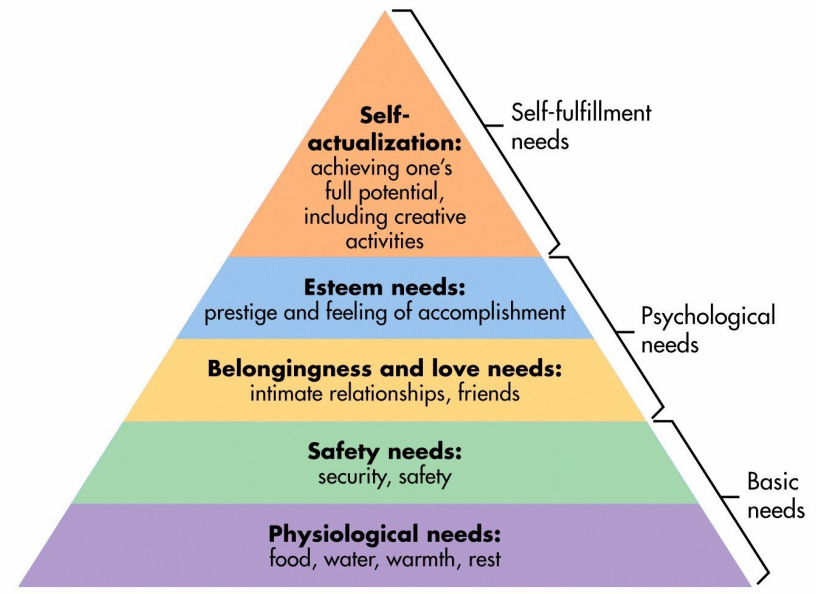

Figure 10: Maslow's Hierarchy of Needs (McLeod, 2024; Hopper, 2024)

The hierarchy dictates that lower-level needs must be fulfilled before attention can be directed towards higher-level ones (McLeod, 2024). Progressing from the bottom upwards, the needs encompass physiological, safety, love and belonging, esteem, and self-actualisation. The five-staged model is also categorised into deficiency and growth needs (McLeod, 2024; Hopper, 2024). Deficiency needs arise from deprivation, with motivation increasing the longer the needs are desired (McLeod, 2024). On the other hand, growth needs stem from a desire to evolve personally to help achieve the highest level of self-actualisation (McLeod, 2024).

While Maslow initially suggested a strict progression, he later clarified that it was a false impression that needs should be 100% satisfied to move on to the next need (McLeod, 2024). Instead, he proposed that progress can often fluctuate, which can be the main reason why reaching self-actualisation is challenging due to the fluctuations individuals experience in life (i.e., transitions). Despite recognising that the model is dynamic and fluid, the theory has faced criticism for its rigidity (Visser, 2020). Criticism also includes low sample sizes in Maslow's studies and difficulty in proving the theory because of reliance on self-reported testimonies of need-fulfilment, which may lead to inconsistencies and misrepresentations (Cherry, 2024a).

The prototype used in this research primarily focused on the higher levels of the hierarchy for achieving self-actualisation and growth. This is because there is an emphasis on communication, reflective practice, and building relationships, which corresponds to 'love and belonging' and 'esteem needs'. Love and belonging needs are met when individuals feel a part of a group and a sense of relatedness (McLeod, 2024). When this need is not met, it can lead to feelings of depression and anxiety, as one may feel flawed due to not fitting in or being wanted (BetterHelp, 2024). Esteem needs relates to confidence, self-belief, and acceptance (Interaction Design Foundation, 2017), which can link to the three psychological factors outlined in the SDT. Without adequately meeting esteem needs, individuals may feel negative or inferior, making it harder to overcome potential transitional periods (McLeod, 2024).

Maslow's Hierarchy of Needs and the SDT are based on fundamental human needs essential for development (McLeod, 2024). Both theories provide insight into how individuals can strive for self-actualisation and personal growth. The SDT illustrates how VR could help engage players to work on self-development due to VR's potential to promote autonomy, competence, and relatedness needs. Whereas Maslow's Hierarchy of Needs highlights how the two games included within the prototype (aiming to develop the athlete-coach relationship and communication and reflection with others) would be beneficial towards achieving higher levels within the hierarchy.

Whilst the research considered alternative theories such as the Goal Setting Theory (Locke & Latham, 2013), the Self-Efficacy Theory (Bandura, 1977; Lopez-Garrido, 2025), and McClelland's Theory of Needs (McClelland et al., 1953; Güss et al., 2017), focusing on the SDT and Maslow's Hierarchy of Needs better represented the PhD focus on self-development. For instance, both theories prioritise personal growth and internal drive, unlike behavioural or goal-based theories (Locke & Latham, 2002). The SDT integrates both intrinsic and extrinsic motivation, addresses psychological needs rather than only behaviours or beliefs, and is well-

researched across multiple domains. The SDT focuses on autonomous motivation, which is ideal for understanding and/or predicting long-term athlete engagement with VR. On the other hand, Maslow's Hierarchy of Needs is intuitive and easy to visualise, provides a broad life-span of perspectives (not just work-related), and works well as a framework for understanding human needs (Deci & Ryan, 2008; Ntoumanis & Mallet, 2014; McLeod, 2024). Maslow's Hierarchy of Needs addresses progression towards self-actualisation, which aligns with the goal of self-development beyond performance metrics.

The SDT and Maslow's Hierarchy of Needs both recognise internal psychological needs such as autonomy, purpose, and personal growth, which are central to meaning development (Cherry, 2025; Deci & Ryan, 2008; McLeod, 2024). This is relevant when reflecting upon the use of a hermeneutic phenomenological approach because both are ultimately concerned with how people interpret, construct, and re-interpret meaning through lived experiences (Sloan & Bowe, 2014; Rhyn et al., 2020). The SDT and Maslow's Hierarchy of Needs help to frame VR as more than just a training tool. VR for self-development is not just about skill repetition; it is a space for reflection, identity building, and motivation. Therefore, both theories help to explore how VR might support holistic development (Klein, 2024; Fromm et al., 2021). Finally, both theories are widely used in sports psychology, education, and coaching, particularly within player-centred development frameworks (Standage, 2023; Guay, 2021; Spence & Oades, 2011; Kleinhesselink, 2022). This makes them a better theoretical fit for this research, which was aiming to understand the influence of how VR is accepted and designed in football as a self-development tool.

Table 5 on pages 40 and 41 aims to provide the reader with a better understanding of how the concepts within both the SDT and Maslow's Hierarchy of Needs relate to one another. Moreover, Table 5 also provides insight into why the type of games included within the prototype (Athlete-coach relationship and communication and reflecting with others) can help work on self-development and overcome some of the common non-normative transitions a footballer may face (which have been highlighted in this chapter)

Table 5: Relating the Self-Determination Theory and Maslow's Hierarchy of Needs to Some of the Common Non-Normative Transitions Footballers May Face

	Self-Determination Theory			Maslow's Hierarchy of Needs	
Example Transitions	**Autonomy**	**Competence**	**Relatedness**	**Love & belonging**	**Esteem**
Being dropped	Can the player better understand how they have ended up in this transition and turn it into a positive experience to better themselves?	Can the player use self-development strategies to achieve a valued outcome and feel effective within the team? Could working on communication and the coach/athlete relationship help with this?	Can the player use this as an opportunity to work on the coach/athlete relationship to further understand why this transition has happened? A result could be that the player feels more in control of the situation as they understand what needs to be done to get back in the team.	Could the use of game-based learning help add the fun/engagement element to engage with others to overcome the transition?	Could self-development via game-based learning facilitate a medium for players to develop their strengths and self-belief to reduce feelings of inferiority and negativity?
Injury and illness	How can the player use this time to work on themselves and re-gain control over a transition by which they can have little control over?	Could the player still work towards valued outcomes that not only improve themselves, but help work towards the team goal?	How can the player still interact with other players and their coach/manager while injured – prompting the question of whether the focus of communication and the athlete/coach relationship is pertinent?	With the player spending more time away from the team and coach, how can the player still achieve a feeling of relatedness – could game-based learning offer an opportunity to keep the player connected?	The transition could impact confidence and instil depression and anxiety for what the future holds. Therefore, can players work on themselves to put them in a stronger position to not only overcome the transition, but be better prepared at the end of it? Could Game-based learning/VR facilitate this?
Loans	Could the player use this transition as an opportunity to learn and develop?	Can the player use self-development strategies to achieve a valued outcome and feel effective within the new and old team?	How can the player be better supported to be a part of a new team and coaching staff? Moreover, how can the player work together with their family to make sure there is a sense of 'togetherness'?	Can working on communication skills and the coach/athlete relationship on a new level create an opportunity to learn and develop?	Could self-development via game-based learning facilitate a medium for players to develop their strengths and self-belief to reduce feelings of inferiority and negativity?

Dealing with relationship and family challenges	How can the player deal with difficult situations with friends and family, without it impacting their sporting performance? Does this show why self-development is needed, with emphasis on communication?	How can the player use self-development strategies to gain the best outcome that is best for them as an individual, but keeps the relationship as strong as it can be?	How can the player still interact with loved ones in a manner that still shows relatedness and love, without them taking advantage? Could working on communication and relationships be a useful for this?	How can players find the right balance between loved ones, and those taking advantage? Can communication and working on relationships facilitate this understanding?	Could self-development via game-based learning facilitate a medium for players to develop their strengths and self-belief to reduce feelings of inferiority and negativity?
Assuming the role of team captain	Can the player learn to deal with the pressure of taking leadership through the good and the bad? Could this be facilitated by effective communication?	Can the player use self-development strategies to achieve a valued outcome and feel effective within the team? Could working on communication and the coach/athlete relationship help with this?	How can the player have authority during difficult moments, while still having strong relationships? Could strategies focusing on communication be effective?	How can players find the right balance between the players and coaching staff to meet the leaderships needed of a captain?	Could self-development via game-based learning facilitate a medium for players to develop their strengths and self-belief to reduce feelings of inferiority and negativity?

So far, this chapter has highlighted the challenges football players may face in their careers and why engaging in self-development can be beneficial. Moreover, it has established the connection that the SDT and Maslow's Hierarchy of Needs have towards integrating VR as a tool for self-development and the focus of the two games included within the prototype. With VR in mind as the tool players would use to engage in self-development, attention will now turn to how to understand its acceptance

2.5 Acceptance of Technology

Even if technological devices are effective and validated, potential users may not always accept them (Mascret et al., 2020; 2022). A model which is used to help understand the processes underpinning the acceptance of technology is the Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh & David, 2000), highlighted in Figure 11.

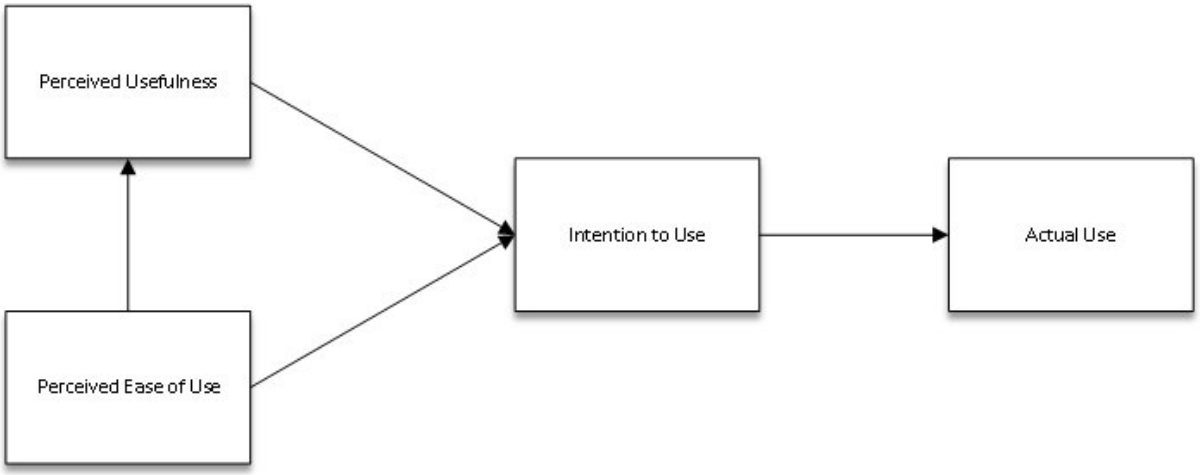

Figure 11: Technological Acceptance Model (Davis, 1989)

The TAM suggests that technology acceptance is a three-staged process whereby system design features trigger perceived ease of use and perceived usefulness (Marikyan & Papagiannidis, 2024). Consequently, this forms an attitude towards using technology/intention), influencing actual use behaviour (David, 1989; Davis, 1993; Marikyan & Papagiannidis, 2024; Mascret et al., 2022). In simple terms, the TAM suggests that the belief technology will have an impact on performance/outcome, the belief that the technology will be effort-free, and the intention to use the technology all converge on actual usage. Although the application of the TAM was used in a variety of cases, the authors of the model aimed to increase its predictive power. Perceived usefulness was the strongest predictor of intention to use (Venkatesh & David, 2000). However, the literature lacked evidence about the factors that underlie the perception of technology usefulness. This line of inquiry was deemed important to understand acceptance, as well as provide guidance on the development of systems beyond suggesting that users' perception of

usefulness and ease of use predict intention (Marikyan & Papagiannidis, 2024). This led to the development of the Technological Acceptance Model 2 (TAM2) (Venkatesh & David, 2000), highlighted in Figure 12.

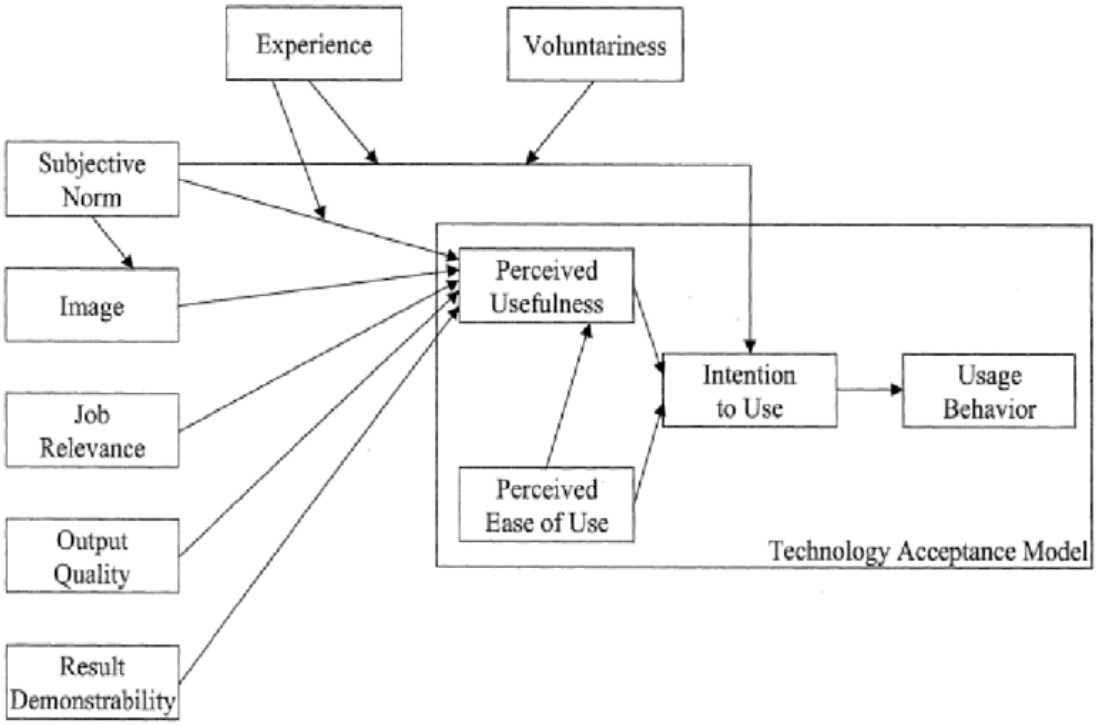

Figure 12: Technology Acceptance Model 2 (Venkatesh & Davis, 2000)

The TAM2 adds two factors: social influence and cognitive instrumental processes (Venkatesh & Davis, 2000). The social influence factors help to explain how external pressures (subjective norms, whether the system is mandatory or voluntary, and image) impact technology adoption. The cognitive instrumental process explains how users rationally evaluate the usefulness of technology, taking into consideration job relevance, output quality, and result demonstrability (Venkatesh & Davis, 2000; Marikyan & Papagiannidis, 2024). The TAM2 is important in the context of this thesis as it can help to understand the perceptions both players and practitioners have on the use of VR as a tool for self-development.

Both the TAM and TAM2 provide rich explanations about key determinants of use intention for technology (Davis, 1989; Venkatesh & Davis, 2000; Marikyan & Papagiannidis, 2024). However, research was still lacking regarding interventions which could be used to increase technology adoption rate (Venkatesh & Speier, 1999; Marikyan & Papagiannidis, 2024). As this was a limitation of the TAM and TAM2, Venkatesh and Bala (2008) developed the Technology Acceptance Model (TAM3), which is highlighted in Figure 13 on the page below.

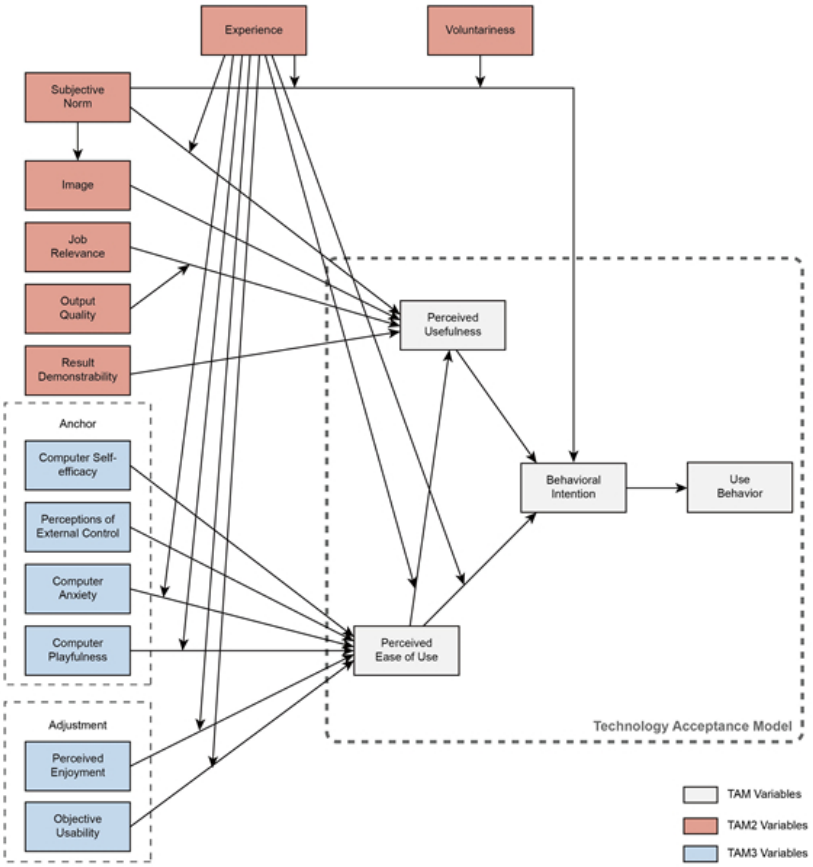

Figure 13: Technology Acceptance Model 3 (Venkatesh & Bala, 2008; Huang et al., 2023

The TAM3 retains the core elements of the TAM and TAM2 but goes further by adding two new dimensions: determinants of perceived ease of use and interventions to improve technology adoption (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). Determinants of perceived ease of use refer to the belief in one's ability to use technology, ability of support, fear of using technology, and enjoyment while using technology. Interventions to improve technology adoption explain that users need to feel more confident using the technology, and the technology needs to adapt to the user's needs (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). Keeping in mind the TAM3 can help interpret the perceptions both players and practitioners have towards using VR as a tool for self-development and make an original contribution to knowledge by exploring the use of VR as a tool for self-development in football.

2.5.1 Gender Differences Regarding Technology Acceptance

Research has shown that gender plays a significant role in determining an individual's willingness to adopt new technologies (Goswami & Dutta, 2016). Therefore, exploring gender differences in attitude towards technology is relevant to this research as it can offer valuable insights into how male and female participants may perceive the use of VR as a self-

development tool within football. Literature has suggested that boys and girls might have different preferences and may act differently with technology (Cau et al., 2017; Sun et al., 2020). This can be understood since boys are more likely to have access to computers and other technological resources from an early age, contributing to greater familiarity and comfort with technology (Campos & Scherer, 2024; Qazi et al., 2022). Moreover, girls are frequently socialised into roles that emphasise communication and relational skills over technical prowess, which can impact their long-term engagement with technology (Goswami & Dutta, 2016; Qazi et al., 2022). With this in mind, parental perceptions can impact why girls at a younger age may not have the equivalent access to technology when compared to boys. For instance, Bolenbaugh et al. (2020) suggest that parents may choose to monitor and guide their child's technology use based on gender, potentially reinforcing stereotypes about appropriate technology engagement for boys and girls. However, given the increasing integration of technology in everyday life, and the fact that Gen Z and Gen Alpha individuals are/have grown up immersed in technology-driven environments, gender attitudes towards technology use may be shifting (Bünning et al., 2023; Cecconi et al., 2025).

Referring to the TAM, research has suggested that women tend to prioritise perceived ease of use and social influence, while men place greater emphasis on perceived usefulness (Zhang et al., 2024; Ren et al., 2022). Moreover, research has suggested that men are more likely to use technology for fun and exploration, while women strive for facilitated task fulfilment (Jackson et al., 2010). This is worth considering when using VR as a self-development tool, as it could suggest that both women and men might be receptive towards its use, as it is a tool that is fun but also strives for exploration and task fulfilment (working towards self-actualisation). As such, including both female and male players and practitioners within this research would be highly beneficial.

Research examining gender differences in VR acceptance has identified variations in user experiences. For instance, systematic reviews have suggested that women are more prone to experiencing discomfort or motion sickness, particularly with emotionally intense or high-motion VR content (Grassini & Laumann, 2020). Moreover, variations in hardware and content type may further affect women's sustained engagement with VR. Conversely, research by Dirin et al. (2019) challenges stereotypes, reporting that female users demonstrated greater emotional engagement and more positive responses to VR than their male counterparts. Moreover, a study by Adeyele (2024) revealed no significant differences between genders in terms of VR adoption and engagement as an educational tool. On the other hand, research is available which suggests that girls have higher anxiety towards the use of technology, which might affect their motivation

and performance in VR settings (Cai et al., 2017). Understanding these gender-related differences is important, not only for interpreting user experience and adoption patterns but also for informing the development of VR tools in ways that are inclusive, user-friendly, and responsive to the distinct needs of all individuals within football.

The final underpinning theory of this PhD refers to Game-Based Learning/Digital Game-Based Learning, which helps to understand why using technology (such as VR) can be a beneficial means of helping players engage in self-development.

2.6 Game-Based Learning/Digital Game-Based Learning

Game-based learning (GBL) is not a new concept within the field of education but has recently seen a surge in popularity over the past few years, given its ability to enhance motivation and encourage a continual learning process (Serrano, 2019). GBL incorporates digital and non-digital games into the learning process, which incorporate key game elements (as shown in Figure 14) which help to enhance external and internal motivation (Tapingkae et al., 2020; Pan et al., 2021). This is achieved through the power and significance of games (in the universal sense), as they can foster motivation and engagement (Krath et al., 2021; Bozkurt & Durak, 2018).

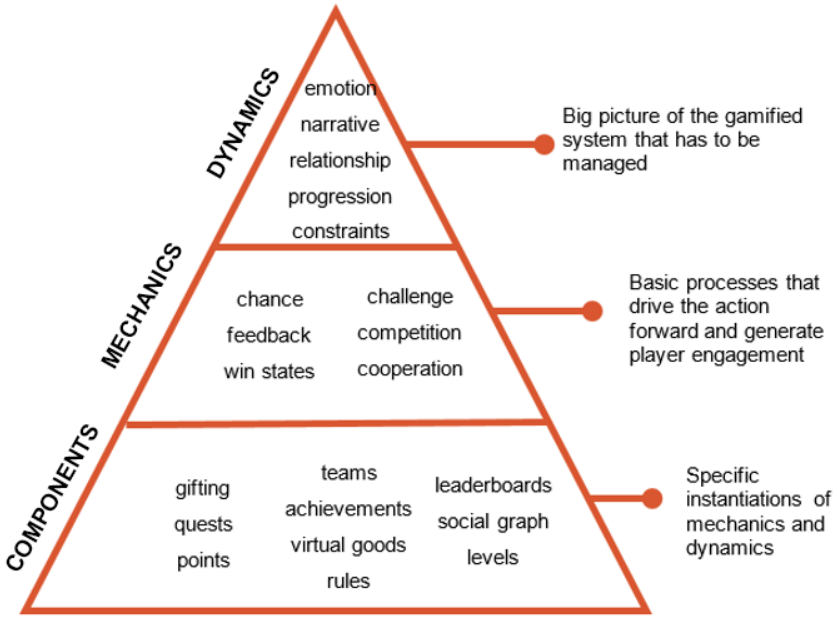

Figure 14: Game elements (Man, 2021)

The notion of GBL in a digital sense has resulted in the term Digitalised Game-Based Learning (DGBL), which connects educational content with computer or video games and can be used in almost all subjects and skill levels (Chen & Tu, 2021; Yang et al., 2018). With GBL and

DGBL providing an opportunity to challenge individuals by prompting them to explore new and diverse problem-solving approaches, an opening presents itself to foster individuals' creativity and critical thinking (Nadolny et al., 2020; Pan et al., 2021). This can be deemed crucial for self-development as the individual must take responsibility and accountability for outcomes, which corresponds with notions such as autonomy and competence of the SDT, and esteem needs from Maslow's Hierarchy of Needs (Deci & Ryan, 2008; Cherry, 2024a; 2024b). Literature concerning the use of games for educational means often uses interchangeable terms alongside GBL/DGBL, such as Gamification and Serious Games (Noemí & Máximo, 2014; Almeida & Simoes, 2019; Zohari et al., 2023). While definitions may overlap to some degree, these three terms convey distinct meanings (as shown in Table 6) (Almeida & Simoes, 2019; Zohari et al., 2023)

Table 6: Difference between Gamification, Game-Based Learning, and Serious Games (Becker, 2018; 2021)

	Gamification	**Game-Based Learning**	**Serious Games**
Basic definition	The use of game elements in non-game context	The process and practice of learning using games	A game designed for purposes other than or in addition to pure entertainment
Purpose	Often used to drive motivation, but can also be used to make something more playful and gamer like	Not a game, but rather an approach to learning	Change in behaviour, attitude, health, understanding, and knowledge
Primary driver (why it's used)	Depending on how it is implemented, it can tap into extrinsic and intrinsic rewards (or both)	To improve learning and to increase learning effectiveness	To get the message of the game
Key question	Does it improve profits from a business perspective, and is it effective from an educational one?	Am I learning what I am supposed/need to be learning?	Is the message being received?
Focus	User experience (how)	Learning objectives (what and how)	Content/message (what)

GBL and DGBL have been investigated across diverse settings (primarily education), with findings showing that they can enhance motivation, improve performance, and reduce anxiety (Chen & Tu, 2021; Lin et al., 2018). Focusing on reducing anxiety, Reinders and Wattana (2015) demonstrated that engaging in games contributed to a reduction of learners' anxiety, making them more inclined to learn from their mistakes. This finding is linked to that of Young and Wang (2014), who observed that learners exposed to GBL outperformed those without such exposure concerning language retention. As such, GBL, in this context, holds the potential to assist individuals in overcoming speaking anxiety (Young & Wang, 2014). This prompts the

question of whether the application of GBL/DGBL could extend to sporting environments, effectively reducing anxiety and creating an environment where individuals feel more comfortable discussing the challenges they face in turn. A consequence is that it could help athletes work towards their self-development, as it would address concepts such as autonomy, relatedness, love and relationships, and esteem.

Beyond its capacity to alleviate anxiety, GBL/DGBL has the additional benefit of enhancing self-efficacy (Wang & Zheng, 2020), which is a concept that is particularly crucial for athletes as lacking high levels of self-efficacy can make them prone to giving up during competitions or daily practice (Sivrikaya, 2019). Furthermore, GBL/DGBL can help individuals understand concepts in the context of their social relationships, which can be beneficial towards the athlete/coach relationship and communication. Despite the acknowledged benefits of GBL/DGBL within the literature, critical perspectives are taken on this concept. For instance, the facilitator (such as the teacher, psychologist, or game developer) must possess extensive knowledge of the chosen game, as ineffective implementation may lead to subpar experiences for the individual using the game-based approach, potentially negating its intended benefits (Grendel Games, 2024). As a result, gaining the perceptions of potential facilitators is essential to make sure future game-based interventions using virtual reality meet key concepts. In the context of this PhD, this relates to self-development via the three psychological needs of the SDT, in addition to meeting ‘esteem’ and ‘love and belonging’ needs, which could lead to positive well-being.

Furthermore, the approach must be grounded in an underlying theory to ensure alignment with teaching or learning goals, as the absence of such theoretical backing could result in the product/tool falling short of its educational objectives (Froehling, 2022). It is essential to emphasise that GBL/DGBL aims to positively complement traditional learning methods (Prodigy, 2023; Emery & Padfield, 2024). This also holds true in the context of this study, where the concept under investigation serves to supplement traditional sports psychology methods used for self-development. While games are highly motivating and engaging, there is a potential downside, as some individuals can find it challenging to resist continuous play (Bowditch et al., 2024). This concept can also relate to additional factors such as the individual’s self-esteem, self-efficacy, anxiety and depression levels/disorders, and aggression (Jeong & Kim, 2011; Mehroof & Griffiths, 2010; Von der Heiden et al., 2019). Therefore, it is crucial to establish clear expectations regarding learning time and the fact that goals and objectives are well-defined, reinforcing the need for the approach to be grounded in research and for the facilitator to possess knowledge of the game and theories being employed.

GBL/DGBL has been shown to have benefits; however, most of its investigation has surrounded educational learning, such as learning a language or its application in learning mathematics. Nevertheless, with research showing that sport is becoming more digitalised, implementing DGBL should be considered as it could hold significant benefits when it comes to self-development, which could positively influence performance.

2.6 Chapter Conclusion

As evidenced in this chapter, footballers may undergo a variety of transitions which could impact their well-being, which in turn could negatively impact their performance and sporting career. A way to support footballers undergoing a transition and throughout their athletic career is via engagement in self-development, as it is the process of improving skills and moulding habits, ideas, attitudes, and behaviours to overcome challenges (Muzakkiya, 2016). To support players in effectively working on self-development, they need to achieve/feel autonomy, competence, and relatedness, in addition to meeting higher needs in Maslow's Hierarchy of Needs. This is because these psychological needs can exhibit active participation and sustained effort in different activities during training and competition, resulting in more favourable physical and psychological well-being outcomes (Ntoumanis & Mallett, 2014; Bartholomew et al., 2011). However, footballers may struggle to cope when these needs are unmet. This is something which could be considered an issue, as engaging in self-development may be categorised as 'not fun'. This brings forward the need to understand what the general perceptions those within football have on self-development and whether an interactive or more fun approach could increase engagement levels towards self-development. With game-based learning being seen as a potential approach to engage footballers with their self-development, attention must turn to the understanding of the 'facilitator' (such as the teacher, psychologist, or game developer) regarding their perceptions of such game-based approaches. However, it is also important not to neglect the 'user' (players) opinions and thoughts of such approaches.

Chapter 3 – Literature Review

3.1 Introduction

This chapter provides an overview of relevant literature to further justify the need for this PhD and how this investigation will complement, challenge, and extend existing research. The chapter will begin by critically analysing literature that outlines the support levels received and wanted by athletes. This can build on the discussions around athlete career development models discussed in the previous chapter by understanding why engaging in self-development may not be utilised to its full potential within sports (mainly football). Following this, attention turns to perceptions those within football have of Virtual Reality. Most of this literature pertains to the integration of VR as a tool to help with physical performance, given that this has been the primary use of VR within the sport. The chapter then examines how VR has been integrated into psychology (within and outside of sports) and critically evaluates research on VR's potential as a learning tool for self-development. The chapter will then conclude by recapping the aims and objectives of this thesis.

3.2 Received and Wanted Support: A Conceptual Overview

Football is characterised as a highly pressurised, brutal, and volatile environment (Clayton & Humblestone, 2006; Nesti, 2010). As highlighted in the Football Model of Transitional Development (Richardson et al., 2013) within the previous chapter, as footballers progress from the academy to first-team/elite levels, the environment/culture can feel lonely, isolating, and ruthless. Moreover, the nature of support can go from being highly supportive to only being provided during crisis situations. With this in mind, it can be considered beneficial to understand whether players across both academy and first-team levels perceive current support levels as effective and whether they would like more support.

A study that provides some groundwork on this concept comes from Perry et al. (2020), who aimed to explore the prevalence of anxiety, depression, and eating disorders of elite female footballers. A total of 155 players completed a questionnaire (62 from the Women's Super League and 52 from the Women's Championship). In total, 90% of participants believed that receiving psychological support within their career would have helped them, with 86% feeling they needed or wanted support at some point. Another key finding from this study was that just 28% of players had received support from their club, with 38% highlighting that they had to look externally. These results highlight that players want support but suggest that they might

not receive it. To provide some context to these results, the Football Association (FA) did not introduce contracts within women's football in England until 2009, and the country did not have a professional league until 2018 (The Women's Organisation, 2023). Moreover, some footballers playing for a championship club may be registered as part-time, meaning some could be working a second job. Furthermore, despite recent developments within women's football, it is not at the same level as the men's game (in terms of resources. All of these factors could have influenced the results.

Nevertheless, the findings from this study raise a number of interesting points and can spark ideas for further investigation. For instance, with 28% of players having received support from their club, the findings highlight that support is available. Given that 86% felt that they needed support at some point, a number of questions can arise: 1) are players aware that support is available; 2) what is the quality of support that is being offered; 3) what can be a barrier to accessing support; 4) how do players feel about asking for support. What these three questions converge on is the central theme of help-seeking behaviours.

Miller et al. (2023) explored the barriers and facilitators to help-seeking behaviours using semi-structured interviews with track and field athletes (n=9). A key barrier that the researchers concluded was the lack of access to, and prioritisation of, psychological support compared to physical health support. This can suggest early signs that help-seeking or support is potentially undermined or disregarded due to the belief that only the 'physical side' can positively influence performance (a point which was discussed in Chapter 2). This prompts questions as to why and if practitioners and players understand the benefits of engaging with self-development. Green et al. (2012) investigated elite rugby league players' attitudes towards sports psychology with a secondary aim of understanding the extent to which these attitudes may impact the utilisation of psychology services. Following semi-structured interviews (n=8), participants had positive attitudes towards sports psychology, which supports the results of Perry et al. (2020). However, concerns about the influence of coaches and senior management and the perceived lack of access to support proved to be common barriers towards help-seeking behaviours. This finding can link towards the concept of 'stigma' towards receiving or seeking help, a subject touched upon in the previous chapter.

3.2.1 Breaking the Stigma

Even if athletes have access to support, they may not choose to accept it as there is the belief that it would impact playing time, and athletes will be viewed as weak (Breslin et al., 2017). The 'fear culture' towards seeking support is something that needs addressing, with the notion

of improving communication and the coach-athlete relationship being highlighted as possible ways that barriers could be overcome. To support this notion, Pain and Harwood (2007) found that a positive club culture that fosters an environment where coaches support players' well-being can create an elite structure that benefits everyone. This means the removal of stigmatisation where coaches hold players' issues against them and promote an environment whereby the coach-athlete relationship can excel. Additional research can advocate this as the coach should work with (instead of against) the athlete to create an environment that supports and encourages help-seeking behaviours (Bisset et al., 2020). Furthermore, with literature suggesting that the communicative actions of a coach may positively or negatively impact an athlete's self-awareness, self-confidence, anxiety, autonomy, and motivation (Kim & Park, 2020), the two proposed games outlined in the prototype can be justified as pertinent areas of focus.

The stigma around accepting support is a topic that is well documented within literature and anecdotal reports, even more so within sports. For instance, a study which aimed to elucidate factors associated with help-seeking behaviours in professional rugby league players in England and France found players reporting fear, embarrassment, and shame as barriers to seeking support (Kola-Palmer et al., 2020). Moreover, Kvillemo et al. (2020) completed a recent study investigating the perceptions of mental health problems and health risk behaviours among Swedish male elite soccer players and their attitudes towards possible prevention strategies. Completing semi-structured interviews with 20 players (aged 15 to 30), the researchers outlined hesitation to talk openly about personal problems and a 'macho culture' as barriers to help-seeking behaviours.

Considering the above findings, curiosity can be instigated regarding the future trajectory of research for strategies to help reduce the stigma associated with help-seeking within football. This outlines the idea of adopting DGBL through the utilisation of VR, with the rationale coming from the fact that DGBL can harness individuals' innate inclination to learn through play (Anastasiadis et al., 2018), with the researcher advocating the prioritisation of self-development. This is because self-development has the potential to bolster confidence, foster personal growth, and enhance communication skills, all of which can contribute to a positive well-being and a heightened sense of fulfilment in life. Moreover, integrating DGBL into VR aligns with today's technology-driven landscape, offering a platform and environment that modern-day players may feel more comfortable or suited to. While stigma is a key issue towards help-seeking behaviours, Miller et al. (2023) suggest that having too much of a focus on physical performance can undermine the prioritisation of help-seeking. This is an interesting line of inquiry and can link to a study by Brown and Potrac (2009), who indicate that players

performing at a lower-ranked academy can play within a climate of fear and intimidation. A reason why the results of both studies are of interest when considering wanted and received support (more so at academy levels) is due to the creation of the Elite Players Performance Plan (EPPP), which was discussed in Chapter 2.

So far, the literature discussed has highlighted that football players/athletes want more support; however, it appears they may either not be receiving enough support, or they may be experiencing barriers towards accessing support. This PhD not only aims to explore these concepts further but also to explore whether VR could bridge the gap of breaking down potential barriers towards help-seeking and the stigma towards asking/receiving support.

3.3 Application of Virtual Reality Outside Sports Psychology

The field of psychology has progressed over recent years with the application of immersive technologies and virtual environments, with VR being increasingly used (Hakim & Hammad, 2022). Reasons why VR has received increased attention within this field can be attributed to its ability to understand and work on human cognition and behaviours within a controlled environment, potentially enhancing psychological skills and capabilities (Cotterill, 2018). Despite the focus of this PhD being aimed towards sporting contexts, the researcher felt it would be beneficial to provide a brief evaluation of VR research outside of sports psychology. This was done to provide more context for the reader to justify why using VR can be a useful tool and why further research into its use/potential can be deemed beneficial.

Initial findings have found VR to be an effective tool for psychological assessments and useful within clinical psychotherapy (Meyerbröker & Morina, 2021; Lie et al., 2022; Selivanov, Selivanova, & Babieva, 2020). This is owed to its ecological validity and potential to provide a deeper understanding of complex cases more efficiently than traditional methods (Hakim & Hammad, 2022; Liu et al., 2022; Zinchenko et al., 2011). As a result, VR is starting to become a promising and potentially revolutionary tool within psychology. One study looked at the potential of VR (and Augmented Reality [AR]) in enhancing personal and clinical change through transformative experiences that provide epistemic knowledge and transform individuals' worldviews (Riva et al., 2016). They found that VR and AR have the potential to enhance personal and clinical change by improving personal efficacy and self-reflectiveness through their sense of presence and emotional engagement.

Furthermore, Riva et al. (2016) found that VR can transform external experiences and alter inner experiences by modifying bodily self-consciousness. As such, VR can be effective in the treatment of anxiety disorders, stress-related disorders, obesity, and pain management (Riva et al., 2016; Riva, 2020). To date, the majority of research has applied VR to non-athletic populations within psychology and focused on using VR for mental disorders such as panic attacks and addiction (Rus-Calafell et al., 2018; Carl et al., 2019; Valmaggia et al., 2016; Hakim & Hammad, 2020). However, VR has started to merge into the realm of sport psychology over the past decade, especially as researchers are still trying to determine the most effective approach to help support athletes (Bates, 2022).

3.3.1 Virtual Reality as a Learning Tool

Self-development is characterised as the process of improving skills and moulding habits, ideas, attitudes, and behaviours to overcome challenges (Miles, 2022). To engage with this process, learning becomes a fundamental instrument. Learning enables individuals to acquire new knowledge, skills, and perspectives, which can help cultivate a growth mindset, leading to an increase in resilience and a greater self-awareness of one's strengths, weaknesses, and aspirations (Desjardins et al., 2012; Zhao & Cziko, 2001). With this in mind, the researcher proposes the question of whether VR could serve as a tool to engage learners and facilitate the learning process, thereby aiding in self-development.

VR is becoming a common tool within educational settings to aid and enhance learning experiences as it has the potential to create interactive environments for learners (Akinola et al., 2020). This is achieved by VR's capacity to facilitate engagement to learn (linking to the benefits of DGBL), alongside its ability to transfer skills from a virtual world into the real one (Gao et al., 2021). Research have reported learning gains when comparing VR with traditional learning (Liu et al., 2020; Johnson-Glenberg & Megowan-Romanowicz, 2017), with Kath et al. (2023) concluding that VR could potentially serve as a learning tool for deep learning concepts, which could suggest that using VR in the sphere of self-development could be achieved.

From a practitioner (teacher) standpoint, VR has the potential to be used as a didactic learning tool to facilitate the teaching-learning process at various levels, which makes it possible to not only practice skills in simulated and safer conditions but also make the didactic process more accurate, thereby influencing learner's emotions positively (Ślósarz et al., 2022; Geisen et al., 2023). In addition, VR has also been shown to increase student teachers' self-efficacy and allow them to be more innovative and creative, which can engage learners and facilitate such teaching

to players, leading to positive outcomes. Initial perceptions of using VR as a learning tool have proven to be positive.

For instance, Domingo and Bradley (2017) aimed to gain student perceptions of the use and value of 3D virtual environments. Just over half of the participants reported positive experiences despite experiencing technical difficulties. Nevertheless, operating within a virtual space could increase meaningful social interactions and reduce social anxiety (Domingo & Bradley, 2017). The results from this study can relate to the findings of Lozano-Tarazona & Pinzón (2023), Thatcher et al. (2020), and Zhao and Guo (2022), who suggest the quality of the virtual space via VR is essential for it to be effective. This leads to intrigue into the thoughts and feelings of football participants on the prototype MEG created.

3.4 The Potential of Virtual Reality in Sport

Researchers have explored the effectiveness of VR in developing sporting ability, including the learning of motor, perceptual, and decision-making skills (Cannavo et al., 2018; Tsai, 2018). For instance, Richlan et al. (2023) conducted a study to clarify the potential benefits of VR in enhancing sporting performance. Their literature search reviewed 12 intervention studies, including sports such as archery, bowling, curling, darts, golf, football, baseball, tennis, basketball, karate, and generic 'sport-specific processes' such as bodily sensations and balancing. The samples within these studies ranged from novice to expert, with a total aggregate sample of 493. Overall, the results highlighted that VR has the potential to elicit real effects towards enhancing sports performance through the training of motor and psychological skills and capabilities in athletes.

Mascret et al. (2022) aimed to test the technological acceptance of VR intended to enhance sports performance (using the Technological Acceptance Model [TAM)]) and examine to what extent the level of practice and type of sports influence acceptance. The sample included 1162 French athletes (N=472 women; N=690 men) who participated in sports ranging from recreational to international levels. Participants were tasked with filling out a questionnaire assessing their acceptance of VR before first use. The results suggest that athletes of all sports had a significant intention to use VR. While VR is being increasingly used as a tool to improve sporting performance and is being accepted by athletes, if practitioners are not accepting, then there is the risk that VR will never be used. Mascret et al. (2025) assessed coaches' acceptance of VR prior to first use. The study sample was 239 French coaches training athletes from different sports at departmental-regional, national, and international levels). Based on the TAM, coaches filled out a questionnaire assessing the perceived usefulness of VR for coaching,

perceived usefulness for athletes, perceived ease of use, perceived enjoyment, job relevance, and intention to use. The results showed that VR was well accepted by coaches before first use. To build from this study (and that of Mascret et al., 2022), it would be beneficial to understand the acceptance of VR away from improving sporting performance, alongside perceptions of VR after using it.

Wood et al. (2021) reported that VR can support athletes by engaging in learning, practice, and rehearsal that in real life can be too demanding or dangerous. As VR has developed, it has become more flexible regarding when and where it can be used, with some VR formats not necessarily needing a connection to a computer, meaning athletes can use VR in various locations (Baye & Yusuf, 2023). Athletes can have hectic schedules and often lack time between training sessions and competitions. This could be the result of family commitments or opportunities to build their profile. For instance, reflecting on the Football Model of Transitional Development (Richardson et al., 2013), elite-level players begin to embrace stardom and have a heightened sense of competition, potentially causing them to be ruthless and take any opportunities to enhance their careers further (Richardson et al., 2013; Tonge, 2021). Therefore, VR can demonstrate its value in this context as its flexibility can help athletes work on their self-development in any environment where they have free time. On the other hand, it can be essential for some VR devices and games to have an internet connection, and there are specific requirements regarding space, which is a barrier to using VR (Thatcher et al., 2020). Another opportunity for VR to be used within sports psychology is that it can allow athletes to interact with teammates, thus enhancing team building, communication, and cohesiveness. This suggests that using VR can help with self-development as it can meet needs such as relatedness, love, and belonging in the SDT and Maslow's Hierarchy of Needs.

3.5 Using Virtual Reality within Football

The advancement of technology within football has paved the way for gaining competitive advantages, with VR offering the potential to enhance skills without being limited by time and space (Rusmanto et al., 2023; Zhao & Guo, 2022). Research surrounding the integration of VR within football has mainly focused on its potential for developing fundamental technical skills such as shooting, passing, and dribbling (Rusmanto et al., 2023). A justification for this focus comes from the notion that training programs should try and be engaging as they can provide athletes with a better experience, resulting in greater chances of seeing improvements (Shen et al., 2021; Rusmanto et al., 2023). This aligns with the philosophy behind GBL, in the sense of making activities fun to increase engagement to achieve specific learning outcomes.

In the context of investigating the benefit of VR towards improving technical skills, a primary focus has been on its implementation to support heading ability. This has been a growing concern over the past decade as research suggests heading in football can immediately impact cognition, movement control, and neurological health (Marshall et al., 2023). Moreover, research has indicated that those who partake in football regularly face a 3.5-fold increase in developing neurodegenerative disease post-retirement (Russell et al., 2023; Marshall et al., 2023). This concern is elevated at youth levels where players may lack a proficient heading technique and have weaker neck muscles, increasing the risk of sub-concussive brain trauma from ball impact (Quintero et al., 2020; Caccese et al., 2017; Gutierrez et al., 2014). Despite a core focus on VR's potential as a tool to improve heading within football, research is available that highlights the opportunities and barriers to using VR in the sport as a whole (although it is important to highlight that the majority of this literature is about VRs role in improving physical/tactical performance).

3.5.1 Barriers to Using Virtual Reality within Football

Research investigating the potential of VR to enhance technical skills yields promising results (Rusmanto et al., 2023; Marshall et al., 2023; Lozano-Tarazona & Pinzón, 2023; Gübüz & Taş, 2023). Despite this, one could call for the need to understand organisational receptivity and acceptance of VR as there could possibly be an implementation disparity, wherein the potential benefits of VR do not align with its implementation in a practical setting (Mascret et al., 2025). To try and address this, Thatcher et al. (2020) completed six semi-structured interviews with elite-level coaches and performance analysts from England, Norway, and the Netherlands. They aimed to analyse the perceived barriers and opportunities for applying VR technology in football coaching.

The first barrier that Thatcher et al. (2020) concluded was the practicality of using VR, with participants believing that using VR before a game would exacerbate natural performance anxiety due to data overload in the build-up towards a match. Moreover, participants thought VR could not be used when travelling to games due to a lack of space, leading to a general viewpoint that VR should be avoided before competitions. These results can be supported by previous research in the sense that overloading players with cognitive activity or physical performance can lead to mental fatigue (Thatcher et al., 2020; Boksem et al., 2006; Marcora et al., 2009; Van Cutsem et al., 2017).

However, with research highlighting the benefits of visualisation, self-reflection, goal setting, mental imagery, and relaxation (Predoiu et al., 2020; Chow & Luzzeri, 2019; Healy et al., 2018), one must question whether the results from Thatcher et al. (2020) would be relevant within the context of using VR as a tool for self-development. With players using VR as a tool to improve psychological growth via autonomy, competence, and relatedness before and after a game/training, players' motivation could be enhanced, and teamwork could be improved, relating to positive outcomes towards performance (Ryan & Deci, 2020). However, the barriers highlighted by Thatcher et al. (2020) in using VR may still apply. Nevertheless, reflecting on the higher levels of Maslow's Hierarchy of Needs for achieving self-actualisation and growth, one could highlight that working on 'esteem needs' via VR before performance could help improve confidence, self-belief, and social acceptance, leading to potential improvements towards performance (Bryon-Cox & Thomas, 2023). Despite this, the challenge of cognitive activity overload could still present itself, necessitating action towards understanding how and when strategies implementing self-development through VR could positively impact performance.

Another barrier highlighted by Thatcher et al. (2020) related to the quality of VR, with specific emphasis on its capability to replace current coaching methods. Using VR as a replacement for traditional methods is something that could be considered a misapprehension (especially in the context of using VR as a tool for self-development): VR should be viewed as an enhancement to traditional methods as opposed to a replacement (Lucena-Anton et al., 2020; Żammit, 2023; Gürbüz & Taş, 2023). This result from Thatcher et al. (2020) could have influenced coaches' perceptions of VR as they may see it as a threat to their role in the sense that VR will replace what they do. This can illustrate gaps in the knowledge those working within football have on VR, signifying a need to go back to the basics and first understand whether practitioners and players know what VR is and comprehend their understanding of VR in the context of self-development. Having this understanding can then break down any barriers and misapprehensions of seeing VR as a potential threat and show that it can be a device that could enhance performance.

Regaining focus on the barrier pertaining to the quality of VR, participants highlighted that virtual environments must be representative of real ones. This finding can link to previous research which looked at evaluating heading skills when trained within a VR environment (Lozano-Tarazona & Pinzón, 2023). A total of 61 participants were divided into three separate groups: 1) a controlled group using standardised tests to measure heading; 2) a training group using a VR environment created by the researchers; and 3) a training group using a third-party device. Results indicated that the group using the VR environment created by the researchers

performed the best when completing two heading exercises. A potential justification for this was highlighted by the researchers as their VR environment included a pedagogical process, providing feedback (using videos) and showing the right way to execute the movement (Lozano-Tarazona & Pinzón, 2023). As a consequence of this, the VR environment could be representative of a real-world scenario, by which heading could be learned through means of observation, which can potentially increase the skills of users (Michalski et al., 2019).

What the finding by Lozano-Tarazona & Pinzón (2023) indicates is that the quality of the VR environment (in terms of what it includes/incorporates) can influence technical skill. This indirectly reinforces the conclusion of Thatcher et al. (2020) as well as the results of Zhao and Guo (2022), as they suggest that the VR environment needs to have a realistic feel from the adaptation of the grass, sky, goals, and general scenery. Moreover, the VR system should have the ability to record the athletes' technical movements, which can help facilitate the correction of errors. Additionally, VR training should provide graphical displays of training efforts and results to aid teaching and training (Zhao & Guo, 2022).

The prototype used within this PhD positioned players and practitioners in two virtual environments (basketball and table tennis)[8]. Reflect on the findings by Thatcher et al. (2020) and Zhao and Guo (2022), one could question whether it would be engaging for football players, which links back to the SDT in the sense that players may not experience autonomy when working in an unfamiliar environment (albeit in a virtual one) to work on their self-development. This tangentially interlaces with the transition examples highlighted in the previous chapter. For instance, with a loan transition, players are positioned in a different environment from what they are normally used to, which could induce symptoms of anxiety. It can be argued that players are still within a football environment during a loan transition. However, it still prompts questions as to whether such situations could impact players' receptivity to using VR

A final barrier emphasised by Thatcher et al. (2020) was that VR is generally unproven within football, leading to scepticism towards the value of VR, with terms such as 'novelty' or 'gimmicky' being used. A factor that can influence this perception is whether the coaches have had experience using VR previously. This was evident in Thatcher et al. (2020), in that coaches with less experience/knowledge of VR were more sceptical, which also relates to the point raised earlier that coaches may see VR as a threat. This underscores the necessity to comprehend a broader consensus regarding coaches/staff experiences with VR and how they would reflect

[8] Discussed in more depth in Chapter Six.

on these experiences in terms of their motivation or willingness to use it again (more so within the realm of VR for self-development and well-being). Additionally, this notion also highlights the importance of understanding practitioner and player perspectives in terms of the longevity of VR within football (in a wider context, but specifically for self-development).

3.5.2 Opportunities in Using Virtual Reality within Football

A benefit illustrated by Thatcher et al. (2020) was that VR could help implement styles of play more effectively and strengthen team cohesion. This is a positive finding which corresponds with the notion of relatedness and love and compassion from the SDT and Maslow's Hierarchy of Needs. Further benefits highlighted by participants included the potential VR could play in bridging the gap between youth and first-team levels. As highlighted in the Holistic Athlete Career Model (Wylleman, 2019) and the Football Model of Transitional Development (Richardson et al., 2013) in Chapter Two, this transition from youth to first-team levels can potentially impact autonomy, competence, relatedness, love and belonging, and esteem to some degree. As a result, the findings from Thatcher et al. (2020) can provide some justification for exploring VR potential as a tool for self-development.

3.5.3 Perspectives on Virtual Reality within Football

Greenhough et al. (2021) extend previous research by completing a study to compare and quantify the perceptions practitioners and players have towards VR within football. To achieve this, they conducted a survey which received 134 responses from coaches and support staff, in addition to 64 responses from players. The majority of participants (94% staff; 89% players) understood what VR was based on the definitions and pictures that the researchers provided within their survey. Moreover, participants were aware of VR being used within professional football (76% staff; 72% players). On the other hand, 22% of staff and 44% of players had used VR within their training ground within the last year, which could suggest that VR is potentially not as widely used as anticipated. This sparks inquiries which have already been highlighted in the sense that there could possibly be an implementation disparity, wherein the potential benefits of VR do not align with its implementation in a practical setting. Therefore, a deeper understanding of VR within football is needed, even more so for its potential use for self-development.

Greenhough et al. (2021) suggest that players and practitioners are influenced in some capacity if influential clubs are using VR (83% of staff; 78% of players) and if influential others use VR (83% of staff; 78% of players). Nevertheless, social influence and technology readiness had

small ($f^2 = 0.03$) and no effect ($f^2 = 0.003$) on the likelihood to use VR, which relates to previous findings (Greenhough et al., 2021; Seol et al., 2017). Greenhough et al. (2021) suggest that social influence was not a contributing factor in VR adoption due to the voluntary context in which participants anticipated they would use it. Despite this, practitioners were more influenced to use VR if players enjoyed it (98%) and the buy-in of senior players (91%), which brings to light the relevance of GBL/DGBL.

Adding to the barriers outlined by Thatcher et al. (2020), Greenhough et al. (2021) suggest that a key barrier presented to football clubs is the associated costs of using VR. However, only 91 participants (approximately 45%) knew what VR costs, thus indicating a limited understanding. Finally, a barrier to using VR within football related to a lack of time players had available to use it, which not only aligns with the findings of Thatcher et al. (2020) but also Milles et al. (2023). An important consideration is that the survey by Greenhough et al. (2021) collected data from 2019 to 2020, meaning levels of understanding and the possible application of VR within football could have changed. This point could be justified by the fact both Thatcher et al. (2020) and Greenhough et al. (2021) don't mention VRs potential within sports psychology, or self-development. On the other hand, neither study mentions these two concepts because of a lack of understanding or knowledge of VR's potential within these domains or the belief that VR does not have any potential for these factors within football. This illustrates a potential gap to update, challenge, and redirect focus on the integration or possibility of VR within football to seek benefits towards performance.

A third and final study investigating perceptions of VR within football comes from Dowsett et al. (2022), who aimed to build on previous literature by exploring the perceptions practitioners in baseball and elite football have towards VR. Focusing primarily on the results gained from those in football, a questionnaire was completed by 25 practitioners in elite football in a variety of countries: England (28%), Germany (12%), Italy (4%), Netherlands (45%), Portugal (8%), Belgium (12%), America (12%), and 25% in the second tier of England. Practitioners included those within a sports science role (48%), sports psychology (28%), performance-based (16%), and athletic development (8%). Respondents indicated that VR could improve on-field mental/tactical performance (m=8.64; SD = 1.75) and rehabilitation for players (M=7.48; SD = 2.49). Aligning with the barriers outlined by Greenhough et al. (2021), Dowsett et al. (2022) indicate an obstacle to VR training is the costs which are involved (M=7.21; SD = 2.52). However, building on previous research, they also suggest that the implementation of VR within football is due to a lack of coach approval (M=6.38; SD = 2.16) and general negative perceptions of VR (M=6.29; SD = 1.90). Moreover, from a player's perspective, VR implementation is impacted by VR being too difficult to use (M=4.42; SD = 1.98) and a lack

of customisation to club needs (M=4.46; SD = 1.84). This aligns with Zhao and Guo (2022), who outlined that the VR environment needs to meet the needs of its users, which can indicate why it is important to understand what both players and practitioners feel about the prototype used in this investigation. This is because if players find the prototype difficult to use, and it does not provide a sense of autonomy, competence, or relatedness, then the primary goal of using VR for self-development can become obsolete as it can fail to meet key elements which are essential to facilitate DGBL

Generally, players' and staff's responses to VR in football are similar in that VR is not yet 'complete', and further work is needed to understand its true potential. However, there does need to be a shift away from the potential VR can play from a tactical standpoint, and we must begin to understand its role in terms of self-development (encompassing sports psychology).

3.5.4 The Relationship Between Virtual Reality and Self-Development

VR can aid self-development in several ways by providing a safe practice environment, allowing individuals to develop skills, face challenges, or practice social situations without real-world consequences (Scorgie et al., 2024; Elendu et al., 2024). Moreover, VR can provide immediate feedback to show individuals in real time what they are doing well and what needs improvement. This is beneficial as it can accelerate learning, build competence, and encourage reflection (Feng et al., 2023). To further understand how VR can support self-development, one can reflect on the importance of engaging the psychological needs outlined in the SDT and fulfilling Maslow's higher-order needs.

The Self-Determination Theory (SDT) explains motivation as a continuum, shifting from externally driven behaviours to autonomous motivation when core psychological needs of autonomy, competence, and relatedness are met (Huang et al., 2022; Deci & Ryan, 2008). This internalisation process fosters more sustainable behaviour change, where individuals are more likely to stick to long-term goals because they are now self-driven instead of forced (Huang et al., 2022). Environments that nurture these needs promote self-regulated learning, creativity, improved development outcomes, and psychological well-being (Hui & Tsang, 2012; Van Den Broeck et al., 2016; Ryan & Deci, 2000). As individuals grow and learn, they develop clearer goals, values, and a stronger sense of identity, all of which are central markers of self-development (Illeris, 2009; Deci & Ryan, 2020; Vansteenkiste et al., 2004). Immersive VR environments can provide autonomy through user choice and control, competence through

skill-building challenges, and relatedness through social or collaborative features (Huang et al., 2019; Kosa et al., 2020; Jung, 2011).

Maslow's hierarchy of Needs further highlights how self-development thrives when higher-level needs are met, particularly love and belonging and esteem needs, ultimately leading to self-actualisation. Supportive relationships (a game outlined within the prototype) can create a secure social base for skill exploration and idea development (Baumeister & Leary, 1995), while collaborative learning and constructive feedback drive personal growth. Achieving competence and receiving recognition enhances self-confidence and encourages persistence in long-term goals (Deci & Ryan, 2000). Healthy self-esteem fosters resilience, enabling individuals to sustain progress towards self-actualisation. VR can boost esteem and belonging by enabling individuals to practice, perform, and connect in safe, engaging contexts, ultimately supporting self-actualisation through meaningful personal growth experiences (Lee et al., 2021; Kalantari et al., 2022). A sophisticated device paired with uninspiring experiences may fail to meet psychological needs, just as high-quality content can be underpinned by inadequate hardware. For this reason, this research (particularly Studies 2 and 3) examines participants' perceptions of VR as a self-development tool, alongside their experiences with the two prototype games described in Chapter 6, recognising that meaningful self-development relies on the synergy between technology and content quality.

3.6 Revisiting the Aims and Objectives

Reflecting on the content which has been discussed and critically analysed, this PhD aimed to explore the perceptions players and practitioners in football have on the use of VR as a tool for self-development within the sport. This was achieved by the following objectives:

1. Acquire insights towards received and wanted support for players and the general well-being of those working within football
2. Explore initial perspectives of footballers and practitioners regarding the integration of technology (specifically Virtual reality) to support the delivery of self-development and well-being
3. Observe football players' reactions to a Virtual Reality prototype aiming to support players with self-development
4. Observe practitioners' reactions to a Virtual Reality prototype aiming to support players with their self-development
5. Explore the perspectives of football players regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

6. Explore the perspectives of practitioners regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

3.7 Chapter Conclusion

This chapter began by building from the discussions within Chapter two but focused on perceptions players have towards received and wanted support levels during difficult periods. Research suggests support is potentially being outweighed by a lack of access, with help-seeking potentially being undermined or disregarded due to the belief that only the 'physical side' can positively influence performance. A key concept that may impact access to support could be the link to perceptions or stigmas associated with 'help-seeking' or identifying one's weaknesses. With the benefits of VR and GBL/DGBL already highlighted, the focus turned to perceptions of VR within football and the opportunities and barriers to its use within the sport. Current research has shown positive signs towards integrating VR in football (generally), although there are areas where it can be developed. For instance, most of the literature pertains to VRs potential as a tool to improve tactical/physical performance instead of its use to support self-development (which could positively impact well-being). Research has been conducted on VR inside and outside of sports psychology, with results indicating it can be an efficient and positive tool. However, VR as a tool within sports psychology is a developing area within literature. It is a concept that mainly focuses on mental health, which can be considered a very broad topic with many aspects branching from it. As a result, research exploring players' and practitioners' perceptions of VR as a tool for self-development would present a new and unique contribution towards the literature.

Chapter 4 – Methodology

4.1 Introduction

This chapter provides an overview of the research paradigm, which helps to provide a framework for the methodology and methods used. It is important to highlight that this chapter does not cover all methods in detail, as these will be discussed in each study (Chapters 5, 6, and 7).

4.2 Research Paradigm

A research paradigm is a range of assumptions and ways of thinking that guide researchers in their work/study by helping them understand and interpret the world around them (Rehman & Alharthi, 2016; Turin et al., 2024). There is a range of research paradigms which offer different perspectives on research and are characterised by philosophical assumptions about the nature of reality, or "what exists" (ontology), and the nature of knowledge, or the "theory of knowledge" (epistemology) (Turin et al., 2024; Crotty, 1998; 2003). Common types of research paradigms include positivism (focuses on objective, quantitative measures), interpretivism and constructivism (focuses on subjective, qualitative methods), pragmatism (uses mixed methods to address the research problem best), and critical theory (aims to critique and change societal structures through the identification of power dynamics and inequality) (Turin et al., 2024; Park et al., 2020; Mann & MacLeod, 2015; Kaushik & Walsh, 2019; Asghar, 2013).

The crux of this PhD was to explore football players' and practitioners' perceptions of using Virtual Reality (VR) as a tool for self-development within the sport. From an ontological perspective, the researcher held the view that the realities players and practitioners have on VR as a tool for self-development are not fixed but constructed through experience. Epistemologically, the focus of the PhD was to gain practical and actionable knowledge on VR as a tool for self-development and, in doing so, gain knowledge on what works in real-world contexts to evaluate its perceived usefulness. Considering that using VR as a tool for self-development within football is relatively unexplored, the research took an exploratory approach. As such, a pragmatic approach was deemed the most suitable research paradigm as it is not bound by a single philosophical stance and is flexible in order to address the research problem most effectively (Patton, 2005; Crotty, 2003; Saunders et al., 2012; Wilson & Carston, 2019; Crotty, 1998).

Taking a pragmatic approach integrates multiple ways of knowing and incorporates methods beyond a purely interpretive stance (Kelly & Cordeiro, 2020). As such, a mixed-method approach was used in this research to gain a more comprehensive understanding of the research question, leading to more well-rounded conclusions (Alghamdi & Li, 2013; Weaver & Olson, 2006; Kaushik & Walsh, 2019; Turin et al., 2024). This approach allowed the researcher to overcome the limitations of other philosophies by avoiding strict subjectivity or objectivity, using both quantitative and qualitative data to facilitate a deeper exploration of the topic. The limitations of using a pragmatic approach surround the fact that it is more time-consuming, and there may be discrepancies between different types of data, which can be hard to interpret (University of Nottingham, n.d). To try and address discrepancies between the quantitative and qualitative data, the researcher adopted a convergence model (a traditional triangulation design) whereby quantitative and qualitative data are collected concurrently, analysed separately, and then merged together (Fetters et al., 2013). This method provided a structured way of interpreting the data and helped turn any possible discrepancies into useful insights.

4.2.3 Positionality and Reflexivity

Positionality reflects the researcher's chosen stance within a study by describing the researcher's worldview and the position they adopt about a research task (Foote & Bartell, 2011; Savin-Baden & Major, 2013; 2023; Rowe, 2014; Holmes, 2020). The researcher's 'worldview' or 'where they are coming from' concerns both ontological and epistemological assumptions, which are influenced by their values and beliefs (Sikes, 2004; Holmes, 2020). Foote and Bartell (2011, p.46) suggest that *"the positionality that researchers bring to their work, and the personal experiences through which positionality is shaped, may influence what researchers may bring to research encounters, their choice of processes, and their interpretation of outcomes".* As such, positionality can be seen to affect the totality of the research process and acknowledges that researchers are a part of the social world they are researching (Holmes, 2020).

A way to help researchers understand how their experiences and views might directly or indirectly influence the research being undertaken is through reflexivity (Holmes, 2020). Although engaging in a reflexive approach should reduce bias, experiences and interpretations are subjectively constructed, meaning no matter how much reflexive practice a researcher engages in, there will always be some form of bias or subjectivity (Holmes, 2020; Von-Glasserfield, 1988). Nevertheless, the researcher completed a variety of reflective accounts to help address interpretations to present a more credible and realistic version of the participant's accounts (Underwood et al., 2010; Kleinsasser, 2000). Positionality is often expressed in the

form of a 'positionality statement', which explains how the researcher became the researcher they are at the time of completing their research. According to research, a good positionality statement includes their potential influences on the research (such as age, social class, race, ethnicity, gender, and religious beliefs – this can be highlighted in Table 7), the researchers chosen or pre-determined position about the project (i.e. are they an insider or outsider), and a description of the researcher's lens (i.e. perspectives through which they view the research process) (Savin-Baden & Major, 2013; Holmes, 2020; Facing History and Ourselves, 2021).

4.2.3.1 Positionality Statement

Table 7: Social Identity Overview

Construct	Description
Ethnic background	Mother = South Africa Father = English
Socio-economic status	Middle-class
Gender	Male
Sexual orientation	Heterosexual
National origin	British
First language	English
Physical, emotional, (dis)ability	None
Age	26
Religious or spiritual affiliations	Christianity
Race	White British
Education	**BSc (Hons) Physiotherapy** – Apart of this degree, I completed a 'research-methods unit' which involved the submission of a research proposal dissertation, that was quantitative based. **MSc Applied Sport and Exercise Science (Physiology Award**) – I completed a mixed-method study exploring what it is like being a medical professional in academy football *("I don't care if you say it will take six months, I expect them back in four: Exploring what it is like being a medical professional for an academy level football club"*). This study is unpublished. **Master of Philosophy (MPhil)** "*An exploration of the profile and perspectives of Allied Health Professionals (AHPs) in Northamptonshire to inform workforce development"*. This was a mixed-method study. At the time of submitting this PhD, this project had been submitted to the post-graduate office at The University of Northampton, and I was waiting for a date for my VIVA. **Doctor of Philosophy (PhD)** - *"Exploring perceptions on how Virtual Reality (VR) could serve as an alternative tool for football players to engage in self-development".* ***This study***

The journey that led me to complete this PhD stemmed from my love of football and not necessarily being provided with the support and skills needed to transition out of the academy system. When completing my master's degree, I completed a work experience placement where I worked for My Energy Game (MEG). In this role, I provided support by creating social media posts to advertise MEG's podcasts or mission statements. When I completed my master's degree, MEG was going through its first transitional period in which it moved away from offering small workshops to clubs to help players engage with self-development and instead

looked to create a VR game/app that could help achieve their vision (or 'the whole') which was outlined in Chapter 1[9]. I shared the same vision as MEG in terms of the potential benefits VR could play in improving the engagement football players have toward self-development, which in turn could positively impact well-being and performance. As such, I asked MEG if I could use their prototype to understand the perceptions those within football have on this concept. I am not employed by MEG and was not provided any rewards or incentives for completing this research. However, given that I shared the same beliefs as MEG, justification can be put towards engaging in reflexive practice to try and differentiate 'what I wanted the results to be' from 'what the results were'. I understood that bias may have persisted, which is why I used a third-party researcher when analysing the perceptions of players and practitioners in Studies 2 and 3 (further discussed in Chapter 6).

4.3 Research Design

Aligning with a pragmatic approach, the researcher utilised mixed methods to gather quantitative and qualitative data (Alghamdi & Li, 2013). By analysing quantitative and qualitative data, the researcher gained a more well-rounded understanding of VR as a possible tool for self-development in football. This is because validity and reliability can increase as each method (quantitative and qualitative) provides different perspectives on the research phenomenon (Sharma et al., 2023). As already alluded to, a triangulation design could combine the traditionally large sample sizes, trends, and generalisations of quantitative research with the small but more in-depth insights gained from qualitative research (Patton, 1990; Nobel & Heale, 2019). Moreover, a convergent design was used, meaning quantitative and qualitative data were collected concurrently, analysed separately, and then merged together (Fetters et al., 2013). As such, the quantitative and qualitative results were equally important to the research aims and objectives. More in-depth insights into how quantitative and qualitative approaches were used will be highlighted in Chapters 5 (quantitative) and 6 (qualitative). Nevertheless, the chapter will now explore the methodology behind this thesis's quantitative and qualitative aspects.

4.4 Research Methodology

The research methodology underpinning this research included both survey research and phenomenology (specifically hermeneutic phenomenology). As already outlined, the two were used in tandem with each other before merging to address the research phenomenon in the most

[9] My Energy Game has the goal of supporting football players to work on their self-development (using Virtual Reality) to facilitate positive well-being.

effective way (Patton, 2005; Crotty, 2003; Saunders et al., 2012; Wilson, 2019; Crotty, 1998). Survey research helped to capture general perceptions of the phenomenon by identifying patterns, prevalence, and relationship between variables. At the same time, hermeneutic phenomenology explored deeper insights towards the perceptions of the phenomenon being explored. Using a convergence model, the two helped to explain any disparities, but also complemented each other (i.e. how qualitative themes through hermeneutic phenomenology can support or challenge the quantitative trends from survey research).

4.4.1 Survey Research

Survey research served as the primary methodology within the quantitative aspect of this thesis. Survey research is defined as *"the collection of information from a sample of individuals through their responses to questions"* (Check & Schutt, 2012, p.60; Ponto, 2015). It is often used to describe human behaviour, making it a common tool within social and psychological research (Singleton & Straits, 2009). Chapter 5 provides more in-depth insights into the type of survey research completed.

4.4.2 Phenomenology

Phenomenology is a research approach that aims to describe the essence of a phenomenon by exploring individuals' lived experiences (Teherani et al., 2015; Van Manen, 1997; Neubauer et al., 2019). The aim is to describe the meaning of an experience, encompassing what the experience was and how it was experienced, so new meanings can be developed to inform how one understands that experience (Laverty, 2003; Neubauer et al., 2019). It is worth noting that phenomenology serves as both a philosophy and a method, with the researcher using it as a method in this research. This is because phenomenology as a method can provide a more transparent framework of how the qualitative data can be triangulated with the quantitative data, meaning both datasets will be equally integrated, allowing for deeper insights into the phenomenon (Mayoh & Onwuegbuzie, 2013; Noble & Heale, 2019).

Most researchers credit Edmund Husserl for defining phenomenology in the early 20th century (Kafle, 2011), with his transcendental (descriptive) approach to phenomenology having a core belief that experiences serve as the foundation for knowledge (Racher & Robinson, 2003; Neubauer et al., 2019). In essence, Husserl's approach is rooted in the idea of gradually transitioning from objectivity to subjectivity (although not entirely). The researcher's goal is to achieve transcendental subjectivity, which is a state where the researcher does not allow their

subjectivity to inform the descriptions offered by participants (Lopez & Willis, 2004; Neubauer et al., 2019).

Another common approach to phenomenology is that of Martin Heidegger. His philosophical inquiry started by aligning with that of Husserl's transcendental approach. However, Heidegger later challenged key aspects of this approach as he believed that individuals cannot step out of his/her lifeworld as individual's realities are invariably influenced by the world in which they live (Lopez & Willis, 2004; Neubauer et al., 2019). Heidegger argued that individuals' lifeworld's inform human experience, and if all experiences are interpreted through this lens, phenomenology can go beyond a description. Therefore, Heidegger put forward hermeneutic phenomenology (also known as interpretive phenomenology), which is rooted in interpretation (Laverty, 2003). This lends itself to supporting the decision to explore the phenomenon of VR as a tool for self-development beyond just quantitative methods.

Hermeneutic phenomenology refers to the interpretation of texts and requires the researcher to interpret narratives provided by participants. As well as going beyond a description, hermeneutic phenomenology recognises that the researcher (like participants) cannot ignore their lifeworld, and instead, the researcher's past experiences and knowledge act as valuable guides to the inquiry (Neubauer et al., 2019). With this in mind, researchers should openly acknowledge their preconceptions and reflect on how their subjectivity could play a part in the research process (Moran, 2002; Jamieson et al., 2023). This justifies why a positionality statement has been outlined in this chapter and why the researcher engaged in reflexive practice throughout undertaking this research.

4.4.2.1 Justifying a Hermeneutic Approach

The literature suggests that the researcher must judge which approach to phenomenology is most relevant to the study being completed (Sloan & Bowe, 2014). Taking into account both transcendental and hermeneutic phenomenology, the researcher opted to take a hermeneutic phenomenological approach as it allowed their perspectives (cognisant of research reflexivity) and experiences to be interwoven within the data, allowing an interpretation rather than just a description of what is being experienced (Sloan & Bowe, 2014). Although this approach carries the limitation of potential researcher bias, the researcher felt it was more suitable compared to transcendental phenomenology. This is because hermeneutic phenomenology allowed the researcher to explore intricate questions that may arise and uncover unique elements inherent within the phenomenon. As well as being a stronger approach than transcendental phenomenology, hermeneutic phenomenology was more suitable than other qualitative research

methods, such as grounded theory. This is because grounded theory is not based on aligning with existing theory and overlooks the researcher's embedded role, obstructing the researcher's influence in data construction and interpretation (Bryant & Charmaz, 2007).

According to Van Manen, research ought to be perceived as a dynamic interaction among six research tasks (outlined in Table 8), which serve as a framework for the researcher's journey (Magrini, 2012).

Table 8: Six Research Activities of Hermeneutic Phenomenology

Research Activity	Justification of its evidence within the thesis
Turning to a phenomenon which seriously interests us and commits us to the world	This is apparent in chapter one, whereby the researcher's growing curiosity and dedication to the research area is highlighted.
Investigating experience as we live it rather than as we conceptualise it	This will be accomplished by observing participants and conducting focus groups. This approach offers the opportunity to tap into participants first hand experiences, which in turn can contribute to capturing the fundamental nature of the phenomenon being investigated.
Reflecting on the essential themes which characterise the phenomenon	This relates to the four lifeworld existentials (outlined in Table 8) which will be reflected upon throughout the analysis.
Describing the phenomenon through the art of writing and rewriting	This will pertain to how the researcher perceives writing as a form of 'art', emphasising the significance of blending participant experiences and anecdotes with the researcher's guided interpretation. This approach aims to enable the reader to gain a more profound understanding of the lived experiences associated with the examined phenomenon.
Maintaining a strong and oriented relation to the phenomenon	Researcher reflexivity will hold significance and is detailed in this chapter. Additionally, the researcher intends to incorporate reflective remarks throughout the thesis, demonstrating their continuous awareness of their individual standpoint.
Balancing the research context by considering the parts and the whole	The aims of this thesis will consider the parts and the whole approach when considering the essence of the phenomenon

Van Manen also proposed four lifeworld essentials (outlined in Table 9 on the page below) that can guide the research process, which are deemed important to human experience (Rhyn et al., 2020).

Table 9: Four Lifeworld Essentials in Hermeneutic Phenomenology

Lifeworld Existentials	Meaning
Lived Space **(Spatiality)**	This is the space in which we are present and will impact upon how we feel and potentially how we act. Lived space will influence experience. In relation to this study, the researcher might consider a footballer who performs within an academy vs a professional footballer.
Lived Body **(Corporeality)**	We are always bodily within interactions and upon meeting someone familiar or strange, individuals will use their body (consciously or unconsciously) to convey certain messages. This can be reflected within the observations and focus group stages as the participants will be meeting someone stage (the researcher) mixed with the familiarity within the focus groups of being in a group of individuals within their team. Furthermore, this could also be in relation to how participants will react to being in a new space (link to spatiality) of VR.
Lived Time **(Temporality)**	This refers to subjective time that can be experienced differently and is encapsulated by past, present, and future. The present and thoughts about the future will shape and mould or temporal landscape. For example, this can reflect how players react at different standpoints of the season and vary depending on how they performed in the previous game to how they see the next game going.
Lived Human Relation **(Relationality or Communality)**	How we relate to one person may be different to how we relate to another. This therefore emphasises the importance on the relationship of the intended use of VR and psychology to improve well-being and possible performance of players. But this can also relate to how one person will respond to VR and how this can compare between the two.

4.5 Research Ethics and Governance Approvals

The researcher gained ethical approval from the University of Derby's research ethics committee, which will be outlined in each study. Data was stored on a password-protected device, which only the researcher could access. This has been backed up regularly every three months, with three copies of the data set being made. Data will be kept for a maximum of two years before all data will be destroyed securely. The researcher acknowledged the ethical risks of completing focus groups, observations, and surveys within the literature and followed guidance on confidentiality, consent, and harm. For instance, pseudonyms were used in studies two and three to remove any potentially identifiable information. Participants were required to complete consent forms before engaging in this research. Moreover, participants were provided with a participation information sheet to provide them with some background as to the study(s) being completed.

4.6 Chapter Conclusion

This chapter has outlined the research methodology, offering insight into the researcher's philosophical stance, positionality, and reflexivity. Additionally, it has presented the

justification for using a mixed-method approach and the application of hermeneutic phenomenology. In-depth descriptions of the methods used in all three studies will be explored in their respective chapters.

Chapter 5 – Well-being Issues in Football: Prevalence, Support Needs, and the Potential Technology Could Play

5.1 Introduction

This chapter outlines the quantitative study completed, which involved a survey/questionnaire split into three sections to gain insights on a range of topics from the perspectives of players and practitioners working in football within England. The first section explored the prevalence of well-being issues in footballers, the correlation between the prevalence of well-being issues and received and wanted support, and the correlation between received and wanted support for football players. The second section gathered information on the overall well-being of practitioners. The third and final section explored players' and practitioners' perspectives towards integrating technology (specifically Virtual reality [VR]) to offer support for well-being and self-development.

5.1.2 Research Questions

This study aimed to address several research questions:

1. The first research question aimed to examine the prevalence of well-being issues among footballers. This was shaped by the recognition that transitional periods that occur within a player's career (as outlined in Chapter 2) can have a negative impact on their well-being. A specific hypothesis was not developed for this question as the aim was to explore experiences across the football pyramid, including male and female players, both full-time and part-time.

2. The second research question explored the relationship between well-being issues and social support (received and wanted support). This was guided by existing literature discussed in Chapter 2. For instance, Perry et al. (2020) reported that female footballers believed that receiving support during their careers would have been beneficial and noted a clear need or desire for support at various stages of their careers. It was hypothesised that there would be a negative correlation between received support and well-being issues, whereas there would be a positive correlation between wanted support and well-being issues. For example, higher levels of received support would be

associated with higher well-being, whilst greater levels of wanted support would correlate with lower well-being.

3. The third research question explored the relationship between received and wanted support among footballers. This was informed by literature highlighted in Chapter 3, such as Miller et al. (2023), which indicated that access to psychological support was often lacking or deprioritised among track and field athletes. Moreover, the literature discussed within Chapter 3 also outlines the stigmatisation around receiving and wanting support (Kvillemo et al., 2020). Given the anticipated and unanticipated challenges football players may face within their career (as detailed in Chapters 2 and 3), it was hypothesised that there would be a relationship between received and wanted support.

4. The fourth research question turned attention to examining the well-being of practitioners working in football. This question drew on discussions in Chapter 2, which emphasised the role practitioners play in shaping players' training, recovery, and performance. Frameworks such as the Elite Players Performance Plan (EPPP) and the FA Four Corner Model stress the importance of a holistic approach to athlete development and coaching, extending beyond just physical factors (Diouf et al., 2024; Premier League, 2012; Kelly & Williams, 2020). However, this can be difficult for practitioners to achieve in high-pressure and results-driven environments that football can create, contributing to their emotional or mental fatigue. Consequently, research by Crawley (2021) and McCormick et al. (2018) suggests that some practitioners feel disillusioned by the perception that psychological support is only for those perceived as weak. This, in turn, can reduce their ability to provide effective support to players. Based on this, it was hypothesised that practitioners would report low levels of well-being areas within the PERMA Profiler, such as 'Positive Emotions', 'Happiness', Accomplishment' and 'Relationships', but higher levels in 'Engagement', 'Meaning', 'Loneliness', 'Negative Emotions', and 'Overall Well-Being'.

The final research question was to explore players' and practitioners' perspectives towards VR. More specifically, it explored how their views differed in relation to VR's potential to support footballers' well-being, its acceptance as a well-being tool within the sport, its perceived value for self-development, and whether it would be embraced for such purposes in football. The researcher hypothesised that there would be differences in attitudes between players and practitioners across these areas, which

reflects discussions highlighted in Chapter 1 and 2, concerning how younger generational cohorts are more receptive to technology, and that practitioners within football are more reluctant to accept new ideas (Crawley, 2021; Granic et al., 2014; Limani, 2022; VanderLinden, 2024).

5.2 Research Strategy

This study employed a Cross-sectional research design, as the researcher aimed to gather objective data which could be statistically analysed to identify trends, patterns, and relationships between variables (Clark-Cater, 2004; Bhandari, 2022; Goertzen, 2017). The researcher created the survey/questionnaire on Qualtrics, with data collection commencing in December 2022 and ending in December 2024. This study received ethical approval (ETH2122-5442) from the College of Science and Engineering Research Ethics Committee at The University of Derby.

5.3 Sampling

5.3.1 Recruitment Method(s)

Initially, the researcher had the aim of only recruiting players and practitioners working within the top four leagues of men's football in England (The Premier League, The Championship, League One, and League Two) in addition to recruiting players and practitioners from the top two leagues of women's football (The Women's Super League and The Women's Championship). Recruitment was not limited to first-team levels, as the researcher also aimed to include players and practitioners working at academy levels from clubs within these leagues. However, to meet ethical guidelines, the aim was for these individuals to be over the age of 18.

From the outset, the researcher understood that recruitment within this study would be challenging. For instance, there is a multitude of literature outlining the difficulty of recruiting those working within football (e.g. Kelly, 2010; Parker, 2016; Roderick, 2006; Law, 2019). *"Football clubs are jealously guarded worlds. Like governments, clubs are interested in good or no publicity. Therefore, they are quite suspicious of social researchers and press and broadcasting journalists whose interests lie in anything other than the straight report or the novelty item"* (Tomlinson, 1982, p. 151). English football is notoriously known as a closed social world, which is described as hostile to 'outsiders' who can be defined as those who have never played or otherwise been involved in football at high levels (Law, 2019; Waddington, 2014, p.15). The difficulty with recruitment is not just limited to elite-level players, as the

Players Football Association (PFA) have previously mentioned that if you are not a former player but manage to gain access to academy-level players, researchers may struggle to gain trust and acceptability (Bryman, 2012, p.201; Law, 2019).

With this knowledge in mind, the researcher used a gatekeeper who worked as a practitioner at an elite level and had been working at this level for a number of years. The gatekeeper helped to distribute the survey/questionnaire electronically to various clubs within England via email or text (Appendix 2). The goal was to use snowballing as a means of increasing the number of responses, as participants could forward the survey/questionnaire to contacts they may have within football and target individuals that the researcher or gatekeeper could not achieve alone (Nikolopulou, 2022; Kennedy-Shaffer et al., 2021). Snowballing is more commonly associated with qualitative research but can be used in quantitative research (Atkinson & Flint, 2021; Thompson, 2012). Using a snowballing method in quantitative research can result in selection bias and generalisability issues (Health, 2023; Raina, 2015). On the other hand, snowballing can be viewed as a *"necessary and irreplaceable sampling method"* (Walters, 2015, p.367) especially when dealing with difficult to reach populations.

Despite using a gatekeeper and a snowballing sampling method, the response rate was low. As such, the researcher distributed the survey/questionnaire via the social media platform LinkedIn. This provided the opportunity to send direct messages (Appendix 3) to potential participants based on their profession/job title, which was highlighted in their profile. Again, a snowballing sampling method was applied, which could have been useful when individuals may not have updated their LinkedIn profile and may no longer be working in football but still have contacts within the sport. At this stage, the focus was still on players and practitioners working in the top four leagues in men's English football, as well as the top two leagues in women's English football (including academy levels as long as they were over the age of 18 and could understand English). However, the LinkedIn approach still did not result in much of an increased response rate, so the researcher used the contacts of the supervisory team and the university, as well as changing the inclusion criteria. This change diverted focus away from just elite-level clubs and allowed players and practitioners from all levels of football to participate. This did come with a number of limitations, which will be outlined later in this chapter.

5.3.2 Sample Size

Before delving into the sample size, it is important to highlight that this study was exploratory in nature. As such, sample sizes can be flexible and reflect the nature of the research question (Babbie, 2010; Thompson, 2012; Fowler, 2013). It was difficult to determine the 'target sample

size' for this study due to a number of factors. For instance, given that research has outlined the difficulty in recruiting those from football and considering that the survey/questionnaire allowed players and practitioners from all levels within England to participate, it was challenging for the researcher to calculate/predict the population size. Moreover, a limited amount of research has used quantitative data (such as a survey/questionnaire) to gather the information the researcher aimed to collect. However, when analysing the literature, similar studies within football provided some guidance for this study on what an 'ideal' sample size could be and ways to recruit participants.

One study of interest was completed by Perry et al. (2020), who completed a survey using female players performing in the Women's Super League and Women's Championship. They aimed to explore the prevalence of anxiety, depression, and eating disorders of elite female players. The researchers managed to gain a sample of 155 players, with the survey being live between November 2020 and March 2021. These dates are important to consider, as during this time, women's football faced a number of challenges due to the outbreak of Coronavirus and the government restrictions related to this. As a result, players may have had more free time to engage in a survey. Another important consideration towards the sample of 155 players was that the first author competed at a high level within English football and maintained personal connections with players performing in the two leagues. Moreover, the researchers also used snowballing and social media to increase the sample size.

Another study of interest was from Greenhough et al. (2021), who aimed to examine the knowledge, perceptions, influences, and barriers of those responsible for implementing VR (coaches and support staff) and those who would use VR (players) within professional football clubs. Furthermore, they aimed to identify how VR is used within professional football and examine factors that could contribute to behavioural intention to use VR in professional football for those who do not have access to the technology. Using a cross-sectional survey between 2019 and 2020, the study yielded 207 responses. Similar to that of Perry et al. (2020), this survey was completed during a time of lockdown restrictions, which could have improved engagement to engage in this survey. Of the 207 responses, only 89 coaches/support staff and 60 players worked in England. Greenhough et al. (2021) also used a snowballing sampling method and social media to help increase response rates. Additionally, their inclusion criteria allowed players, coaches, and support staff aged 17 and over to participate.

The studies by Perry et al. (2020) and Greenhough et al. (2021) are similar to what was being studied in this study in terms of VR within football and the prevalence of well-being and received and wanted support. These two studies provided some justification for using a

snowballing sampling method and social media to help improve sample sizes. In terms of the sample size, another thing to consider was that the researcher utilised three validated surveys to gain key information from players and practitioners. Unfortunately, the researcher was unable to reach the sample sizes of the original researchers, which will be discussed further within the limitation section.

5.4 Data Collection Method

The researcher created the survey/Questionnaire on Qualtrics and began with the participant information sheet and consent form (Appendix 4), which included the lead researcher and supervisory team's email if participants had any further questions about the study. Information was also provided on how they could withdraw any of their data. The researcher attempted to reduce the risk of easily identifiable information by not asking for participant/club names. Furthermore, participants were provided with a unique code that was placed against their dataset, which could also help remove any data should the participant wish to withdraw. Due to the areas which the researcher was exploring, the survey/questionnaire was split into three sections: (1) Player-specific questions, (2) Practitioner-specific questions, and (3) VR-specific questions.

5.4.1 Player-Specific Questions

5.4.1.1 Athlete Psychological Strain Questionnaire

For player-specific questions, the researcher focused on exploring the prevalence of well-being issues among footballers, the correlation between these issues and the levels of received and wanted support for well-being, and the correlations between received and wanted support. To gain insights into the prevalence of well-being issues, the researcher utilised the Athlete Psychological Strain Questionnaire (APSQ). The APSQ (Appendix 5) was designed to be a self-reporting rating scale used in an athletic context (Rice et al., 2019; 2020). It is a 10-item instrument that assesses three domains of athlete mental strain: Self-regulation difficulties (items 1-4), performance concerns (items 5-8), and externalised coping (items 9-10) and scored using a Likert scale (1 – 'None of the time' to 5 – 'All of the time) (Rice et al., 2019; 2020). Based on this scoring, the minimum score would be 10 and the maximum of 50. Rice et al. (2019; 2020) provided cut-off scores based on a sample of 1,093 elite athletes, which suggests the risk of psychological strain of athletes (scores between 15 to 16 – 'Moderate psychological strain', 17 to 19 – 'High psychological strain', and 20 or above – 'Very high psychological strain'). The three domains within the APSQ are based on relevant studies highlighting that

athletes experiencing psychological strain often report relationship challenges within and outside of sports settings (Doherty et al., 2016), problems with substance involvement/abuse (Donohue et al., 2013; Dunn & Thomas, 2012), performance concerns (Torrehrosa et al., 2004), and negative externalising behaviours such as anger, aggression, or increased risk-taking (Doherty et al., 2016).

Rice et al. (2020) sought to examine the convergent, divergent, and construct validity of the APSQ. From a large sample of 1007 current Australian athletes (of which 233 were footballers), their study highlighted that the APSQ may be helpful when examining athlete performance and well-being (Rice et al., 2020). For the present study, the Cronbach's alpha score for the APSQ was 0.838 (good internal consistency). In regard to its three domains, the study had a Cronbach's alpha score of 0.724 for self-regulation difficulties (acceptable internal consistency), 0.800 for performance concerns (good internal consistency), and 0.592 for externalised coping (poor internal consistency). When considering the response rate for this questionnaire in this study, it can help provide some degree of explanation towards the low level of reliability for externalised coping and why internal consistency did not reach higher than a 'good' (Bujang et al., 2018).

There are alternative questionnaires to the APSQ, some of which are more general, such as the Kessler Psychological Distress Scale (K10), General Health Questionnaire -28 (GHQ-28), and the Depression, Anxiety, and Stress Scale (DASS) (Kessler et al., 2002; Goldberg & Hillier, 1979; Lovibond & Lovibond, 1995). Moreover, there are athlete-specific alternatives to the APSQ, including the Sports Mental Health Continuum Short Form (Sport MHC-SF), the Brunel Mood Scale (BRUMS), the Athlete Burnout Questionnaire (ABQ), the Sport Anxiety Scale (SAS), the recovery-Stress Questionnaire (RESTQ), and the Mental Toughness Questionnaire (MTQ) (Foster & Chow, 2018; Terry et al., 1999; 2003;Gerber et al., 2018; Smith et al., 1990; Correia & Rosado, 2019; Gnacinski et al., 2021).

Regarding the more general alternatives to the APSQ, these are not necessarily specific to the unique stressors of athletes, such as performance and career uncertainty, which can make the APSQ more specific for this study as it was developed specifically for athletes, making it more relevant to their experience (Rice et al., 2019; 2020). Focusing on the athlete-specific alternatives, the APSQ is a brief scale that can be completed quickly, making it more practice (Rice et al., 2019; 2020). When reflecting on the literature highlighting the challenges in recruiting those working within football, having longer scales (such as the RESTQ or DASS) may have led to higher drop-outs in the study. Moreover, as the APSQ measures the three domains of self-regulation, performance, and externalised coping, although it is short, it can be

considered more comprehensive than tools such as the SAS or ABQ (Rice et al., 2019; 2020). Overall, as the aim was to measure psychological strain in footballers to help identify whether players need additional support, the APSQ was considered the best option as it is sport-specific, brief, validated, and covers multiple dimensions (Rice et al., 2019; 2020).

5.4.1.2 Athlete Received Support Questionnaire

The Athlete Received Support Questionnaire (ARSQ) was used in this survey to address received support for well-being. The APSQ (Appendix 6) is designed to be used across all sports to help assess the frequency in which an athlete receives emotional (receiving comfort, safety, and personal care), esteem (obtaining recognition and confidence in one's abilities from others), informational (receiving helpful advice and guidance), and tangible support (obtaining practical and instrumental assistance) over the last week (Freeman et al., 2014). The reasoning behind asking participants to reflect on the last week is due to two reasons. The first relates to the regularity in which many athletes train and compete in their sport; the second is in response to maximising recall (Freeman et al., 2014).

Questions within the ARSQ were developed from previous statements made by athletes about their social support experiences (Rees & Hardy, 2000) as well as previously received support measures designed for specific studies in sporting contexts (Freeman & Rees, 2008; Zourbanos et al., 2011). Furthermore, the Perceived Available Support in Sports Questionnaire (PASS-Q) and Inventory of Socially Supportive Behaviours (ISSB) were considered. Although these two questionnaires differ from the APSQ in terms of support and context, some of their specific themes are relevant to the support that an athlete receives (Freeman et al., 2014). Initially, two authors identified 91 items for discussion, which were reviewed for wording, redundancy, relevance, and fit within the domains of received emotional, esteem, informational, or tangible support. This reduced the pool to 31 items, which were then reviewed by two further authors. A further nine items were removed due to a debate over their relevance across all sports and competitive levels. In total, the ARSQ consists of 22 items, with emotional and esteem support made up of five items each, and informational and tangible support comprising six items each (Freeman et al., 2017). Like the APSQ, the ARSQ uses a Likert scale from 1 to 5, but instead, 1 indicates 'Not at all' and 5 'Seven or more times'.

Studies by Freeman et al. (2014) and Yilin et al. (2023) have provided evidence of the ARSQ's reliability and cross-cultural. For the present study, the Cronbach's alpha score for the ARSQ was 0.852 (good internal consistency). In regard to its four domains, the study had a Cronbach's alpha score of 0.945 for emotional support (excellent internal consistency), 0.924 for esteem

support (excellent internal consistency), 0.851 for informational support (good internal consistency), and 0.722 for tangible support (acceptable internal consistency).

There are alternatives to the ARSQ that the researcher considered using. For instance, there are sport-specific questionnaires such as the Social Support Survey for Injured Athletes (SSSIA), Perceived Available Support in Sports Questionnaire (PASS-Q), and Athlete Burnout Questionnaire (ABQ) (Yang et al., 2010; Freeman et al., 2011; Raedeke & Smith, 2001; Freeman et al., 2014). The researcher also considered non-sport-specific questionnaires such as the Multidimensional Scale of Perceived Social Support (MSPSS), the Social Support Questionnaire (SSQ), the Interpersonal Support Evaluation List (ISEL), and the Berlin Social Support Scales (BSSS) (Zimet et al., 1988; Roomaney et al., 2019).

While questionnaires like the MSPSS, SSQ and ISEL are validated, they pertain to broader populations. In contrast, the ARSQ is specifically designed for athletes, making it more relevant in capturing the unique demands of the sports environment (Freeman et al., 2014). Another consideration the researcher took was that questionnaires such as the PASS-Q and MSPSS assess the perceived availability of support/what an athlete thinks is available (Freeman et al., 2014; Zimet et al., 1988). By using the ARSQ, the researcher could provide a more objective measure of social support interactions. This can be deemed important as athletes may perceive support as available but not actually receive it when needed (Perry et al., 2020; Thomas et al., 2023; Green et al., 2012). This can be beneficial towards literature as it can help identify gaps in support systems for athletes. Finally, the ARSQ was deemed more appropriate as it captures various dimensions of support, making it more comprehensive compared to tools such as the SSSA, as this questionnaire mainly focuses on injury-related support (Mitchell et al., 2014).

5.4.1.3 Modified Athlete Received Support Questionnaire

To gather data on wanted support levels, the researcher developed the ‘Modified Athlete Received Support Questionnaire’ (Appendix 7). In effect, the researcher used the same questions found in the ARSQ, but the way the questions were worded was changed in order to gain data on wanted support. For instance, instead of asking, *“In the last week, how many times did someone do the following?”* questions were changed to *“To what extent do you think the below support is important to you?”.* For the present study, the Cronbach's alpha score for the modified ARSQ was 0.867 (good internal consistency). Regarding the four domains within the questionnaire, the study had a Cronbach’s alpha score of 0.787 for wanted emotional support (acceptable internal consistency), 0.804 for wanted esteem support (good internal consistency),

0.851 for wanted informational support (good internal consistency), and 0.722 for wanted tangible support (acceptable internal consistency).

5.4.2 Practitioner-Specific Questions

The practitioner-specific questions aimed to identify areas where they could improve their quality of life. This helped to provide some context on how they feel about well-being and self-development in football and provided some preliminary insights into the areas explored in Chapter 7 and context towards more detailed discussions in Chapter 8. To explore this, the researcher utilised the 'PERMA' model, which is an acronym and a general measure for adults which provides a brief snapshot of well-being across five domains: Positive Emotions (PE), Engagement (EN), Relationships (REL), Meaning (MNG), and Accomplishment (ACC) (Kern, 2022; Kern et al., 2015; Seligman, 2018; Magare et al., 2022; Butler & Kern, 2016).

PE describes enjoyment, happiness, ecstasy, and cheerfulness, which contribute towards improved human functioning and growth that can facilitate expansive reasoning (D'raven & Pasha-Zaidi, 2016; Magare et al., 2022). EN refers to being absorbed and interested in an activity and has roots in the work of 'finding flow', which is a state of enjoyment (Butler & Kern, 2016). REL relates to feeling supported and valued by others, as positive relationships are an important part of life as humans are social beings (Magare et al., 2022; Butler & Kern, 2016). Relationship-based well-being is not dependent on others but infers being present and accessible at the most needed time (Kern, 2022). MNG refers to having a sense of purpose in life and is associated with personal identity and giving rather than taking (Magare et al., 2022). Finally, ACC has been linked to a persevering attitude rather than an outcome alone (Magare et al., 2022; Seligman, 2018). It can be objective (marked by honours and awards). However, the profiler measures subjective feelings of accomplishment by working towards and reaching goals and feeling able to complete tasks and daily responsibilities (Butler & Kern, 2016).

Overall, the PERMA consists of 23 items (Appendix 8) and includes Health (H), Negative Emotion (NE), Happiness (HAP), Loneliness (LON), and Overall Well-being (OWB), which act as filler questions and provide more information (Butler & Kern, 2016). Moreover, these filler questions can be helpful in the context of asking questions about well-being to try and prevent respondents from responding to each question in the same way. The 23 items are divided into eight blocks and measured on a Likert scale from 0-10, with different sections using different scales of measurement (i.e. 1 – Terrible, 10 – Excellent; 1 – Not at All, 10 – Completely; 1 – Never, 10 – Always) (Butler & Kern, 2016). For the present study, the Cronbach's alpha score for the PERMA was 0.767 (Acceptable internal consistency). For the

individual items which make up the PERMA, this study had a Cronbach's alpha score of 0.259 for PE (Unacceptable internal consistency), 0.644 for EN (questionable internal consistency), 0.744 for REL (Acceptable internal consistency), 0.746 for MNG (Acceptable internal consistency), 0.625 for ACC (Questionable internal consistency), 0.265 for H (Unacceptable internal consistency), and 0.690 for NE (Questionable internal consistency). As LON and HAP are single questions, the researcher could not gain a reliability score. When considering the response rate for this questionnaire in this study, it can help provide some degree of explanation towards the low level of reliability for externalised coping and why internal consistency did not reach higher than a 'good' (Bujang et al., 2018).

There are alternatives to the PERMA that the researcher considered using. For instance, there is the Flourishing Scale (FS), the Satisfaction with Life Scale (SWLS), the World Health Organisation Well-Being Index, Ryff's Psychological Well-Being Scale (RPWB), the Workplace PERMA Profiler, and the Sport Mental Health Continuum-Short Form (Sport MHC-SF) (Diener et al., 2010; World Health Organisation, 2024; Ryff, 1989; Kern et al., 2015). Despite these alternatives, the researcher felt the PERMA was the most appropriate option. One reason why was due to the fact that the PERMA covers five key dimensions of well-being, whereas other scales (such as the SWLS) only focus on one aspect (Diener et al., 1985). Another reason why the PERMA was used was that it does not just focus on problems or deficits but instead on what makes life fulfilling. This was beneficial in this study as it could provide an understanding of what drives practitioners, as when practitioners are not thriving, they could struggle to support players. Further reasons justifying the use of the PERMA relate to the fact that it is short and easy to use and has also been used in a range of contexts, including sports psychology (Kern, 2022; Kern et al., 2015; Seligman, 2018; Magare et al., 2022; Butler & Kern, 2016).

5.4.3 VR-Specific Questions

The VR-specific questions were designed to be answered by both players and practitioners. Questions within this section are more exploratory in nature and ask questions about past experiences of using VR (inside and outside of football), the acceptance of VR within football as a tool for well-being and self-development, and general knowledge of VR. Questions also pertain to players' and practitioners' views on delivery methods of well-being support within football and whether these are effective. Questions were developed using previous research, which has been outlined in Chapter Three. For instance, Greenhough et al. (2021) completed a survey for players, coaches, and support staff within football to gain some insights into how VR is being used within football. Their focus was based on how VR could be used as a tool to

improve performance as opposed to well-being and self-development. Perry et al. (2020) used a questionnaire that only focused on elite female football players. Their focus was not necessarily on VR, but they did look at access to well-being support of footballers. Therefore, in this study, the researchers could build on Perry et al. (2020) by asking players and practitioners about the effectiveness of accessing support.

In terms of help-seeking within football, research has highlighted a lack of financial support as a common barrier (Pain & Harwood, 2004; Green et al., 2012; Martin, 2005; Wood et al., 2017; Gervis et al., 2020). While Greenhough et al. (2021) did include a question asking participants what they felt the cost of VR would be, the researcher felt it would be beneficial to re-word and find out how much players and practitioners would be prepared to pay. This could provide interesting insights into whether VR may be accepted in football. Finally, anecdotal evidence has suggested that VR is being integrated into numerous clubs, with experts predicting that almost all elite-level teams will adopt VR by the end of 2022 (Cunningham, 2022; Richlan et al., 2023). As a result, gaining insights into players' and practitioners' familiarity with VR would be useful to see if VR is being integrated within football as predicted (all-be it throughout the footballing system as opposed to just elite levels).

Due to this part of the survey asking a range of different questions, it was challenging to group them to gain an overall reliability score. Nevertheless, the researcher gained a Cronbach's alpha score of 0.748 for the experiences players and practitioners had of VR inside and outside football (Acceptable internal consistency). All VR-specific questions can be found in the appendix (Appendix 9).

5.5 Results

201 individuals opened the survey, with 142 of them completing the consent form. However, after the consent form, only 99 participants engaged in the survey beyond this point (Players: n=21) and (Practitioners: n=78). This equates to a response rate of 49.25%. As will become apparent in the results, some participants may have started to answer questions but did not answer all of them. More detailed information on the sample will be outlined below when presenting the results from the player-specific, practitioner-specific, and VR-specific questions.

5.5.1 Player-Specific Questions

Table 10 outlines the demographics of participants who answered the player-specific questions (APSQ, ARSQ, and Modified ARSQ).

Table 10: Demographics for the Player-Specific Questions

Demographic	Characteristics	Players % (n)
Gender	**Male**	76.2 (16)
	Female	23.8 (5)
Age	**18 - 24**	76.2 (16)
	25 – 34	23.8 (5)
	35 – 44	
	45 – 54	
	55+	
Nationality	**English**	81 (17)
	Scottish	4.8 (1)
	Irish	
	Welsh	
	Other	American 4.8 (1) Dual Nationality of English and Albanian 4.8 (1) Paraguay 4.8 (1)
Level	**First Team**	66.7 (14)
	Academy	33.3 (7)
Employment status	**Full-Time**	38.1 (8)
	Part-Time	52.4 (11)
	Free-Lance	4.8 (1)
	Other	4.8 (1)
Years of experience	**Less than a year**	42.9 (9)
	1 – 2	19 (4)
	3 – 4	9.5 (2)
	5 – 6	
	7 – 8	
	9 – 10	9.5 (2)
	11 – 12	4.8 (1)
	13 – 14	
	15+	14.3 (3)

5.5.1.1 APSQ

Using descriptive statistics, Table 11 on the page below shows the results from the APSQ suggesting a high level of psychological distress and strain among the 21 footballers who completed these questions. This is based on the APSQ cut-off scores provided by Rice et al. (2019; 2020), which suggest that a total score between 17 and 19 equates to a ‘high' level of psychological distress and strain. However, it is worth noting that in their studies, cut-off scores were based on a sample of 1,093 elite-level athletes (of whom only 233 were footballers). In our study, players appeared to feel more distress and strain regarding performance concerns.

Table 11: APSQ Results

	APSQ	Self-Regulation Difficulties	Performance Concerns	External Coping
Number of Participants	21	21	21	21
Mean	18.52	7.61	8.28	2.61
SD	6.45	2.85	3.7	1.2

5.5.1.2 Correlations between the APSQ and the ARSQ

A non-parametric Spearman correlation (used to analyse all correlation data)[10] showed no statistical significance between received support and the prevalence of well-being issues. This correlation was weak and negative *(R=0.135; P = 0.560)*, suggesting that as the prevalence of well-being issues increases, received support may decrease slightly.

In terms of the correlations between the individual items of the APSQ (self-regulation difficulties, performance concerns, and externalised coping) and the ARSQ (emotional, esteem, informational, and tangible support), these can be detailed in Table 12 on the page below. Across all types of received support, the relationships with the prevalence of well-being issues were generally weak, with the majority having a negative correlation. Received emotional and esteem support showed weak and negative correlations with all three well-being issues, suggesting (albeit slight) decreases in received support as well-being challenges increase. However, none of these relationships reached statistical significance. The correlation between performance concerns and received informational support was positive but weak, suggesting that as performance concerns rise, so will received informational support. In contrast, the correlation between self-regulated difficulties and externalised coping was weak and negative, suggesting a slight decrease in received informational support as self-regulated difficulties become more prevalent. Similarly, received tangible support showed positive but weak correlations with performance concerns and externalised coping, while its correlation with self-regulation difficulties was negative but weak. Overall, these findings suggest minimal trends that may not hold beyond this sample, as none of these correlations were statistically significant.

[10] The reason why a non-parametric Spearman correlation was used is because the researcher was aiming to measure the relationship between two variables that are not necessarily linearly related, measured on ordinal scales, and have non-normal distributions (Schober et al., 2018).

Table 12: Correlations Between the Individual Items of the APSQ and ARSQ

	R and P values	Received Emotional Support	Received Esteem Support	Received Informational Support	Received Tangible Support
Self-regulated difficulties	Correlation Coefficient	-.232	-.173	-.146	-.096
	Sig. (2-tailed)	.324	.453	.560	.704
	Number of participants	20	21	20	18
Performance Concerns	Correlation Coefficient	-.202	-.144	.026	.108
	Sig. (2-tailed)	.392	.533	.914	.670
	Number of participants	20	21	20	18
External coping	Correlation Coefficient	-.221	-.196	-.205	.014
	Sig. (2-tailed)	.348	.394	.387	.957
	Number of participants	20	21	20	18

5.5.1.3 Correlations between the APSQ and the Modified ARSQ

There was no statistical significance between the prevalence of well-being and wanted support, with this correlation being positive and weak *(R=0.087; P=0.731)*. This suggests that as the prevalence of well-being issues increases, there may be a chance that wanted support may also increase slightly.

Table 13 on the page below summarises the correlations between the individual items of the APSQ (self-regulated difficulties, performance concerns, and externalised coping) and the modified ARSQ (wanted emotional, esteem, informational, and tangible support). Wanted emotional support was negatively correlated with performance concerns and externalised coping, with the latter showing a negative but moderately strong relationship close to reaching statistical significance. This suggests that as external coping issues increase, wanted emotional support may decrease. Conversely, a positive but weak correlation was observed between wanted emotional support and self-regulation difficulties, indicating a potential trend that greater self-regulation difficulties might correspond with increased wanted emotional support. Wanted esteem support showed a positive but weak correlation with self-regulation difficulties and performance concerns, suggesting a slight trend where increased self-regulation difficulties and performance concerns may correspond with higher levels of wanted esteem support. However, the correlation with externalised coping was negative and weak, implying that as externalised coping issues increase, wanted esteem support may decrease slightly.

For wanted informational support, all correlations were positive. While weak correlations were observed with performance concerns and externalised coping, the correlation with self-regulation difficulties was moderately strong and statistically significant. This highlights a

meaningful trend where greater self-regulation difficulties correspond with increased wanted informational support. Finally, wanted tangible support showed a positive correlation with self-regulation difficulties and a negative correlation with performance concerns and externalised coping. The strength of these relationships was weak, indicating slight trends where wanted tangible support may decrease as performance concerns and externalised coping increase but may increase when self-regulation difficulties are more prevalent. It is important to highlight that these relationships showed no statistical significance.

Table 13: Correlations Between the Individual Items of the APSQ and the Modified ARSQ

	R and P values	Wanted Emotional Support	Wanted Esteem Support	Wanted Informational Support	Wanted Tangible Support
Self-regulated difficulties	Correlation Coefficient	.299	.192	.582	.402
	Sig. (2-tailed)	.228	.459	**.018**	.123
	Number of participants	18	17	16	16
Performance Concerns	Correlation Coefficient	-.012	.230	.299	.132
	Sig. (2-tailed)	.964	.375	.260	.627
	Number of participants	18	17	16	16
External coping	Correlation Coefficient	-.434	-.115	.051	-.351
	Sig. (2-tailed)	.072	.659	.851	.182
	Number of participants	18	17	16	16

*Statistically significant relationships have been highlighted and are in bold

5.5.1.4 Correlations between the ARSQ and the Modified ARSQ

The correlation between received and wanted support was statistically significant, positive, and moderately strong *(R=0.510; P=0.031)*. This suggests that when received support increases, so will wanted support.

As summarised in Table 14 on the page below, positive correlations were observed between the ARSQ (emotional, esteem, informational, and tangible) and the modified ARSQ (emotional, esteem, informational, and tangible). This suggests that as levels of received support increase, wanted support also tends to increase. Among these relationships, several were noteworthy for their statistical significance and moderate strength. The relationship between received emotional support and both wanted emotional and tangible support was moderately strong and statistically significant, indicating meaningful trends within the data. Similarly, received esteem support showed a moderately strong, statistically significant relationship with wanted emotional support, while correlations with other types of wanted support were positive but not statistically significant. For received informational support, a statistically significant and moderately strong

relationship was found with wanted tangible support, suggesting that as informational support is received, the desire for tangible support increases. However, relationships with other types of wanted support, though positive, were weak and not significant. Finally, received tangible support showed a statistically significant, moderately strong correlation with wanted esteem support. Although positive correlations existed with wanted emotional, informational, and tangible support, these relationships were weak and lacked statistical significance, making it challenging to conclude their trends.

Table 14: Correlations Between the Individual Items of the ARSQ and the Modified ARSQ

	R and P values	Wanted Emotional Support	Wanted Esteem Support	Wanted Informational Support	Wanted Tangible Support
Received Emotional Support	Correlation Coefficient	.505	.244	.144	.635
	Sig. (2-tailed)	**.032**	.345	.595	**.008**
	Number of participants	18	17	16	16
Received Esteem Support	Correlation Coefficient	.590	.143	.214	.418
	Sig. (2-tailed)	**.010**	.585	.425	.107
	Number of participants	18	17	16	16
Received Informational Support	Correlation Coefficient	.275	.269	.209	.497
	Sig. (2-tailed)	.270	.297	.438	**.050**
	Number of participants	18	17	16	16
Received Tangible support	Correlation Coefficient	.210	.500	**.**007	0.79
	Sig. (2-tailed)	.418	**.049**	.979	.780
	Number of Participants	17	16	15	15

*Statistically significant relationships have been highlighted and are in bold

5.5.2 Practitioner-Specific Questions

Table 15 on the page below outlines the demographics of participants who answered the practitioner-specific questions (PERMA).

Table 15: Demographics for the Practitioner-Specific Questions

Demographic	Characteristics	Manager/Coach % (n)	Sport science and medical staff % (n)	Others % (n)
Gender	**Male**	90.9 (20)	54.5 (12)	67.6 (23)
	Female	9.1 (2)	45.5 (10)	32.5 (11)
Age	**18 - 24**	9.1 (2)	27.3 (6)	20.6 (7)
	25 – 34	40.9 (9)	54.5 (12)	23.5 (8)
	35 – 44	22.7 (5)	13.6 (3)	29.4 (10)
	45 – 54	22.7 (5)	4.5 (1)	26.5 (9)
	55+	4.5 (1)		
Nationality	**English**	81.8 (18)	81.8 (18)	88.2 (30)
	Scottish	9.1 (2)	4.5 (1)	2.9 (1)
	Irish	4.5 (1)		
	Welsh	4.5 (1)	4.5 (1)	2.9 (1)
	Other		Portuguese 2 (9.1)	Dutch 1 (2.9) Portuguese 1 (2.9)
Level	**First Team**	40.9 (9)	68.1 (15)	
	Academy	50.1 (13)	31.9 (7)	
Employment status	**Full-Time**	72.7 (16)	50 (11)	67.6 (23)
	Part-Time	27.3 (6)	36.4 (8)	14.7 (5)
	Free-Lance		9.1 (2)	5.9 (2)
	Other		4.5 (1)	8.8 (4)
Years of experience	**Less than a year**		4.5 (1)	17.6 (6)
	1 – 2	9.1 (2)	27.3 (6)	14.7 (5)
	3 – 4		27.3 (6)	5.9 (2)
	5 – 6	9.1 (2)	13.6 (3)	5.9 (2)
	7 – 8	4.5 (1)		2.9 (1)
	9 – 10	13.6 (3)	4.5 (1)	8.8 (3)
	11 – 12	9.1 (2)	4.5 (1)	5.9 (2)
	13 – 14	9.1 (2)	4.5 (1)	5.9 (2)
	15+	40.9 (9)	13.6 (3)	32.4 (11)

5.5.2.1 Snapshot of the Well-Being of Practitioners

Using frequency analysis, Figure 15 on the page below provides a snapshot of the well-being of practitioners who responded to the practitioner-specific questions. To remind the reader, each domain of the PERMA is measured on a scale of 0 to 10 for the following factors: Positive Emotions (PE), Engagement (EN), Relationships (REL), Meaning (MNG), and Accomplishment (ACC); Health (H), Negative Emotion (NE), Happiness (HAP), Loneliness (LON), and Overall Well-being (OWB) (Kern, 2022; Kern et al., 2015; Seligman, 2018; Magare et al., 2022; Butler & Kern, 2016). Butler and Kern (2016) suggest that scores should be interpreted as follows: (1) 'Very high functioning' = score of 9 or above (0-1 for NE and LON); (2) 'High functioning' = score of 8 to 8.9 (1.1 to 3 for NE and LON); (3) 'Normal functioning' = score of 6.5 to 7.9 (3 to 5 for NE and LON); (4) 'Sub-optimal functioning' = a score 5 to 6.5 (5.1 to 6.5 for NE and LON); (5) 'Languishing' = a score below 5 (above 6.5 for NE and LON). In total, 71 practitioners completed questions related to ACC, EN, PE, NE, and H. 70 practitioners responded to MNG and REL questions, and for LON and HAP, 67 responses were gained. Overall, for every domain within the PERMA, practitioners mean score ranked them as

'Normal functioning'. However, the OWB mean score ranked practitioners as having 'Sub-optimal functioning'.

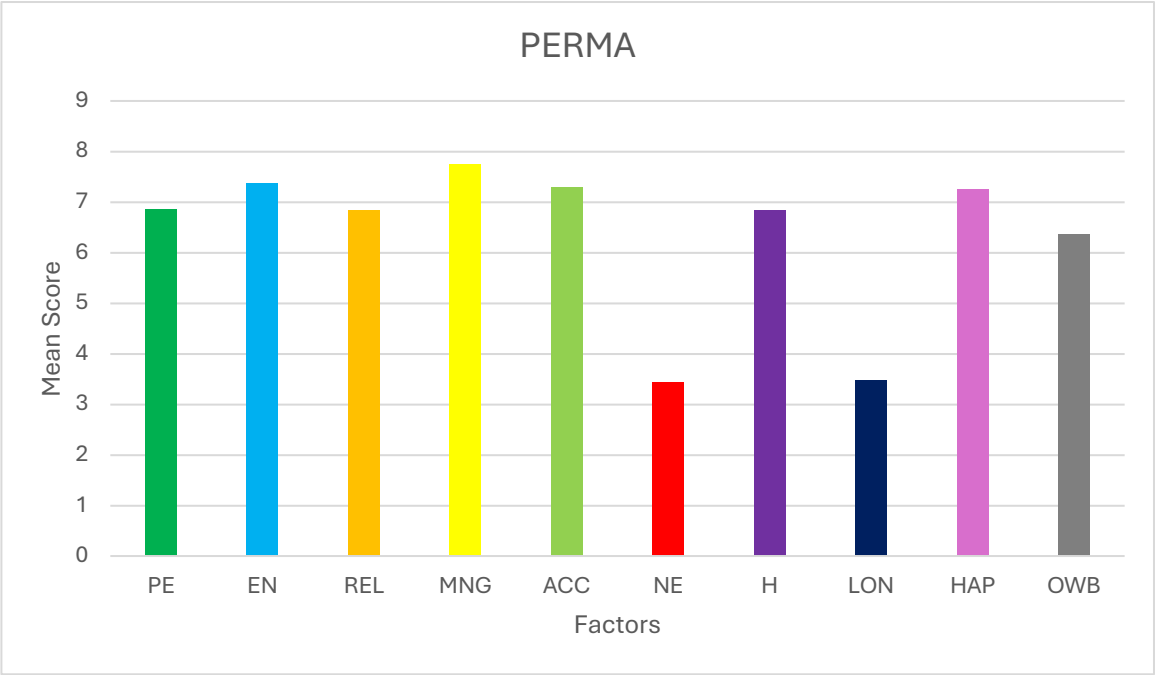

Figure 15: PERMA Profiler of Practitioners

5.5.3 VR-Specific Questions

Table 16 on the page below outlines the demographics of participants who answered the VR-specific questions. This is a combination of those who completed the player-specific and practitioner-specific questions. However, as will be illustrated when presenting the results, not every participant answered each question, which will be discussed in more detail within the limitations of this study.

Table 16: Demographics for the VR-Specific Questions

Demographic	Characteristics	Players % (n)	Manager/Coach % (n)	Sport science and medical staff % (n)	Others % (n)
Gender	**Male**	76.2 (16)	90.9 (20)	54.5 (12)	67.6 (23)
	Female	23.8 (5)	9.1 (2)	45.5 (10)	32.5 (11)
Age	**18 - 24**	76.2 (16)	9.1 (2)	27.3 (6)	20.6 (7)
	25 – 34	23.8 (5)	40.9 (9)	54.5 (12)	23.5 (8)
	35 – 44		22.7 (5)	13.6 (3)	29.4 (10)
	45 – 54		22.7 (5)	4.5 (1)	26.5 (9)
	55+		4.5 (1)		
Nationality	**English**	81 (17)	81.8 (18)	81.8 (18)	88.2 (30)
	Scottish	4.8 (1)	9.1 (2)	4.5 (1)	2.9 (1)
	Irish		4.5 (1)		
	Welsh		4.5 (1)	4.5 (1)	2.9 (1)
	Other	American 4.8 (1) Dual Nationality of English and Albanian 4.8 (1) Paraguay 4.8 (1)		Portuguese 2 (9.1)	Dutch 1 (2.9) Portuguese 1 (2.9)
Level	**First Team**	66.7 (14)	40.9 (9)	68.1 (15)	
	Academy	33.3 (7)	50.1 (13)	31.9 (7)	
Employment status	**Full-Time**	38.1 (8)	72.7 (16)	50 (11)	67.6 (23)
	Part-Time	52.4 (11)	27.3 (6)	36.4 (8)	14.7 (5)
	Free-Lance	4.8 (1)		9.1 (2)	5.9 (2)
	Other	4.8 (1)		4.5 (1)	8.8 (4)
Years of experience	**Less than a year**	42.9 (9)		4.5 (1)	17.6 (6)
	1 – 2	19 (4)	9.1 (2)	27.3 (6)	14.7 (5)
	3 – 4	9.5 (2)		27.3 (6)	5.9 (2)
	5 – 6		9.1 (2)	13.6 (3)	5.9 (2)
	7 – 8		4.5 (1)		2.9 (1)
	9 – 10	9.5 (2)	13.6 (3)	4.5 (1)	8.8 (3)
	11 – 12	4.8 (1)	9.1 (2)	4.5 (1)	5.9 (2)
	13 – 14		9.1 (2)	4.5 (1)	5.9 (2)
	15+	14.3 (3)	40.9 (9)	13.6 (3)	32.4 (11)

5.5.3.1 Access and Stigma Towards Well-Being Support within Football

As illustrated in Figure 16 (on the page below), frequency analysis[11] (which was used for all VR-specific data) showed that out of the 79 responses, the majority of participants agreed that well-being and mental health are stigmatised within football, which was strongly supported by all groups. However, the researcher is aware that this question could have been leading, and this will be acknowledged in both the discussion and limitations of this chapter.

[11] Frequency analysis was chosen for all VR datasets as it helped to summarise and interpret categorical/numerical data and is particularly common with descriptive statistics (Jurkojć et al., 2021).

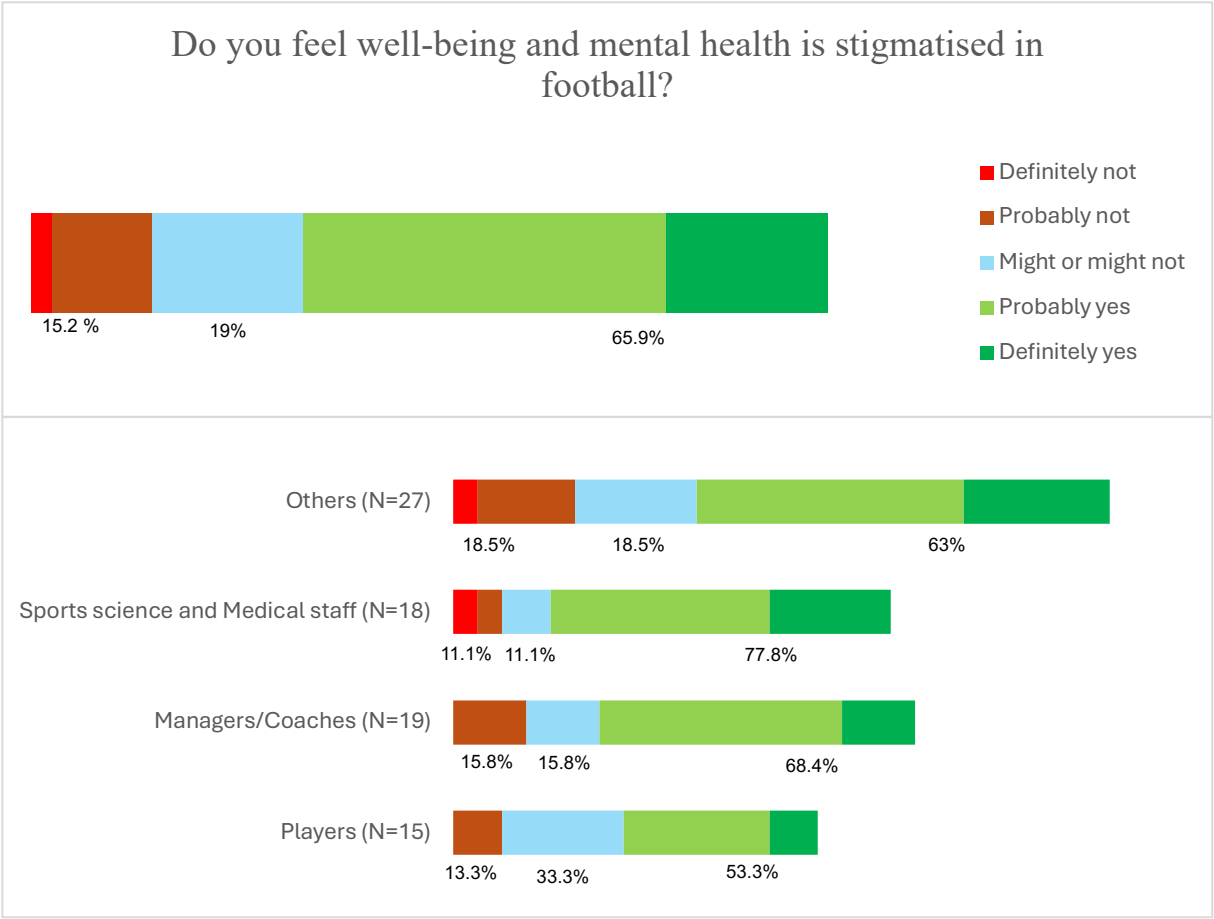

Figure 16: Likert bar plot responses to whether participants feel well-being and mental health are stigmatised in football[12]

Regarding the effectiveness of accessing support for well-being and mental health within football, as shown in Figure 17 on the page below, out of the 78 responses, participants generally adopted a neutral stance with a tendency to view it as ineffective instead of effective. Notably, players perceived the effectiveness of accessing support as ineffective. In comparison, managers and coaches were the only group to view it as effective.

[12] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively

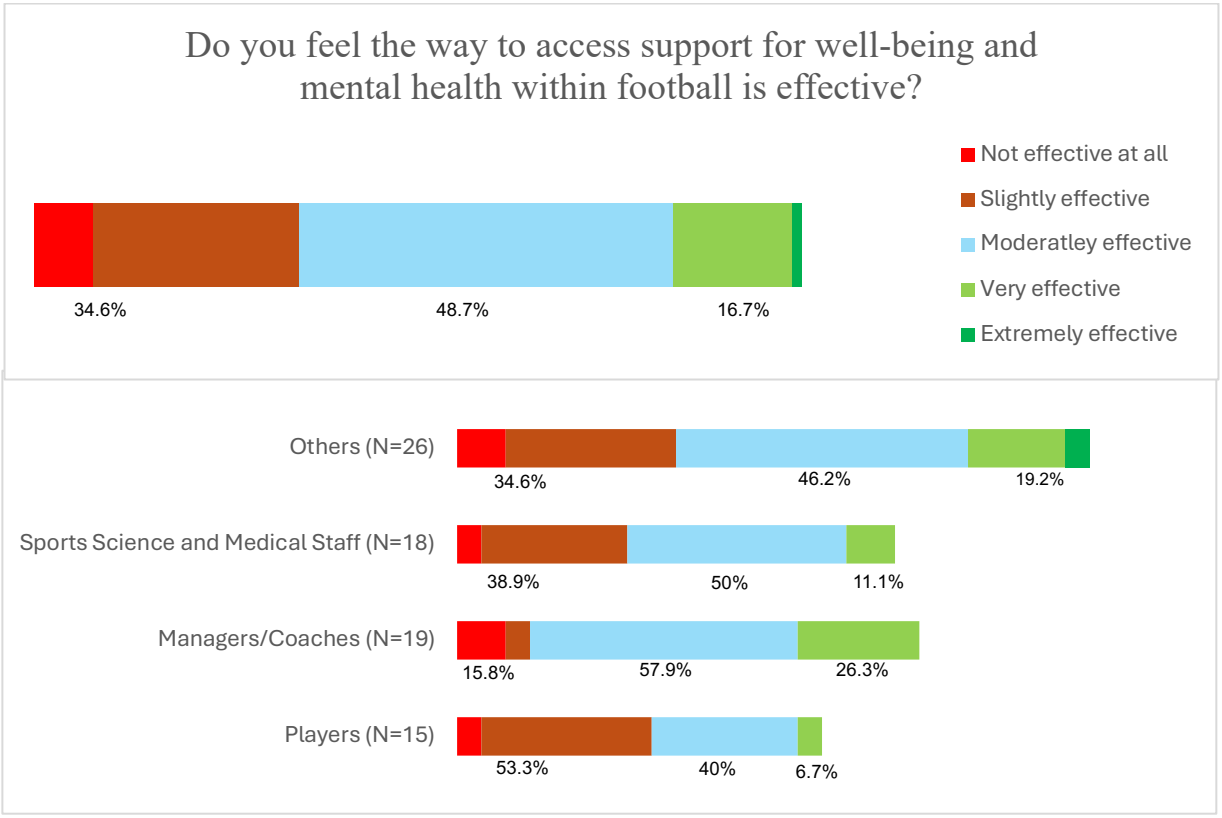

Figure 17: Likert bar plot of responses to the effectiveness of accessing well-being and mental health[13]

5.5.3.2 Knowledge and Experience of Virtual Reality

As shown in Figure 18 on the page below, showed that the general perception from the 83 responses was that participants understood or were aware of VR (*N=80;96.4%)*. No matter the profession, the consensus was that individuals had an understanding or were aware of VR (also regardless of age).

[13] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively

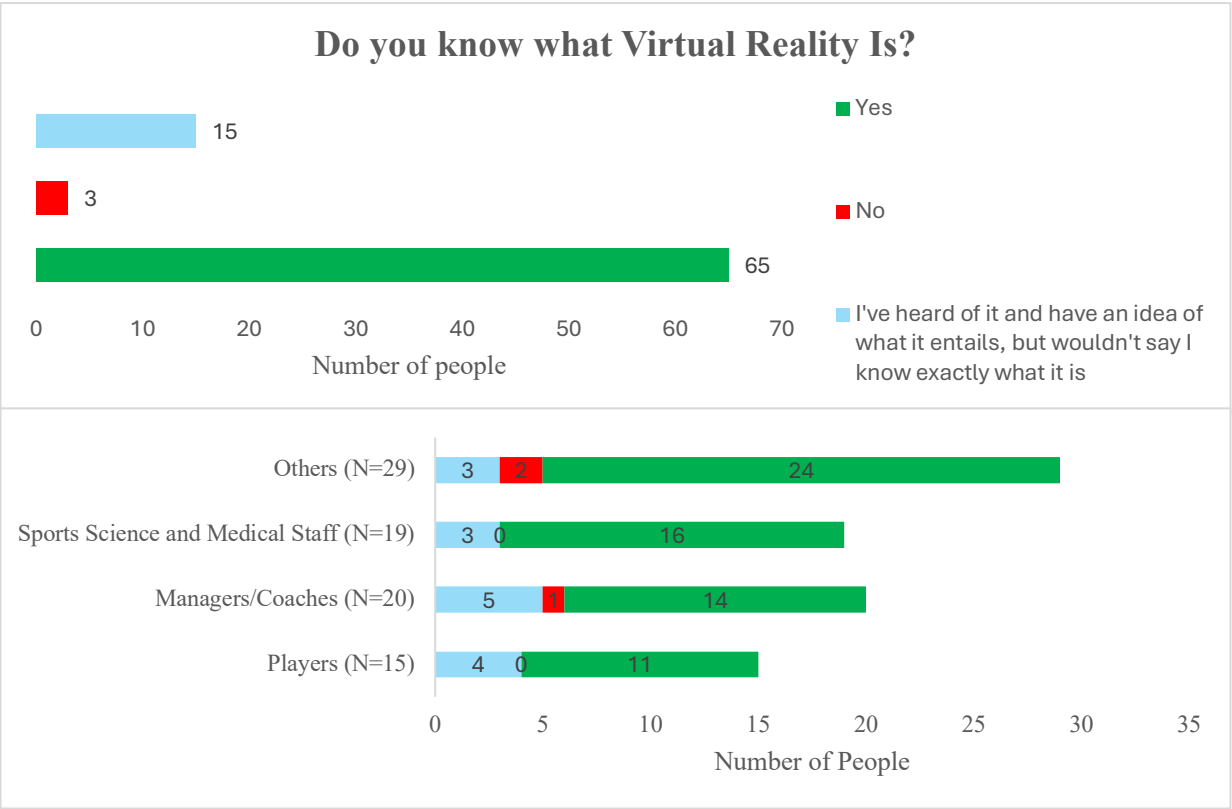

Figure 18: Bar Chart of Whether Participants Knew What Virtual Reality Was

Out of 80 responses, Figure 19 outlines that participants are most likely to pay between £50.00 and £99.99 for a new VR headset (N=*27; 33.8%)*.

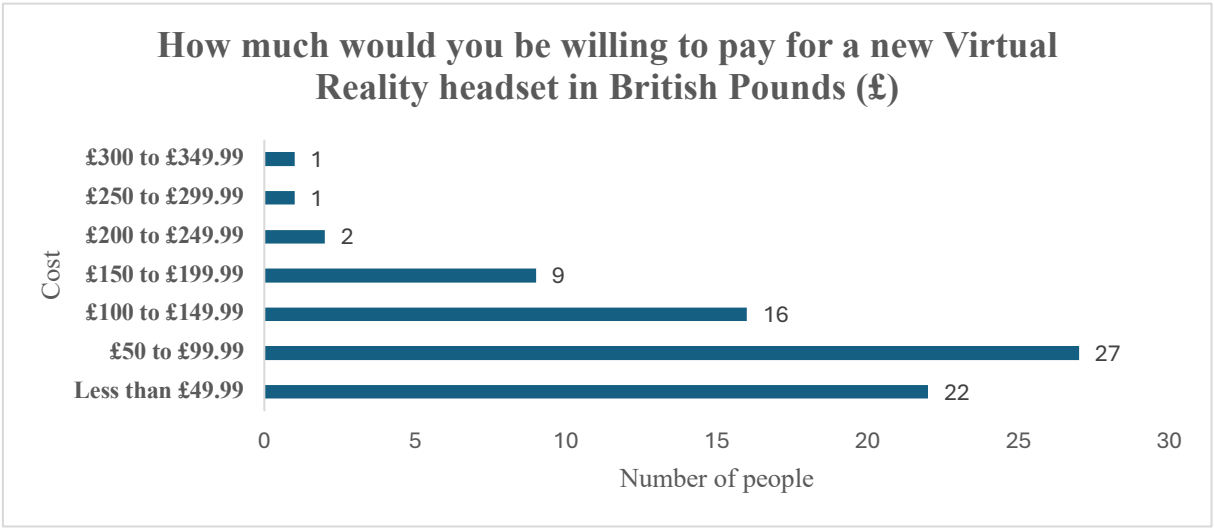

Figure 19: Bar Chart of How Much All Participants Would be Willing to Pay for a New Virtual reality Headset in British Pounds (£)

Figure 20 on the page below illustrates that players would be more willing to pay for a new VR headset if it cost less than £49.99 *(N=5; 33.3%)*, although it is important to highlight that only 15 players responded to this question. Managers/coaches and sports science and medical staff would be willing to pay between £50.00 and £99.99 *(N=9; 47.4% and N=7; 36.8%*

respectively). For others, they would be willing to pay either less than £49.99 *(N=7; 25.9%)*., between £50.00 and £99.99 *(N=7; 25.9%)*, or between £100 and £149.99 *(N=7; 25.9%)*.

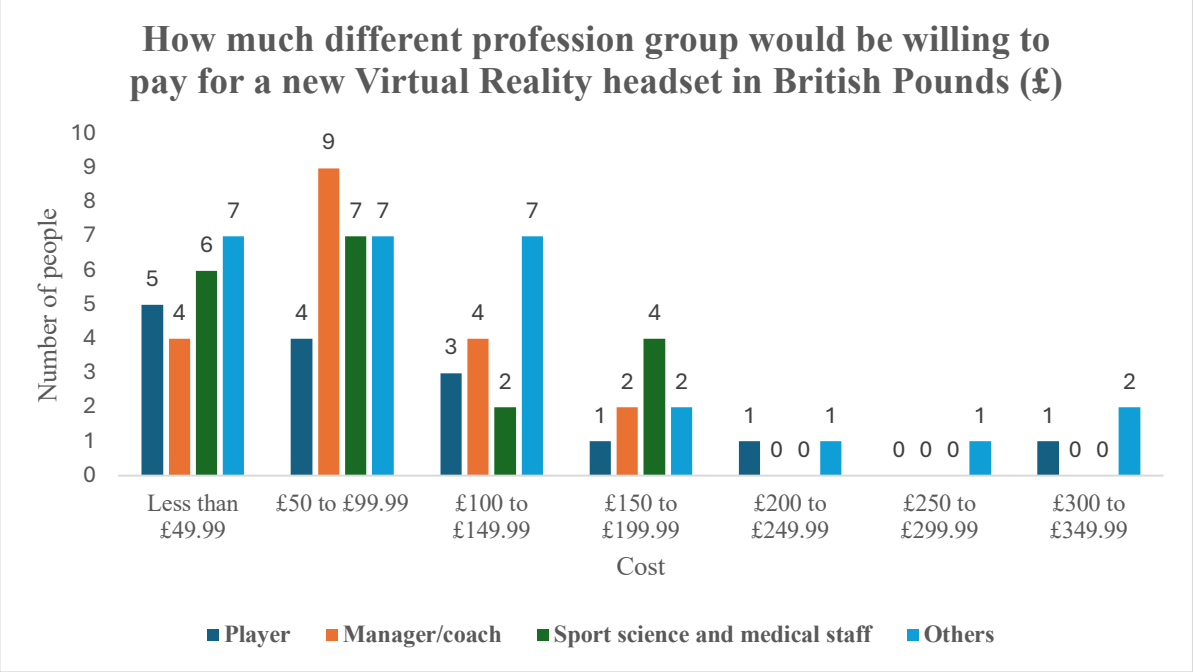

Figure 20: Bar Chart of How Much Different Groups Would be Willing to Pay for a New Virtual Reality Headset in British Pounds (£)

As shown in Figure 21 on the page below, most of the participants had not seen VR being used in football *(N=33; 40.7%),* particularly as a tool for improving well-being *(N=8; 9.9%)*. However, despite limited first-hand experience, participants were more open to using VR *(N=47; 58%)* than those who would not *(N=34; 42%)*. While using technology to improve well-being appears uncommon among participants, a large majority of participants believed that tools like VR could positively impact well-being *(N=70; 86.4%)*.

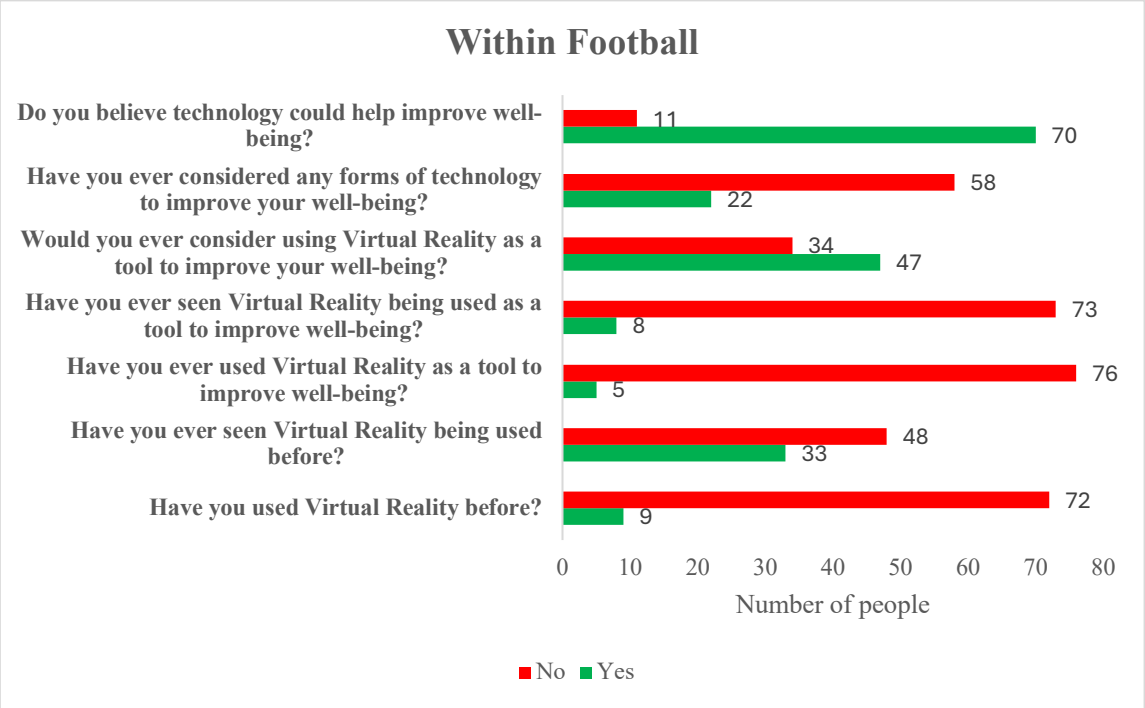

Figure 21: Bar Chart Showing the Level of Experience and Understanding Participants had of Virtual Reality Inside of Football

Figure 22 on the page below shows that from 82 responses, the majority of participants had seen VR being used outside of football *(N=69; 84.1%)*. However, similar to the responses within football, out of 80 responses, most participants had not seen VR being used as a tool for well-being *N=65; 81.3%)*. Despite a lack of experience seeing VR being used as a tool for well-being outside of football, from 80 responses, most of them would be open to using VR for this purpose, although this was not a feeling shared by all *(N=54; 67.5%)*. When discussing the general use of technology as a means to support well-being outside of football, responses from 81 individuals showed that it was relatively even between those who had experience using technology (other than VR) for well-being outside of football *(N=45; 55.6%)*, compared to those that have not *(N=36; 44.4%)*. Nevertheless, the replies from 81 participants showed that the majority felt technology could help improve well-being *(N=72; 88.9%)*.

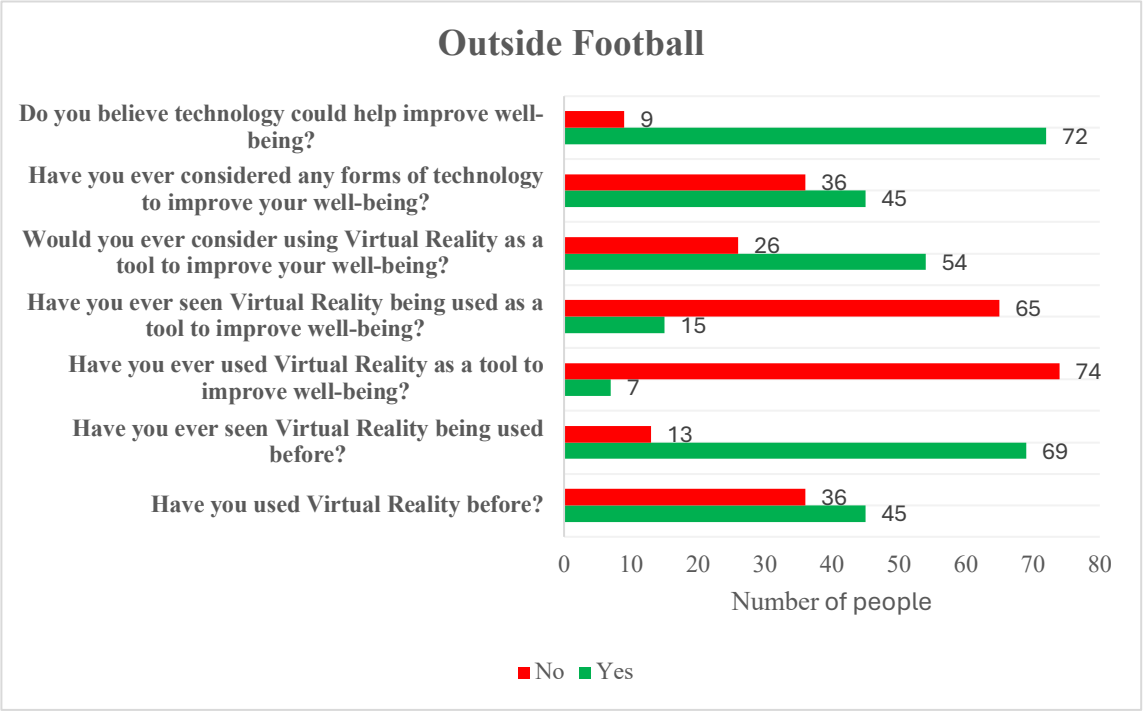

Figure 22: Bar Chart Showing the Level of Experience and Understanding Participants Had of Virtual Reality Outside of Football

As outlined in Figures 21 and 22, a total of nine participants (11.1%) had used VR within football, with five of these individuals (9.9%) using VR as a tool for well-being. Outside of football, 45 participants (55.6%) had used VR, with seven of these individuals (8.6%) using it as a tool for well-being. From these 66 individuals, 47 participants responded to how likely they would use VR again based on their past experience, shown in Figure 23 on the page below, with the percentages of 'unlikely', 'neutral', and 'likely' indicated. A total of 34 individuals responded positively to using VR again based on their experience; 12 individuals were still undecided, and only one person would be unlikely to use VR again. Breaking this down into the different job groups, nine players, 10 managers/coaches, five sports science and medical staff, and 10 'others' would be likely to use VR again based on their past experience. Two players, one manager/coach, and three sports science and medical staff were undecided, with one manager/coach and six 'others' unlikely to use VR again.

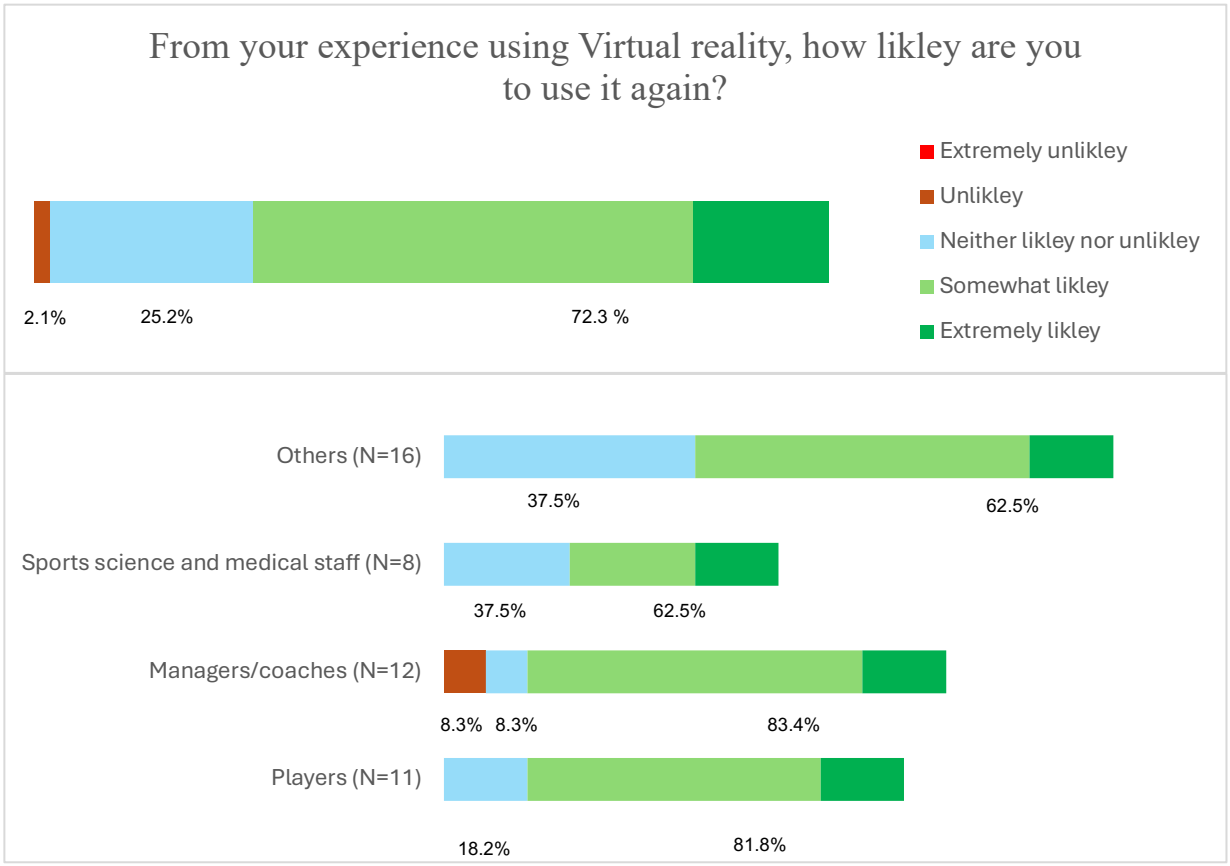

Figure 23: Likert Bar Plot of Responses of the Likeliness Participants Would Use Virtual Reality Again Based on Experiences[14]

Participants who had used VR as a tool to help with well-being found that its impact was relatively mixed. However, there were more individuals who felt the impact on well-being was more positive than negative, as shown in Figure 24 on the page below.

[14] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively

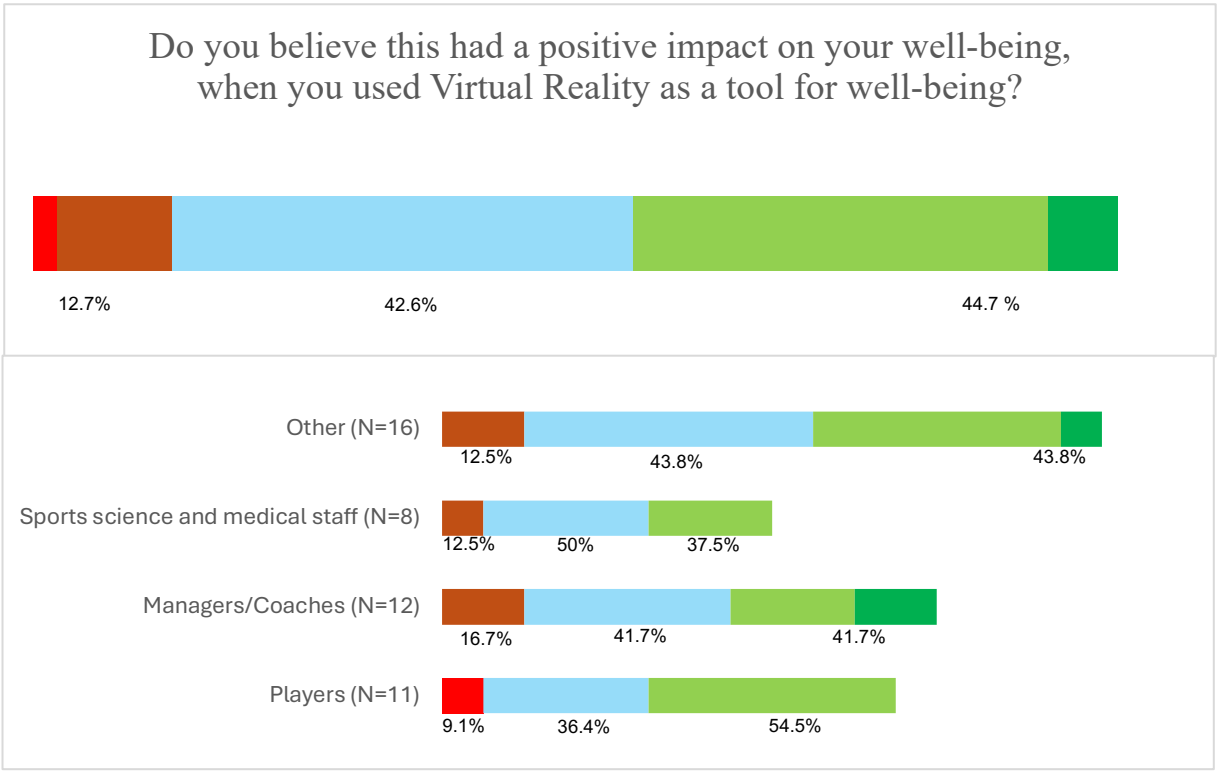

Figure 24: Likert Bar Plot Responses of Virtual Reality's Impact on Participants Well-Being Based on Experience[15]

5.5.3.3 Acceptance of Virtual Reality as a tool for well-being and self-development

Figure 25 on the page below outlines that the majority of participants agreed that the delivery methods for improving well-being and mental health in football require further development. This sentiment was consistent across all professional groups, with sports science and medical staff and managers/coaches expressing it most notably.

[15] Percentages indicate overall disagreement, neutrality, and overall disagreement, from left to right respectively

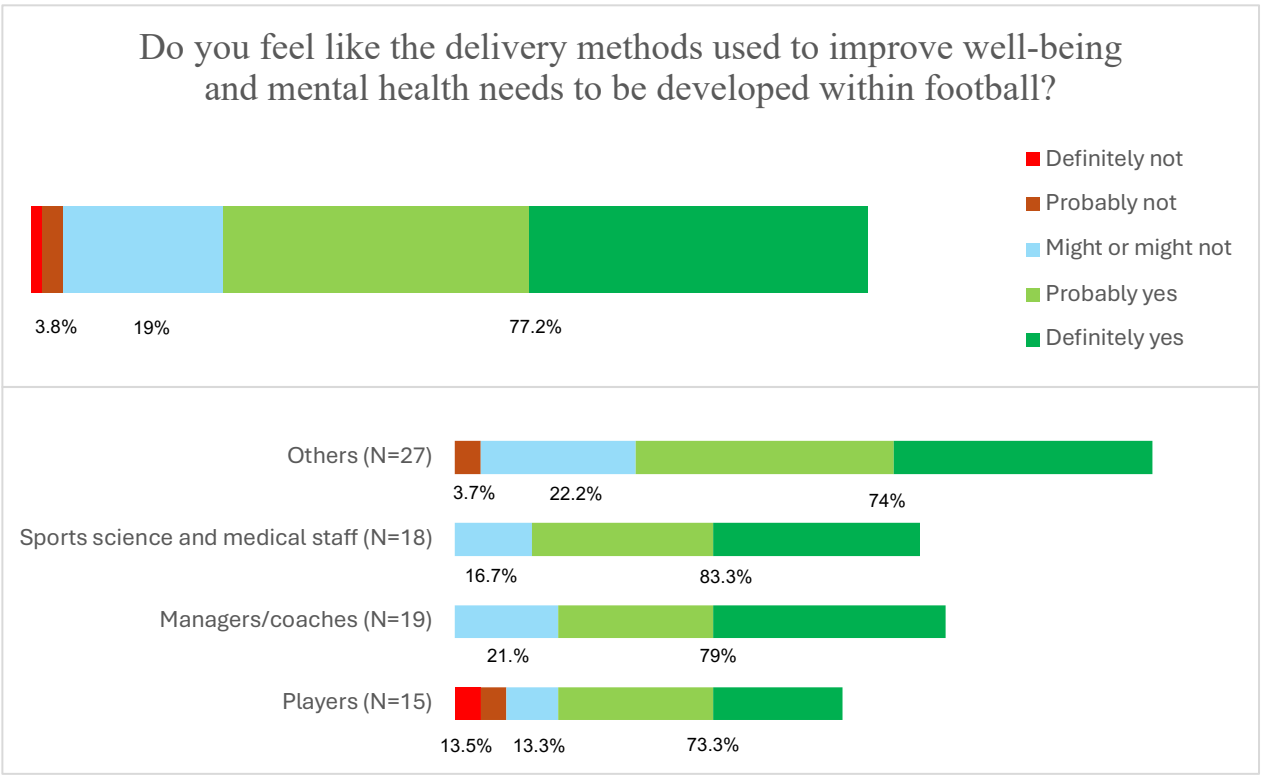

Figure 25: Likert Bar Plot Response on Whether Participants Think Delivery Methods to Improve Well-Being and Mental Health Need to be Developed[16]

When it came to its acceptance to be used in this manner within the sport, players and practitioners felt it would be accepted, although this was not convincing as a large proportion remained unsure. Players and managers/coaches felt more positive about VR's potential acceptance within football to help improve well-being, whereas sports science and medical staff and others were more neutral (see Figure 26 on the page below).

[16] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively

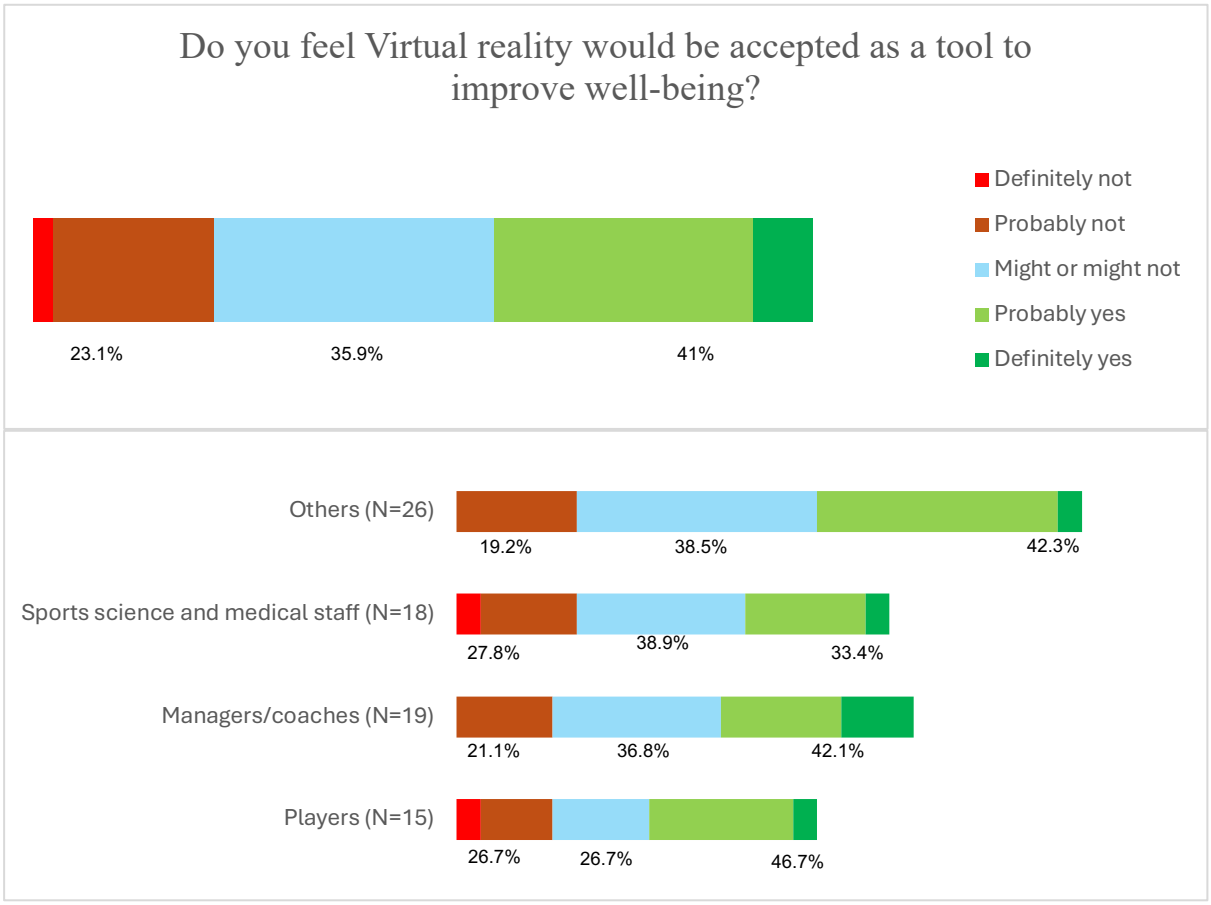

Figure 26: Likert Bar Plot Response of Whether Participants Feel Virtual Reality Would be Accepted as a Tool to Improve Well-Being in Football[17][18]

The results were positive regarding technology (such as VR's) potential usefulness for improving self-development, regardless of profession (see Figure 27 on the page below).

[17] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively
[18] The researcher completed an independent ANOVA to explore if views differed between groups (Players, Managers/Coaches, Sports Science and Medical Staff, and Others). The results indicated no statistical significance between groups.

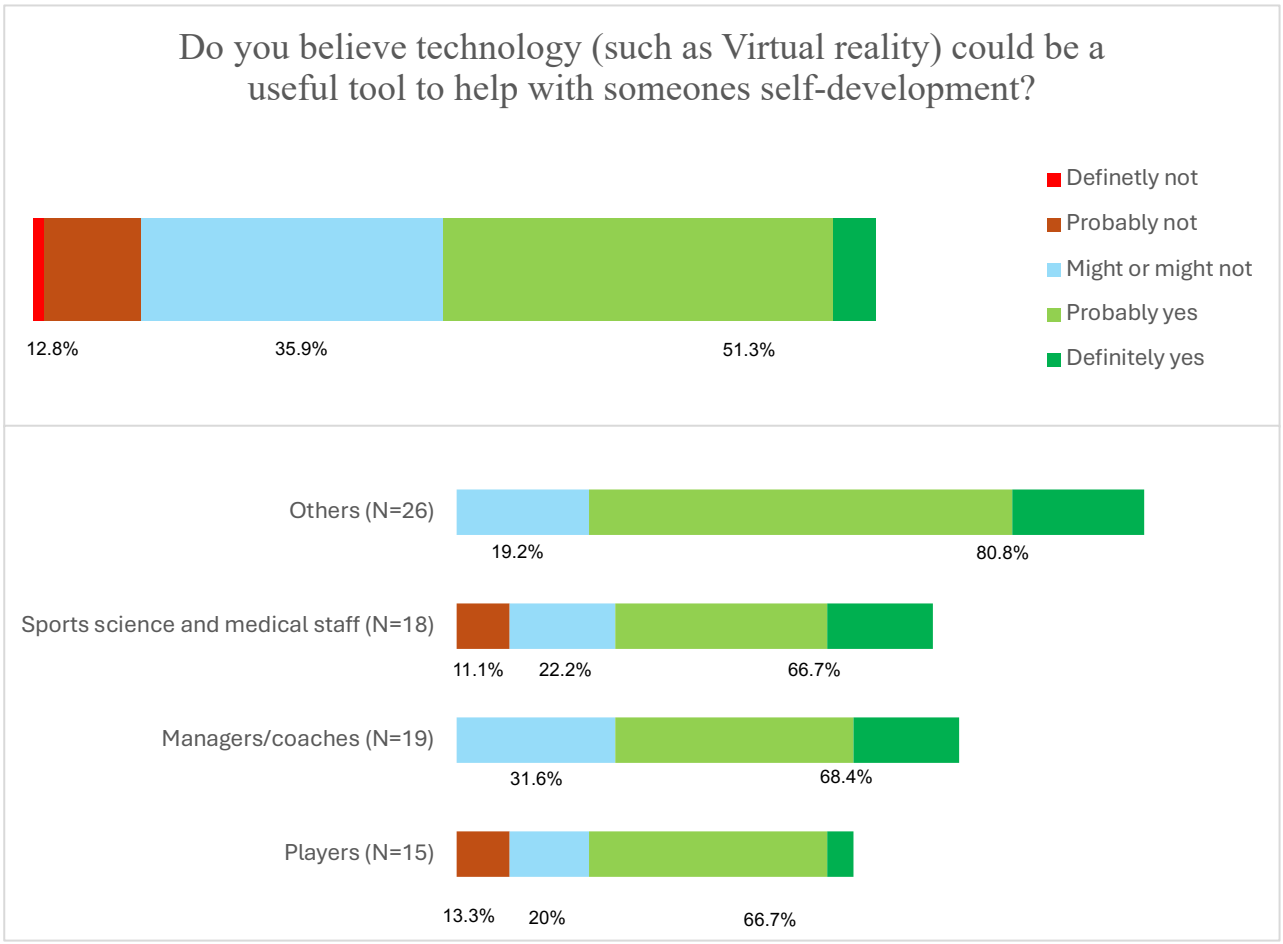

Figure 27: Likert Bar Plot Response on the Belief Participants Had on Whether Technology (Such as Virtual Reality) Could be Useful to Help Someone's Self-development[19][20]

Finally, participants were optimistic that VR would be accepted as a tool for self-development in football. However, many individuals, regardless of profession, were not entirely convinced (See Figure 28 on the page below).

[19] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively
[20] The researcher completed an independent ANOVA to explore if views differed between groups (Players, Managers/Coaches, Sports Science and Medical Staff, and Others). The results indicated no statistical significance between groups.

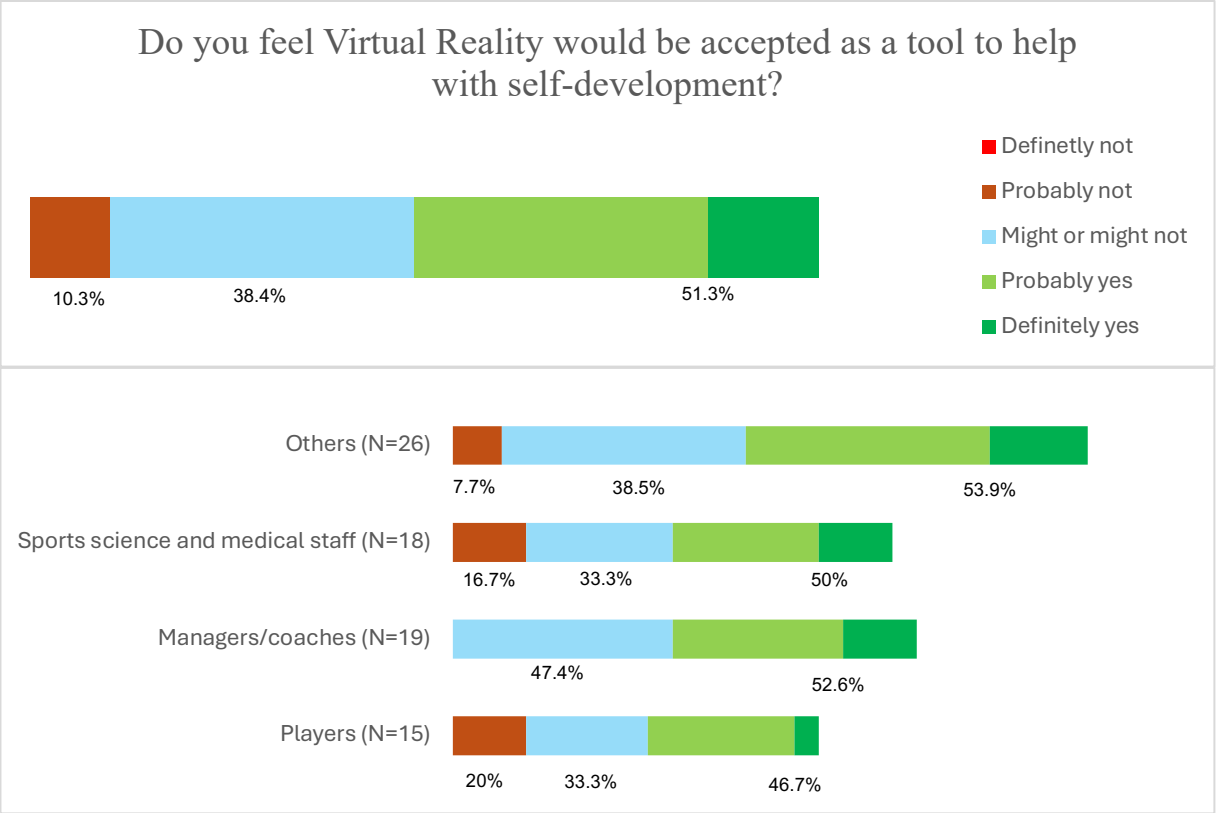

Figure 28: Likert Bar Plot Response of Whether Participants Feel Virtual Reality Would be Accepted as a Tool to Help with Self-Development[21][22]

5.6 Discussion

This section of the chapter will examine the results of this study by comparing and contrasting them with existing literature, interpreting what the findings might imply, and offering a brief conclusion on their significance. The discussion will be expanded in more detail within Chapter 8, where the results of all three studies will be synthesised.

A finding from this study was that players had a high level of psychological distress and strain, which is based on the APSQ cutoff scores provided by Rice et al. (2019; 2020), which suggests a total score between 17 and 19 equates to a 'high' level of psychological distress and strain. These results align with a variety of existing literature. For instance, a study by Pillay et al. (2024) examined the prevalence and incidence of mental health and well-being symptoms in active professional male footballers over 12 months. Of the 101 participants, the prevalence of distress was 53%. This finding is similar to that of Kilic et al. (2021), who aimed to determine

[21] Percentages indicate overall disagreement, neutrality, and overall agreement, from left to right, respectively
[22] The researcher completed an independent ANOVA to explore if views differed between groups (Players, Managers/Coaches, Sports Science and Medical Staff, and Others). The results indicated no statistical significance between groups.

the prevalence of mental health and well-being symptoms among professional footballers compared to former players. Results showed that sport-related psychological distress was the most prevalent symptom for the two groups at 63%. A potential reason why psychological strain and distress are more commonly experienced towards performance can be due to a variety of factors. These can link back to the common transitions footballers can face, which has already been discussed in Chapter Two. For instance, fear of deselection (Nelly, 2022), injury/illness (Brand, 2022; Jarvis, 2019), transfers/loads (Stambulova, 2003), and assuming the role of team captain (Cotterill, 2015; Apizsch, 2009; Fransen et al., 2015).

Another potential reason why high psychological distress and strain were found among players could be linked to the fact that football is a continual struggle to manage success and cope with setbacks (Roderick, 2006). Furthermore, it is characterised as an environment which can be unforgiving and cut-throat, even more so at elite levels (Kerai et al., 2019). Coupled with the fact that players have limited control over their careers in both the short and long term (Roderick, 2006; Holt & Mitchell, 2006), the result found in this study can be given some context. Overall, this finding underscores that more support would be beneficial for players to cope with psychological distress and strain (particularly when it begins to affect their performance).

A further finding from this study was that as the prevalence of well-being issues increases, the amount of received support may decrease (although it must be noted that this result showed no statistical significance). A potential explanation for this finding could be players' reluctance to talk openly about their feelings and that they need support. This is linked to the stigma commonly discussed in football (particularly in the men's game) about receiving support (Souter, 2023). However, stigma is not the only potential explanation behind this finding, as low well-being or mental health literacy, negative past experiences with treatment, or busy schedules could all be reasons why received support may decrease as well-being issues increase (Castaldelli-Maia et al., 2019).

Another reason why the level of received support may decrease as the prevalence of well-being increases for footballers could link to players not being provided the support they need. This study can support this, as a further finding indicated that players and practitioners took a neutral viewpoint regarding the effectiveness of accessing support. However, players perceived the effectiveness of accessing support as ineffective. This could imply a difference in opinion between players and practitioners towards help-seeking, with literature and anecdotal reports supporting this conflict in opinion. For instance, a 2015 study by the International Federation of Professional Footballers (FIFPRO) found that 38% of active players had experienced

symptoms of depression and that within the industry, there is a distinct lack of support (FIFPRO, 2019).

On the other hand, football clubs, organisations, and football strategies (such as the Elite Player Performance Plan [EPPP]) indicate that they provide players with enough support (The Premier League, 2012; 2024; PFA, n.d). A potential cause for players not only receiving less support as the prevalence of well-being issues increases, but also why they have a difference in opinion to practitioners about the effectiveness of accessing support, could be due to some players having the belief that receiving support may negatively impact their playing time, and make them appear weak. This phenomenon is supported by previous literature (Breslin et al., 2017). However, another finding from this study was that as the prevalence of well-being issues increases, so may wanted support. Therefore, players in this study want support for their well-being when struggling. This suggests that the way players are provided/offered support needs development. Based on the findings, a suggestion could be offering/providing support that will not make players feel they will be stigmatised or appear weak. This aligns with another finding from this study: players and practitioners felt the delivery methods used to improve well-being need to be developed within football.

A reason why players and practitioners feel delivery methods to help improve well-being need to be developed within football could be linked to today's technology-driven world. To support this claim, research has indicated that technology is becoming more popular within sports (such as football), with its role within sports psychology gaining increased attention, pressing a unique opportunity to complement traditional methods and enhance performance from both physical and tactical standpoints (Watson & Coker-Cranney, 2018; FIFA, 2020; 2023). When analysing participants' beliefs on the impact technology (such as VR) can have on well-being within football, players and practitioners felt it would be positive, both inside and outside of football. Initial insights to support this claim were gained in this study, as nearly half of the participants who had previously used VR believed it positively impacted their well-being and would use it again. Although participants felt technology (such as VR) could have a positive impact, responses were not entirely convincing when determining if it would be accepted within football. However, this result could be understood when considering that both inside and outside of football, participants had not seen VR being used for this purpose. Therefore, based on the results obtained, there would be validation to explore the use of technology to improve well-being further within football.

Focusing on the correlations between the prevalence of well-being issues and received support, the data was, on the whole, weak and not statistically significant. Regarding the correlations

between the prevalence of well-being issues and wanted support, there was a statistically significant and positive correlation between wanted informational support and the prevalence of self-regulated difficulties. Moreover, there were positive and statistically significant correlations between wanted emotional support and the prevalence of external coping, received support and wanted support, received emotional support and wanted emotional and tangible support, received esteem support and wanted emotional support, and received tangible support and wanted esteem support. As all of these correlations were positive, the results suggest that as one increases, so will the other. One can reflect on the Self-Determination Theory (SDT) and Maslow's Hierarchy of Needs to understand the context of these results (Deci & Ryan, 2008; Ntoumanis & Mallet, 2014; Standage & Ryan, 2020; McLeod, 2024; Hopper, 2024).

When individuals struggle with self-regulation, they may likely seek informational support to regain a sense of autonomy and competence (Deci & Ryan, 2000; Ntoumanis & Mallet, 2014). Moreover, if self-regulated difficulties impact an individual's ability to achieve psychological needs within Maslow's Hierarchy of Needs, it is possible that they may seek informational support to restore stability. Externalised coping often refers to distress related to unmet psychological needs and relatedness, resulting in individuals seeking emotional support to restore emotional balance and relationships (Nuetzel, 2023). This, in turn, meets love and belonging needs from Maslow's Hierarchy of Needs by offering reassurance, validation, and connection to help individuals feel understood and supported (McLeod, 2024; Hopper, 2024).

Emotional support also fosters trust and resilience, which can increase individuals' willingness to seek help from others through tangible support. This is because emotionally secure individuals may be more likely to seek broader avenues of support without fear of judgment (Deci & Ryan, 2000; Ntoumanis & Mallet, 2014; Trépanier et al., 2013). Esteem support can enhance an individual's sense of competence, making them feel more valued, and influence them to seek emotional support to maintain the positive state they find themselves within (Deci & Ryan, 2000; Ntoumanis & Mallet, 2014; McLeod, 2024). Finally, when individuals receive tangible support, they may wish to gain esteem support to maintain dignity and self-worth. This could be the result of individuals wanting to make sure they are still competent and valued despite receiving tangible support (Ntoumanis & Mallet, 2014).

5.7 Limitations

Like any other study, limitations are evident. First, the study was made available to anyone working in football within England. Consequently, there could be multiple responses from players or practitioners from one particular club, meaning a shared philosophy on the use of

VR may have influenced the results (Thatcher et al., 2021; Greenhough et al., 2021). Second, the survey yielded a low response rate (particularly for players). Research has reported that obtaining people working in football to participate in research is an arduous task (Law, 2019). Initially, the researcher had the aim of gaining responses solely from players and practitioners working within the top four leagues in England (The Premier League, The Championship, League One, and League Two), in addition to the top league in women's football in England (The Women's Super League). The reason behind this was because players and practitioners within these leagues are mostly full-time and working at an elite level. This is relevant when considering a question within the ARSQ asking participants to reflect on the last week when answering questions, with the justification behind this linked to the regularity in which many athletes train and compete in their sport (Freeman et al., 2014). Unfortunately, the researcher could not obtain a large sample size from these groups, which could have impacted the type of responses gained from participants, especially those who work in other roles outside of football. Furthermore, due to the researcher anticipating a low response rate to the survey (based on previous literature), there were a limited number of follow-up questions that could be asked to understand in more detail why participants responded the way they did.

A third limitation is that some participants responded to 'other' instead of indicating their true profession within football, 'i.e. manager/coach, or sports science and medical'. As highlighted, the survey was initially designed for professional or academy football workers. Therefore, when asking participants to select their profession, it is possible that some practitioners chose the 'other' option because of the response options available to them. For instance, for managers/coaches, the option on the survey said 'Professional or first team manager' which could imply that this should only be answered by those working at a high level. In addition, as the survey was developed to be available for everyone in English football, some practitioners worked within football, but this was not their primary job. This resulted in them selecting the 'other' option, and while the survey did ask for participants to include what their profession was, some did get confused as they put what their profession was outside of football (i.e. 'Plummer') or did not provide this additional information Another limitation was that some questions asked could be considered as leading questions, leading to potential bias (Erčulj & Šulc, 2024). This leads to the final limitation in that a pilot study was not completed, which would have been beneficial (especially for the Likert scale questions) to identify and address potential issues with wording, response options, and overall survey flow (Van Teijlingen & Hundley, 2002).

5.8 Conclusion

This study addressed insights into the prevalence of well-being issues in footballers and how received and wanted support levels change depending on the issues players face. It also provided a snapshot of the current well-being of football practitioners. The study also explored the initial perspectives those within football have on integrating technology (specifically Virtual Reality) to offer support for self-development and improve well-being. Consequently, this chapter has achieved objectives one and two of this thesis:

- Objective one – Acquire insights towards received and wanted support for players and the general well-being of those working within football
- Objective two – Explore initial perspectives of footballers and practitioners regarding integrating technology (specifically Virtual reality) to support the delivery of self-development and well-being

This study provides valuable information towards the existing literature. However, it is important to recognise the limitations of this study, including the low response rates and the fact that with some of the correlation data, not all results were statistically significant. Nevertheless, this study builds on previous literature by moving away from VR's potential as a tool to help with physical performance and switch focus towards its potential as a tool for self-development and well-being within football. This provides the foundation for studies two and three, highlighted in Chapters 6 and 7, which explore this concept further.

Chapter 6 – The Next Big Thing, or No Place Within Football? Football Players' Perceptions of Virtual Reality as a Tool for Self-Development

6.1 Introduction

The following chapter illustrates football players' perceptions of Virtual Reality (VR) as a tool for self-development. It outlines the first of two qualitative studies, which employ identical methods, with the primary distinction being the sample selection.

6.2 Research Strategy

This study employed a qualitative approach, as the researcher aimed to understand football players' perceptions of using VR as a tool for self-development. Taking a qualitative approach allowed the researcher to gather viewpoints, beliefs, and opinions to gather in-depth insights into the phenomenon under investigation, as well as create new ideas for future research (Bhandari, 2020a). A hermeneutic phenomenological approach was taken (outlined in Chapter 4) as the researcher could explore the lived experiences of football players when using the prototype VR headset (Van Manen, 1997). This allowed the construction of critique, leading to the generation of new meanings and apprehensions of how one can understand the concept of VR for self-development within football (Laverty, 2003).

6.3 Data Collection Methods

The researcher opted to use two data collection methods, the first being observations and the second focus groups.

6.3.1 Observations

Observations are used to gather data by watching the behaviours and characteristics of participants within a particular setting (Walshe et al., 2011). In qualitative research, observations can be overt (everyone knows they are being observed) or covert (no one knows they are being observed, and the researcher may be concealed) (Walshe et al., 2011). Within this study, the researcher completed overt observations as it could allow honesty between the participants and researcher, which could provide strengths when completing the focus groups

(discussed later in this chapter). Furthermore, based on the quality of the prototype and what was being asked of participants, it would have been challenging to complete covert observations and would have presented ethical issues such as deception or a lack of informed consent.

Observations can be structured or unstructured (Berg & Lune, 2012), with the researcher completing unstructured observations, meaning no pre-existing criteria were used. As little was known about the concept of VR for self-development in football, in addition to viewpoints towards the prototype, it would have been difficult for the researcher to complete structured observations. Furthermore, using unstructured observations could allow the researcher to capture unforeseen actions and enable a better level of research engagement (Fetters & Rubinstein, 2019; McLeod, 2024b). The observations carried out were recorded to capture any missed behaviours or characteristics which may have happened in real-time but were missed by the researcher (Asan & Montague, 2014). They were also completed at a convenient location for the participants, which in every case turned out to be the club's training grounds. Consequently, the data obtained could provide the researcher with initial insights into how participants may behave and interact with VR as a tool for self-development within their 'typical' environment. This could help improve the study's ecological validity, as well as enhance behaviour authenticity (Bryman, 2016).

Observations have the limitation of producing high levels of subjectivity, which was likely increased in this study due to the fact that the researcher used unstructured observations. To try and reduce this risk, when analysing all observations, the researcher used a research assistant. This could have allowed greater inter-rater reliability as the researcher and research assistant could compare notes to help minimise subjectivity and enhance trustworthiness (Middleton, 2022). However, a question can still arise on whether the researcher and research assistant are looking for similar things, as unstructured observations do not come with any particular guidance. However, the researcher and research assistant were clear that the aim was to consider the four lifeworld essentials in hermeneutic phenomenology (Spatiality, corporeality, temporality, and relationality or communality). Therefore, the researcher and research assistant were looking for aspects such as participants' facial expressions, enthusiasm, and body language.

During the observations, the group of participants were invited into a room to engage with the prototype, which featured two games described in sections 6.3.1.1 and 6.3.1.2. It is important to note that the selection of the two games and the virtual environment in which they were played was made before the start of this research. However, the reasoning behind choosing the basketball and table tennis games is linked to the functionality of the Meta Quest 2, which

operates with handheld controllers. Developing football-specific scenarios would have been less suitable, as the technology does not support 'physically football-related' movements effectively. Additionally, these games were chosen to explore whether engaging footballers in non-football-specific settings could still satisfy the key components of the Self-Determination Theory (autonomy, competence, and relatedness), as well as Maslow's Hierarchy of Needs (esteem and love and belonging needs). Finally, given that My Energy Game (MEG) aims to take a holistic approach (offering a variety of games across its five key pillars), incorporating non-football environments could offer meaningful insights toward the 'whole approach' MEG aims to take.

The researcher and assistant were able to view the participants' experience in real time via the Meta Quest 2's screen-sharing function. This enabled the researcher to provide guidance as needed and assist with any bugs or glitches that the participants may have encountered (see section 6.3.1.3). The duration of each session varied depending on how quickly participants completed the games, which was in part influenced by their familiarity with VR technology, but also the need for participants to leave in order to attend training, go home, or meet with their coach. Data from the observations helped shape the questions asked within the focus groups and contributed to the thematic analysis, which was performed. Both the observations and focus group findings were analysed together through a holistic lens, aligning with the principles of the Hermeneutic Circle (explored further in section 6.4).

To help provide more clarity to the reader, further insight into the tasks participants had to complete will now be outlined.

6.3.1.1 Athlete-Coach Relationship

The relationship between the coach and athlete is positively correlated with well-being (Simons & Bird, 2022), suggesting a focus towards improving this relationship can be beneficial from a performance, self-development, and well-being perspective. Research has highlighted that coaches across different levels predominantly deliver verbal instructions and/or feedback (Toner et al., 2012). The timing, content, and purpose of their feedback influence an athlete's learning and performance to some degree (Otte et al., 2020). Every athlete receives and perceives feedback in different ways, which is why it can be advantageous for athletes to understand how they like to receive feedback and how coaches should provide feedback. A potential outcome is that players will be better positioned to develop technical skills, coordination, and overall performance (Røynesdal et al., 2018)

The first task/game positioned participants in a virtual basketball arena, where a coach explained that users must shoot free throws into the basket (as shown in Figure 29).

Figure 29: Game One, Image One

After each shot, the coach provided feedback based on its success. For instance, if the participant missed, the coach may have provided constructive feedback. As shown in Figure 30 below, the coach provides constructive feedback (for example, "Try again, but this time give more effort").

Figure 30: Game One, Image Two

After feedback is provided, the participant responds by pressing one of two buttons: one that signifies they like this kind of feedback or the other that suggests they do not like this type of feedback. For example, if a participant missed a shot and the coach said, "Back luck, you'll do better next time," the participant would respond either "Positive" or "Negative" to this feedback.

6.3.1.2 Communicating and Reflecting with Others

Engaging in reflective practice can help players with their performance by enhancing their self-awareness (McWilliams, 2019). Athletes with heightened self-awareness demonstrate better regulation of arousal, enhanced self-confidence, increased proficiency in goal setting, and improved self-actualisation (McWilliams, 2019). In addition, reflective practice can help motivate players to engage in problem-based learning, a method deemed valuable for evaluating and learning from unfavourable situations and experiences (McWilliams, 2019).

Communication with others is important in team sports, as good communication fosters collaboration and the ability to tackle challenges (Wickes, 2023). When athletes communicate well with others, problem-solving skills can be enhanced, resulting in improved decision-making and contributing to success in training and competition (Wickes, 2023). From a well-being perspective, good communication can help reduce stress and anxiety, help create more satisfying relationships, establish trust and empathy among colleagues, and improve decision-making (Sangal et al., 2021). As a tool for enhancing communication within research, VR has mainly focused on its potential to learn new languages or improve patient/clinician interaction within medical settings. Nevertheless, initial findings suggest positive outcomes of using VR in this capacity (Yudintseva, 2023; Dzardanova et al., 2021).

The second game/task involved participants being taken to a virtual sports hall, where they were met by a coach who explained what they needed to do (Figure 31).

Figure 31: Game Two, Image One

Participants were tasked with hitting movable targets with a paddle and ball (as shown in Figure 32). The initial purpose of this game was to get participants to reflect on their performance and

think about how they could communicate to other players about improving their technique/performance. However, as will now be discussed, the prototype came with numerous bugs/glitches.

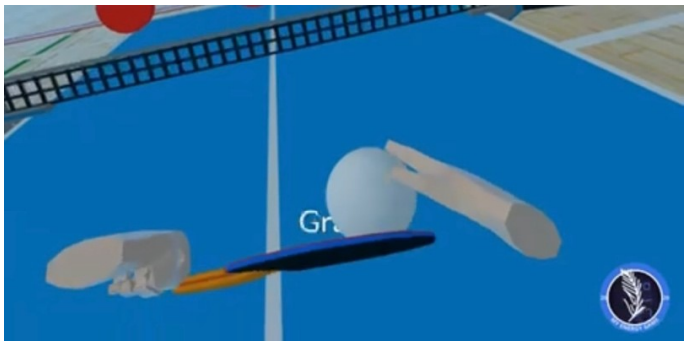

Figure 32: Game Two, Image Two

6.3.1.3 Problems with the Prototype

As outlined in Chapter 1, this PhD used a prototype which could help facilitate a better understanding for participants when discussing the potential VR can play as a tool for self-development. However, as this was a prototype, it was prone to glitches and bugs. The concept of using VR as a tool for self-development for footballers is still in its infancy, which can add justification towards the need for this PhD and how it provides new contributions to the literature. Nevertheless, to provide clarity to the reader, Table 17 outlines the errors and bugs that were recognised by the research team in the lead-up to completing the observations.

Table 17: Errors and Issues with the Prototype

	Game 1	**Game 2**
Errors and issues	It is not clear that the user needs to press A after the coach finishes speaking	There can be loading errors when entering the arena, leading to the coach not explaining the purpose of the game.
	When trying to press A on the coach for them to continue speaking, this does not always work.	The score does not change despite hitting the target.
	There are no obvious instructions on how to pick up the basketball and shoot.	Sometimes the paddle does not sit right in the user's hand which impacts how the game is played.
	Coach feedback is general and could be deemed as 'basic'. Sometimes it may not be shot specific.	The game is limited to 60 seconds, which considering that there are no instructions on how to play the game, can be limiting.
	Sometimes the shot power and direction are random and not consistent.	After the 60 seconds ends, the users can still carry on playing. Therefore, it is not clear when the game is ended. This relates to a lack of a debrief.
	There is no conclusion or debrief at the end of the game	There are no instructions provided to the user in terms of how they pick up the paddle or ball, and how to hit the targets.
	After each shot, it is not clear that the participant must respond to the coaches' feedback as the game can still continue without doing this.	

6.3.2 Focus Groups

Focus groups involve the collection of in-depth insights which can illuminate agreements or inconsistencies on a topic through the social interaction of participants, which can facilitate the collection of meaningful data (George, 2024; Shaha et al., 2011; Gill & Baillie, 2018). They allow researchers to build an evaluative story as participants can collaborate on their insights, resulting in researchers being able to gain diverse options and views, which can provide a 'bigger picture' as there is the potential to observe participants agreeing or disagreeing with sentiments which are shared (Brown, 2022). Focus groups are often synonymous with interviews, presenting a unique question to researchers about which one to use (Parker & Tritter, 2006). One method is not necessarily better than the other, as they both have their own unique advantages, which can impact the type of insights the researcher is trying to collect (Krueger, 2002). While interviews can allow for more in-depth insights, it mainly provides this from a 'single perspective'. As a consequence of this, participants could provide limited data compared to a focus group, which provides the opportunity for participants to understand and reflect on alternative insights towards the same topic, which could spark further discussions leading to richer data (Brown, 2022). However, this all depends on the participants themselves, as some may provide more information than others (Gill & Baillie, 2018).

6.3.2.1 Procedure

A key factor contributing to the decision to complete focus groups was the recruitment and engagement of individuals within football. This is a phenomenon discussed later in this chapter, but the researcher felt a group discussion could allow participants to feel comfortable as they would be in an environment with people they know, which could lead to them becoming more open to talking about the topics being discussed (Gill et al., 2008). Literature has suggested the necessity of establishing a rapport before completing a focus group, which could lead to more meaningful discussions (Gill et al., 2008; Gill & Baillie, 2018). To achieve this, the researcher introduced themselves before each focus group, but also had the advantage of meeting and talking to participants beforehand when completing the observations. Moreover, before the completion of the focus groups, the researcher provided further clarity about the study and the process by which the focus groups would work, in effect setting some ground rules about ethical procedures, which will be discussed later in this section (Krueger, 2002).

Typically, focus groups are carried out face-to-face; however, with the development of technology (and the backlash of Coronavirus), online focus groups are becoming more popular

(Richard et al., 2020). While online focus groups can mitigate the difficulties of travel and time associated with setting up face-to-face discussions, online focus groups do come with some disadvantages. For instance, ethical challenges can be presented regarding informed consent and appropriate access to data/data storage (Sims & Waterfield, 2019). A further limitation can result from poor connectivity and the inability to easily capture non-verbal data (Nyumba et al., 2018). Despite these potential disadvantages, the researcher still felt that completing online discussions was a suitable approach when considering the geographical dispersiveness of participants (Birnbaum, 2004; Thomas et al., 2013; Kite & Phongsavan, 2017). However, in this study, there were some instances where participants preferred to complete the focus group in person. Two focus groups were completed on Microsoft Teams, while the others were at the participant's training ground. All focus groups were recorded, lasting an average of 9 minutes and 13 seconds.

The researcher aimed to recruit players from up to six different clubs, consisting of four to six players from each club (a total of 24 to 36 participants). The rationale for this was due to research suggesting that no more than six focus groups need to be completed as any more than this could be too large to gain various perspectives. Furthermore, evidence suggests that focus groups are best conducted with between four and 15 participants (per focus group) (Spencer et al., 2003; Guest et al., 2016; Fern, 1982). As will be alluded to later in this chapter, in this study, the researcher ended up completing a total of five focus groups with a total of 10 players (two per group). Despite research advocating the need for at least four participants per focus group, justification can be provided for using only two players. For instance, two players could still maintain the fundamental characteristics of a focus group by allowing an interactive discussion as it allows the opportunity for players to build on each other's contributions and create a 'conversational dynamic' that would be difficult within interviews (Leung & Savithiri, 2009; Krueger, 2002; George, 2022).

One could also argue that having fewer participants within a focus group can improve its quality as it can allow researchers to hear from each participant and not have to worry about the length of the discussion, which could have led to further issues when considering the busy schedule of participants (Leung & Savithiri, 2009; Kruger, 2002; George, 2022). Moreover, Guest et al. (2016) suggest that more than 80% of themes are discoverable within two to three focus groups and 90% discoverable within three to six. Completing five focus groups could have tackled the shortcomings of only having two players per focus group.

6.3.2.2 Ethical Considerations

This study received ethical approval (ETH2223-2918) from the College of Science and Engineering Research Ethics Committee at The University of Derby. To try and tackle the ethical challenges surrounding informed consent and appropriate access to data which come with online focus groups, the researcher provided participants with a 'Participant Information Sheet' (Appendix 10) to provide an understanding of how their data will be used and stored. In addition, the researcher also asked participants to fill out a consent form before completing any data collection (Appendix 11). The researcher also mentioned before starting the focus groups that any discussion of names of people or clubs would not be included within the write-up or analysis, and synonyms would be used when presenting the data. By doing this, there could have been the potential that participants might have been more open to discussing their ideas and experiences (Tates et al., 2009). This could then tackle a common disadvantage of using footballers in research, as Law (2019) suggest that participants would withdraw from research as they felt their responses could be easily identifiable.

6.3.2.3 Materials

Similar to interviews, focus groups are guided by the creation of an interview schedule or guide, which is guided by the review of literature, the project aim, and (in the case of this study) the findings from the observations (Gill & Baillie, 2018). While a question guide was created (Appendix 12), it is important to mention that this was not set in stone and would depend on how the conversations developed with the participants. Ultimately, the researcher asked open-ended, probing, and/or clarifying questions to obtain sufficient and in-depth participant insights. By asking these types of questions, the researcher could address a key limitation of focus groups, which has already been outlined, whereby some participants may speak more than others (Gill & Baillie, 2018).

6.4 Approach to Data Analysis

Data was analysed using Thematic Analysis (TA), aligned to hermeneutic phenomenology, which is widely used within qualitative research for identifying, organising, and offering insights into patterns (themes) across a dataset, allowing the researcher to make sense of collected or shared meanings and experiences (Braun & Clarke, 2006; Nowell et al., 2017). This researcher-led analysis was informed (though not bound) by a six-staged approach (Appendix 13), which can help to outline how the analysis was completed in a precise, consistent, and exhaustive manner (Attride-Stirling, 2001; Nowell et al., 2017; Braun & Clarke, 2006). Given that both qualitative studies were underpinned by a hermeneutic

phenomenological approach, enabled the analysis to move beyond surface-level themes towards the essential meaning of the phenomenon, culminating in essential themes (as detailed in Chapter 8). This was achieved through interpretation, iteration, and contextualisation. Hermeneutic phenomenology is not bound to a single set of analytical techniques and instead is considered an interpretive process involving the interplay of multiple analysis activities (Bynum & Varpio, 2018; Neubauer et al., 2019). Heidegger posits that comprehension is a reciprocal activity and introduces the concept of a 'hermeneutic circle' (as shown in Figure 33) to illustrate this interplay (Koch, 1996).

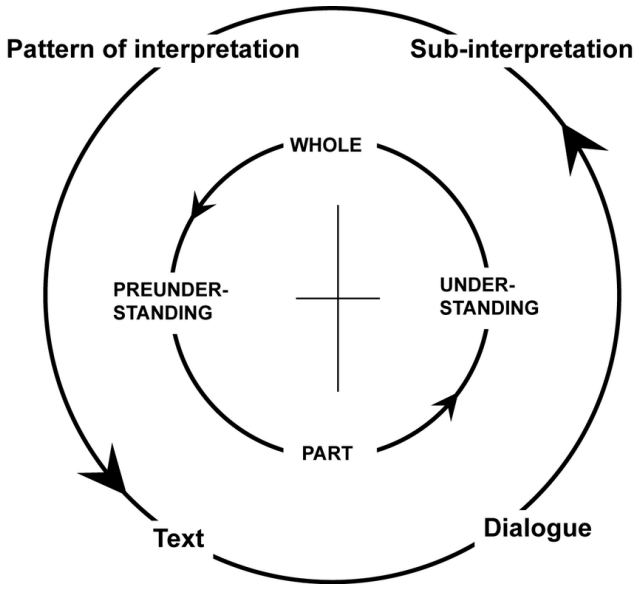

Figure 33: Hermeneutic Circle (Alvesson & Shöldberg, 2008)

In essence, the process outlined in Figure 32 involved the researcher investigating lived experience and led them to develop and reflect on the phenomenological themes that help to characterise the participant's experiences, as well as their own (Neubauer et al., 2019; Bynum & Varpio, 2018). Researchers can capture reflections by writing, reflecting, and then re-writing, creating a continuous cycle to help develop increasingly robust and nuanced analysis. Through this analysis, researchers must maintain a strong orientation to the phenomenon and attend to the interactions between the parts and the whole. This led to the final step of understanding how the data (the parts) contributed to the evolving understanding of the phenomena (the whole) and how each enhances the meaning of the other (Brynum & Varpio, 2018; Neubauer et al., 2019).

6.5 Sample

Recruitment of participants within qualitative research can often be the most challenging and time-consuming aspect (Archibold & Munce, 2015). This can be made worse when researchers

overestimate the willingness and eligibility of potential participants, which is often the result of recruitment efforts being underreported within qualitative research (Archibold & Munce, 2015; Northouse et al., 2006). There is a multitude of literature outlining the difficulty of recruiting those working within football (e.g. Kelly, 2010; Parker, 2016; Roderick, 2006; Law, 2019). *"Football clubs are jealously guarded worlds. Like governments, clubs are interested in good or no publicity. Therefore, they are quite suspicious of social researchers and press and broadcasting journalists whose interests lie in anything other than the straight report or the novelty item"* (Tomlinson, 1983, p. 151).

English football is notoriously known as a closed social world, which is described as hostile to 'outsiders' who can be defined as those who have never played or otherwise been involved in football at high levels (Law, 2019; Waddington, 2014, p. 15). The difficulty with recruitment is not just limited to elite-level players, as the Players Football Association (PFA) have previously mentioned that if you are not a former player but manage to gain access to academy-level players, researchers may struggle to gain trust and acceptability (Bryman, 2012, p.201; Law, 2019). With this knowledge in mind, the researcher considered different ways to recruit participants.

6.5.1 Procedure

Initially, the researcher considered employing a purposeful sampling procedure, whereby they could select participants based on their characteristics, knowledge, and experience (Andrade, 2020; Cresswell & Plano-Clark, 2011). In the context of this study, the researcher aimed to recruit footballers aged 18 and over (to meet ethical guidelines) who perform at either professional or academy levels from a team within England (men's and women's teams) and can understand and communicate in English (as this was the only language the researcher could understand). With purposeful sampling, there is a primary emphasis on saturation, meaning the researcher would continue to recruit towards the sample until no 'new' substantial information can be acquired (Palinkas et al., 2016; Eitkan et al., 2016). Considering the difficulty of gaining individuals from football, the researcher anticipated that they may encounter issues that could have caused significant delays in completing the PhD. Specifically, the researcher felt as though they may have been able to recruit a handful of players but struggled to gain enough to achieve saturation. As a result, a purposeful sampling procedure was dismissed, and the researcher opted to use a convenience sampling procedure.

Convenience sampling is a type of non-probability sampling that involves recruiting individuals who are available and willing to participate (Galloway, 2005; Andrade, 2021). While it would be more advantageous to use participants from all four levels of the English football pyramid, in addition to players from the Women's Super League, it would not have been realistic, thus providing some justification towards the use of convenience sampling (Etikan et al., 2016). A disadvantage of convenience sampling is that selection bias, and a lack of generalisability may have occurred. However, these can also be deemed disadvantages of purposeful sampling (Andrade, 2020; Nikolopoulou, 2022). The researcher considered these limitations and still felt a convenience sampling procedure was more suitable as it could tackle the known issues of recruiting people within football. Furthermore, as the study is exploratory, justification can be provided towards this approach (Simkus, 2023). When it is known that the intended sample is difficult to reach, it can be common in qualitative research to use friends, colleagues, or partners to act as mediators (Oliffe & Mroz, 2005). As the researcher was not an ex-professional or working in a football environment, difficulty would have occurred when recruiting participants (even with a convenient sampling procedure). As such, the researcher used a friend (who was currently working in elite-level football in England) as a gatekeeper, acting as an intermediary between the researcher and potential participants.

Aligning to the limitations of convenience sampling, potential bias could have occurred as the gatekeeper may have tried to recruit individuals who may or may not have supported their own personal gain (or the researchers). This was something that the researcher could not necessarily control, but to try and reduce this risk (and try to tackle the limitation of a lack of generalisability), the researcher spoke with the gatekeeper on numerous occasions and provided them with a copy of the participant information sheet. The aim was to provide them with a better understanding of the project and their role in helping recruit participants throughout the football pyramid while attempting to maintain an unbiased role.

6.5.2 Meeting the Participants

To maintain the confidentiality of players, pseudonyms will be used when presenting the data. Table 18 (on the page below) outlines their gender, age range, and performance level at the time of completing the focus groups. Additionally, Table 18 shows the length of each focus group and the time between completing the observations to the focus group.

Table 18: Meeting the Participants (Study 2)

	Focus group one	Focus group two	Focus group three	Focus group four	Focus group five
Pseudonym	John & David	Harry & Anthony	Marco & Brian	Chris & Simon	Trevor & Logan
Gender	Male	Male	Male	Male	Male
Age	18 - 25	23 - 29	19 - 25	19 - 25	19 - 25
Performance level	Category three academy	Non-league First team	Academy release, now performing at a university level	Academy release, now performing at a university level	Academy release, now performing at a university level
Length of focus group (minutes)	07.57	12.10	08.47	07.22	10.30
Time between observations to focus group	18 weeks	8 weeks	21 weeks	21 weeks	14 weeks
Location of focus group	Online	Online	In-person	In-person	In-person

It was necessary to complete all observations before commencing with the focus groups, as the observations aimed to inform the creation of questions for the discussion. As showcased in Table 17, despite best efforts to complete focus groups within a timely manner after completing the observations, this was difficult due to the recruitment and organisation process with participants. This can be important to consider before delving into the results, as participants may have become less familiar or possessed limited recollection within the focus groups when they used the prototype. Overall, the average time between the completion of observations and focus groups was 16.4 weeks.

6.6 Evaluating the Trustworthiness of Results

To help judge the quality of the analysis performed, the researcher considered concepts of rigour, relevance, resonance, and reflexivity. Rigor asks the question of whether the analysis has been competently managed and systematically worked through (Finlay, 2021). To demonstrate this, the researcher tried to go beyond describing participants' discussions and provide an interpretation of what it means. In effect, the researcher aims to explain to the reader the importance and relevance of what participants discussed within the focus groups and the themes that are being represented (Finlay, 2021). Furthermore, the researcher ensured that an abundance of themes were not presented, but rather themes provided sufficient levels of detail and relation to further themes or sub-themes (Finlay, 2021).

Relevance concerns the value of the researcher regarding its applicability and contribution (Finlay, 2021). To judge the value of this study, Chapter 8 will provide a synthesis to outline the value and contributions this research can provide. In terms of showcasing resonance, the

researcher aimed to present the results in a powerful and evocative way (Finlay, 2021). This can be achieved via the power of phenomenological writing, which is considered an art form that requires careful thought and consideration, positioning the researcher as the artist who can provide thought on behalf of the reader (Van Manen, 1990). The researcher aims to demonstrate this via powerful and enticing theme names. Lastly, reflexivity refers to the researcher's self-awareness, openness, and ethical sensibility (Finlay, 2016; 2021). This has been briefly touched upon in Chapter Three when discussing ethical considerations but will be expanded in Chapter 8, whereby the researcher will outline the limitations and considerations for future research.

6.7 Overview of Themes

Three themes and six sub-themes will now be presented:

Theme 1 – Developing a person beyond the player

- Receiving an assist to engage with self-development
- Acting as my true self to get the most out of my development

Theme 2 – Virtual reality can foster enjoyment, but should be approached on an individual basis

- Virtual reality offers a fresh and unique experience
- Feeling comfortable working on myself

Theme 3 – The future of virtual reality within football is looking promising

- Embracing innovation to invest in my development
- Working as a team to maximise the potential of virtual reality as a self-development tool

6.7.1 Developing a Person Beyond a Player

The essence of this theme is that players felt they needed to look beyond developing just as footballers and develop as well-rounded individuals. To achieve this, players felt they needed some support and work in collaboration with a mentor to help guide them in areas that require development. However, players recognised that they should not rely heavily on others to inform them on what needs improvement and understood that they needed to take ownership of their development.

6.7.1.1 Receiving an assist to engage with self-development

Metaphorically speaking, a player's ability to score a goal can often be dictated by the quality of pass or assist they receive from others. This notion resonates with the dataset as players evoke the sense that a good mentor (typically a coach) can support players in achieving their goals and objectives. This was evident in the sentiments of Logan as he believed *"you need the coach to help you along the way"* and "*it's important to have that person there to help you out"*. There was the feeling from participants extracts that relationality is a vital component, as there was the sense that having shared interests and working in unison with someone they trust, would put players in a stronger position to engage with self-development as they would feel more comfortable to do so:

> *I think from a player's perspective, I need something I can relate to, or have some sort of relationship with. I think in the past, the coaches I've had, the ones I've developed the most with, are the ones that I've had them relationships with, and I look up to. I think that is one of the most important things for self-development for myself – Trevor*

> *...just before I came here, I had someone who was a mentor already. They work for [Club name] as a mentor. So, having them to talk about football kind of makes me more at ease because I know what he says is true. I know you can ask your family, but it's different when you speak to someone in a football role because they actually understand your issues and how you go about it. As opposed to just doing it by yourself and not knowing what to do – Chris*

Analysing the final sentence from Chris's extract, one could suggest that self-reflection or self-discovery is just as important as obtaining support from others. Taking a metaphorical stance, no matter how good the pass or assist is from a mentor, if the player does not consider the element of 'self' they can often find themselves in an 'off-side position', meaning they will always be struggling to achieve their goals or objectives. As the conversation developed with Chris, it felt as though he acknowledged this, as while he valued the guidance and support from a mentor, players need to realise that they have to be accountable for their development. This was a perspective shared by John, as he felt it has to be a collaboration between the player and mentor:

> *...I feel like although the coaches can tell you what to do, I think there are still stuff that you need to do as a player to help you develop yourself, as well as being invested in yourself. I feel that comes hand in hand because if you don't invest in yourself, how are you supposed to self-develop – Chris*

I think it's a collaboration. I think coaches definitely help with it. As soon as they see something wrong or something that needs to be worked on, they will definitely come to you and be like, 'What do you think we can do as a team to make things improve' – John

Players who spoke about the importance of having a mentor or the support of another to help engage with self-development were all performing at an academy level and under the age of 25. This is thought-provoking as it could suggest two perspectives, the first being players performing at a first-team/elite level may not require or value the same amount of support an academy player needs to engage with self-development. An alternative view is whether first-team/elite-level players realise that having support for self-development would be beneficial. This can make interesting links to the nature of support players require or are provided as they progress within their careers. In summary, this sub-theme highlights the notion that players value the guidance of a mentor when engaging in self-development. However, players need to take ownership of their behaviours and be the ones to lead on the changes needed to improve as footballers and as individuals. This is not to say players shouldn't have some support, but instead, mentors should work in collaboration with players to provide suggestions or elicit a response from players to recognise what they need to work on.

6.7.1.2 Acting as my true self to get the most out of my development

I think for me, it's just trying to put myself out there. I keep to myself. I can just go into a shell. That's why I find it really important to interact with people. Making sure I'm acting as my true self and not trying to act as some impostor – Marco

The idea of taking a more comprehensive stance when focusing on oneself was something that came to light within the focus groups, with Marco's perspective of 'acting as my true self' proving to be an insightful statement to help understand the viewpoints of others when discussing the importance of self-development. Anthony felt as though it can be difficult to act as your true self due to the overwhelming demands of the sport, directing focus away from the importance of engaging in self-development. Success within football is often categorised by a team winning, and while players are integral to this, they can often be viewed as interchangeable components that contribute towards the team's overall functioning. However, this view can often be determined via the culture and mindset of the club, with Anthony feeling those at elite levels can struggle to work on self-development due to a win-at-all-costs environment and/or mentality. This can expand knowledge as to why first-team/elite-level players didn't talk much

about having a mentor when engaging with self-development, as coaches or practitioners might not value this over the need to focus on physical/tactical performance:

> *I would say it depends on the club you are at. A lot of football is focused on team development rather than individual development. So, it can be neglected quite a bit. But if you find yourself in an environment aiming to harness individual talent, then of course, some clubs do try and approach it in a different way. But the most important thing, especially in first-team football is results and winning. So, it can be neglected – Anthony*

David seemed to expand on Anthon's viewpoint and suggests that *"it's not just about making good football players, obviously that's the main goal, but it's about making good people as well"*. Brian developed this further by suggesting a culture change should start to be instigated within football, as there needs to be the recognition that footballers need time to develop themselves on and off the pitch:

> *...I think self-development, not just as footballers, but as human beings getting to know people. For example, I don't like to interact with a lot of people. But I think throughout the course of the month that I have been here with [Club name] as a footballer, and as a person, my confidence has got higher. Now, I think of self-development for myself, I can have conversations with people that I don't know or am not too comfortable with on and off the pitch. Off the pitch, I can sit down and talk to people about my problems for example. They can have trust in me and say this is what I'm going through as well, and I'm going through the same thing as you – Brian*

Looking at Brian's extract, there is the impression that temporality is being alluded to when he talks about his growing confidence over a month at his current football club. An interpretation is that as time has progressed, Brian felt integrated within the team leading to increased confidence levels. This demonstrates that time can be a core element in understanding how experiences are interpreted and understood, suggesting that self-development should be viewed as an ongoing process. Moreover, there is also a suggestion that corporeality is being hinted at, as Brian's conscious (and potentially unconscious) interactions with strangers and/or those familiar to him have changed. A suggestion is that Brian's physical presence and bodily sensations have impacted his confidence through the way he interacts with others. This sub-theme has an emphasis on players taking ownership over their self-development, even if it isn't a priority within the club/environment they are in. Additionally, development shouldn't be viewed as developing solely as a footballer but developing as a person at the same time.

6.7.2 Virtual Reality can foster enjoyment but should be approached on an individual basis

This theme illustrates that while players found the prototype to be engaging and enjoyable, how it would be used as a tool for self-development seemed difficult to comprehend. The notion that VR is an enjoyable tool suggests it could be valuable as its captivating and immersive nature could lead to repetitive use. On the other hand, participants primarily viewed the prototype as a tool to have fun as a team, as opposed to seeing it as a way to engage with self-development. A potential reason for this could be the result of the prototype itself, as there was the sense that players struggled to see the bigger picture from their experience. This can be demonstrated by players providing conflicting views on where they would use VR for self-development, and who they would use it with.

6.7.2.1 Virtual Reality offers a fresh and unique experience

A pattern was evident within the dataset related to the excitement and enjoyment players demonstrated when using VR. This was a pattern not only recognised during the observations but also through participant extracts within the focus groups. A potential contributing factor towards these findings could relate to the amount of experience players had with VR. For instance, Simon and Logan mentioned that they had never used VR, meaning they came into the experience not knowing what to expect. As a result, this could provide some context as to why they not only *"liked it"* but felt *"it was a serial experience"*. On the other hand, a lack of experience with VR did lead to opposing viewpoints from Anthony, saying, *"It was a bit difficult",* and Brian feeling as though *"everything was in front of you, and you don't expect to see certain things"*. Despite some negative views on VR (as opposed to the prototype), there was the sense from the observations that players still were intrigued and engaged as VR was being used as a tool which had them (as footballers) in mind. For instance, player reactions were positive as there was the impression that they were genuinely interested in what was trying to be achieved. This was also evident from Trevor saying *"I think it was different and new. I think I engaged more with it because I was interested if it could help me and other people"*.

Intrigue and unfamiliarity with VR were a contributing factor to using the prototype. As a consequence, David felt as though it took his mind away from football and helped him realise that everything doesn't always have to revolve around the sport. This insight expands on the previous discussion around the perspective that players need to be viewed as more than just footballers, as behind each player is a person. As a result, players need to have the opportunity

to work on themselves, but in doing so, taking a holistic approach which could integrate elements which ignite fun and enjoyment. Moreover, the insights from David also provide early indications that VR for self-development could be beneficial as players can go into a virtual environment where the distractions of the real world are toned down, meaning they can better focus on the task at hand. The importance of enjoyment and fun also shone through the sentiments of Marco and John as they felt as though using VR with others could foster an environment that could build a stronger team connection. While VR for self-development could help to enhance team cohesion (leading to potential improvements towards performance), the concern was that John and Marco felt the element of fun should be built around making fun of the mistakes and shortcomings of others:

> *...I think it could help bring people together. As in like, watching people do it, it's like a good laugh. I don't know if someone does something wrong, it's just a good laugh and could bring some people together as a team – John*

Looking at the language that John uses, emphasis can be placed on the word 'some' as it suggests it could depend on personality as to whether players would feel comfortable being around others and being mocked or laughed at, especially if trying to work on self-development which is already a taboo topic. While there is no malice behind John's viewpoint of using VR to have fun by making fun of others, if this viewpoint was commonly shared by others, the success of 'the whole' approach MEG aims to take may be difficult to achieve.

6.7.2.2 Feeling comfortable working on myself

When the conversation shifted to the location where players would use VR for self-development, John seemed to contradict his original viewpoint of using VR as a tool for fun and to make fun of others. Instead, he felt it should be used in a location away from any distractions:

> *I would go with a training ground or any quiet room really. Go in a quiet room and you can do what you want. Instead of being surrounded by people from the outside where you're not too sure what their opinion might be – John*

This line of thought can spark various interpretations as to why John's view changed when focusing on VR as a tool specifically for self-development. One viewpoint could link to the personal challenges or experiences John could have experienced when he has engaged (or tried to engage) with self-development in the past. For instance, an interpretation is that John could have been judged for engaging in self-development, making him more conscious about what

other people's opinions could be. This adds to the knowledge surrounding the culture within football posing a challenge towards engaging with self-development. Another suggestion could relate to his experience using the prototype. During the observations, players were in the same room as each other, and all they could see was their teammates having fun and reporting back how good (or how bad) they were at the two games within the virtual environment. As such, it can be understandable why John would view VR as a tool for fun and a way to spark camaraderie with other teammates via means of competition and failure. However, during the focus groups, questions were based on player's perceptions of VR as a tool for self-development, not just what they think about the experience of VR. Therefore, one could better understand why John may have shifted his viewpoints

Using VR within the training ground to engage with self-development was a viewpoint shared by the majority of participants, although David suggested that *"It depends what you are doing"*. What David was trying to suggest was that players wanting to develop in more personal areas may opt to use VR in a quiet room alone. This line of enquiry begins to draw on concepts of spatiality and relationality as one must think beyond VR for self-development, and consider the real-world environment that can directly or indirectly influence a player's ability to effectively engage with self-development (evident from Harry, David, and Logan's extracts):

> *Personally, I would like to do it on my own. I feel like you would take more time out on your own, whereas, if you're with others, you don't really get the full effect. I could work with you and the coaches as well, but I feel in a group, I don't think it would work as well as you're hearing all the noise behind you. So, I definitely think it would be better alone or with a coaching staff personally – Harry*

> *I think doing it in an area where there are other people, having people in like that surround sound, white noise kind of thing. It kind of immerses yourself a bit more maybe. And kind of like, sets a scene sort of I think – David*

> *I agree that it shouldn't be outside. I think it needs to be in a private and quiet area to try and do this sort of thing, so you don't get constant distractions. Like if there are people behind you having a chair, it will just put you off on what you are trying to develop. So, you need that area to concentrate on what you are doing – Logan*

While Harry said he would like to use it alone, he was still open to the idea of working with another person (in the form of a coach), which expands on the discussions within theme one as players may feel more comfortable working on their development alongside a mentor.

Nevertheless, both Harry and David offer two perspectives, which further illustrate that the environment in which players would use VR to engage in self-development could be an individual choice. This is something that Logan summarised well as he recognised that the enjoyment and camaraderie that can come from using VR should not be disregarded. However, there must be an objective behind players using it to make sure there are some ground rules to make sure players are in the best position to effectively engage with self-development:

> *I think it would depend on different people. Personally, I would like it in a group scenario. But not with the whole team as it can get too much if you have 16-17 players taking part while someone is doing virtual reality. For example, you have small groups and then did that together with people you are comfortable with, so you don't mind doing it in front of them – Logan*

6.7.3 The Future of Virtual Reality within football is looking promising

> *It's only going one way. Using virtual reality and stuff, it's quite commonly used in Formula One and stuff already. So, it's the way it's going to go. So, if it can help performance in any way, and players will take it up as it's so competitive – Anthony*

Participants share a common view that VR can be an effective tool within football as technology in sports is becoming more popular. It was evident within the data extracts that players are prepared to embrace new techniques (integrating technology) that may help enhance performance. However, there was the understanding that VR should not be viewed as a replacement for traditional methods, but rather as an enhancement tool. It was difficult to determine whether players were referring to traditional methods in the sense of football coaching or self-development, although interpreting extracts it did seem like players were more fearful that VR would replace coaching techniques. This links back to the general lack of understanding players had about how VR as a tool for self-development, as players would sometimes confuse the tool as a way to improve physical performance, or review performance from an analytical standpoint. However, players seemed to recognise that they still lacked a complete understanding of how this tool would work in the real world, so they felt it would be necessary for players (in general) to be involved in some capacity with the design and creation process of such VR tools designed to help with self-development. This is to make sure players have a better understanding of what is trying to be achieved but also to enhance the possibility that the tool will be a success, as there is the sense that it's made for players by those who understand players.

6.7.3.1 Embracing innovation to invest in my development

Players exhibited a willingness and openness to accept new ways to develop themselves, with VR sparking intrigue as most of the participants have not considered it as a possible tool for development. Reflecting upon the observations and interpreting the discussions had with players, there is a sense that players would embrace VR as they can express themselves without any physical barriers. This is something that Brian and Marco saw as a real opportunity to help them improve. Furthermore, there was also the sense that VR for self-development would be accepted as it would align with today's technology-driven world, showing positive signs of corporeality and spatiality as players would feel comfortable within virtual environments and could potentially excel more with their self-development because of this. Nevertheless, Marco aired on the side of caution as there is always a risk of addiction to technology, which could lead to players wanting to remove themselves further from reality:

> *Within football, I don't think it will be that big of an issue in the long run. Within real life or outside of football, if you use it too often, you then start to distance yourself from the people around you and the reality. The same as social media, you don't want to be on it too much – Marco*

While players were open to change, it was apparent that within football, it can be difficult for everyone to accept change. Generally, players felt that the coaching staff would be the individuals who would block VR for self-development integrating itself within the sport. The impression behind this notion was the players' felt coaches don't fully understand modern technology, with Harry feeling like *"a lot of people will say no because they either don't know or like change"*. However, players felt change is not always a bad thing, especially if it can help with performance, with Simon feeling that anything which improves performance should be accepted.

> *I don't think the coach would be, there would be an understanding. Some players still don't open up. I think virtual reality can help them and I think coaches will be thinking even better, because on the pitch, we can understand and help each other when going through stuff. Even off the pitch, you can walk into an interview it could make you feel comfortable. I think that reality thing would really help – Brian*

> *I would think the opposite. I think he would rather us kind of live, instead of living it through virtual reality. It's not in person. When it's in person, you see people. Let's be*

real, if you're going to hear stuff more live, in virtual reality, you're not going to hear stuff. Like semi-professional football, you hear the fans as they are right there. If it's virtual reality, it's different to when you are actually there – Chris

An important aspect to consider is that Brian and Chris have the same coach, which could bring into question the different relationships they have with their coach. What it could suggest is whether players truly feel they have autonomy when it comes to engaging with their self-development due to the relationship they have with their coach. However, it could also raise questions on whether coaches' trust levels towards certain players to not use VR as a tool to mess around with (an aspect explored in more detail in Chapter 7). However, when analysing the viewpoint of Chris, there is the feeling that he may not be grasping the concept of VR for self-development. For instance, it is difficult to understand why Chris diverted to the sound of the crowd, especially when this is something that is harder to replicate in a training scenario and is only experienced within a game. One could argue that players would only be able to learn and adapt to the crowd noise on the spot, potentially putting players at a disadvantage as they don't have an understanding of how to deal with such environments. This was supported by Brian as he felt that anything which can help players prepare and improve should be seen as valuable, which aligns with how Simon felt.

…that's what I want to be as well [a coach], I think you need to be accepting of anything new. Development has moved so fast in recent years, and I think you need to be open to anything. It could be a huge thing in sports. They might be open to it. Coaches here would be open to it as it's something new to try. Why not try it out with players – Trevor

Trevor's perspective was unique in the sense that he wants to be a coach in future. As such, he is speaking as the next generation of coaches who seem to be open to adopting innovations, meaning there is the possibility that tools such as VR for self-development could have longevity within the sport. This is because the next generation of coaches may be more familiar and aware of how beneficial it could be towards performance. Overall, there is the sense that VR would generally be accepted within the sport if it can be shown to improve performance. However, it should not be viewed as a tool to replace traditional methods.

6.7.3.2 Working as a team to maximise the potential of Virtual Reality as a self-development tool

I think sometimes it depends on what you're doing, where you're doing it, and how you're doing it. But I feel like the best things come when you get the opinions from those who are actually going to be doing it. Meeting your target audience – David

100%, at the end of the day it's made for the player. It's like when making a game, you need the opinions of the people who play the game as it's not just made for you. At the end of the day, we are buying your VR set, so we as players want to know it's coming from us and not from you – Chris

If VR for self-development is going to be successful, the collaboration of game designers and players would be essential to make sure it meets the needs of the target audience. Players suggest that defining the target audience would be the first step as choosing footballers from different levels could lead to a variety of opinions. For instance, would certain elements of self-development be identical for a first-team and academy player? Moreover, concepts such as time and money will also impact how VR for self-development would be integrated into different levels, which in turn can impact people's views on how it would work:

I think as long as it's effective, everyone wants them marginal gains and will take it up. But it also depends on what level you bring it up at. Like, some levels it will be too pricy or too many constraints on resources. But the higher you get up, if games are smaller, teams would take it – Anthony

There was also the sense that the collaboration between players and game designers would need to be an ongoing process to make sure the product remains up to date with the development of technology and changes within the world. This insight expands on the previous discussion about the notion of temporality, as time can change how our experiences are interpreted and understood, suggesting that self-development (and tools which work on self-development) should be viewed as an ongoing process. However, when reflecting on the extract of Marco, there was the sense that he wouldn't need to be a part of the process and that it was not essential for him to be involved in every single part of the development of the creation and design process. However, there was the sense that he would like to be made aware of any changes made or ideas created and that he could provide feedback to make the game better. The key thing is that players didn't feel that they would need to lead in developing VR as a tool for self-development, but rather, it should be seen as an equal process between players and game designers. Players felt that game designers don't have a full understanding of the footballing world, and players would need education from game designers on what self-development consists of, and what the game is intending to achieve. A consequence of not taking this into account could lead to players questioning VR as a tool for self-development, illustrated by Chris saying, *"I don't know what virtual reality would bring into the football aspect that will make them a player?"* However, Chris seemed to focus purely on how VR could improve players'

physical performance, which could suggest a lack of understanding about a) what VR can do and/or b) how personal and psychological development can aid performance.

6.8 Discussion

This section of the chapter will examine the results of this study by comparing and contrasting them with existing literature, interpreting what the findings might imply, and offering a brief conclusion on their significance. This discussion will be expanded upon in more detail within Chapter 8, where the results of all three studies will be synthesised.

One finding from this study revolved around the value football players placed on having support from a mentor (typically in the form of a coach), to help engage with their self-development. These results are similar to what is discussed within the literature which suggests having a mentor can be valuable as they can enhance performance, promote personal development, and facilitate a successful transition (Hoffman et al., 2017; Park et al., 2023; Hoffmann & Loughead, 2015). A reason why players might value a coach playing the role of a mentor could link to the relationship that they have with them. The relationship that players have with their mentor is important as engaging with mentorship alone does not guarantee a positive outcome for the mentee. Instead, the quality of the relationship between the mentor-mentee is influential to gain any benefits for the mentor or mentee (Sandardos & Chambers, 2019; Jowett, 2017; Rocchi & Pelletier, 2018). This corresponds to research which advocates a mentor-mentee relationship that is built on respect, trust, shared interests, and commitment (Winstanely, 2023; Straus et al., 2013; Sarabipour et al., 2021). On the whole, what this result suggests is the importance of having a strong 'athlete-coach relationship' as this could be influential towards effective self-development for football players when a coach undertakes the role of a mentor.

While players valued the insight and support of having a mentor to work on their self-development, they also emphasised the importance of taking ownership of their development. This aligns with literature which suggests successful mentor-mentee relationships are mentee-driven and mentor-guided, with both sides willing to invest their time and energy in development (Cameron et al., 2020). From a mentor's perspective, they need to have the goal of facilitating the development of a mentee's self-reflection and growth (Taherian & Shekarchian, 2008; Hill et al., 2022). Similarly, mentees must be active participants in the mentoring relationship and not merely expect the mentor to do all of the hard work (Sarabipour et al., 2021). It is the responsibility of the mentor to engage in personal/professional development activities (Bielczyk et al., 2020; Gemayel & Martin, 2017).

When players in this study spoke about the importance of taking ownership over their development, they referenced the need to 'act as their true self', which could be achieved via self-discovery and self-reflection. Self-discovery is a powerful tool for self-development as it can work towards achieving 'esteem needs' highlighted within Maslow's Hierarchy of Needs, as understanding oneself can lead to better decision-making, stronger relationships with others, and the sense of living more fulfilled lives (Bench et al., 2015; Interaction Design Foundation, 2017; Byron-Cox & Thomas, 2023). Moreover, understanding one's thoughts, feelings, beliefs, and values can be important towards continued learning and growth (Wang et al., 2024; Cherry, 2024; Serdiuk et al., 2018; Deci & Ryan, 2008; Ntoumanis & Mallett, 2014). With players in this study emphasising the importance of taking ownership over their development, a suggestion that this study makes is that autonomy is a significant need towards effective self-development of footballers. However, with players advocating the support of a mentor, relatedness/love and belonging needs should not be underestimated as the meaningful connections players have with their mentor can better support them to meet competence needs. This can result in players feeling more capable of interacting effectively in their surroundings and taking action to achieve their goals/overcome challenges (Ntoumanis & Mallet, 2014; Deci & Ryan, 2000; McLeod, 2024a).

As players in this study spoke about the need to act as their true selves, they emphasised that they should develop holistically, considering the development as a player and person. Davis (2023) suggests developing more than a footballer could positively correlate to performance, well-being, and how football players overcome a variety of transitions. Therefore, what this study is advocating is that having self-awareness of athletic identity is important, but players shouldn't overcommit to the role of being an athlete and instead find a balance between being a human and an athlete. However, this could be difficult when considering the culture of football, especially at elite/first-team levels. This was an outcome of this study as players felt the overwhelming demands of football can direct focus away from developing as people, but also the value of self-development in general. Literature and anecdotal reports have characterised football as micro-political, cut-throat, competitive, and, at times, an uncaring sport (Kerai et al., 2019). Consequently, there can be some hesitation to talk openly about ways to improve oneself beyond just physical performance due to a stigma around help-seeking behaviours (Kvillemo et al., 2020; Kola-Palmer et al., 2020; Miller et al., 2023; Breslin et al., 2017).

Moreover, when considering the Football Model of Transitional Development (Richardson et al., 2013) as players advance from the academy to first team/elite levels, the amount of support can reduce, and the culture around development can change from one which is nurturing and

empathetic, to one which is outcome oriented and ruthless (Richardson et al., 2013). With this understanding, one can better understand why first-team players in this study did not speak about the value of having a mentor nor specifically discuss the value of engaging with self-development. Therefore, the results from this study suggest that as footballers progress to mastery levels, the focus on self-development can decline due to the culture of football and potentially the club, causing players at first-team/elite levels to potentially miss out on the value of engaging with self-development.

Another outcome from this study was that the majority of players displayed and/or reported excitement and enjoyment when using VR. This finding corresponds with a variety of literature in different domains whereby VR was shown to induce positive feelings of game enjoyment and is perceived as a satisfying and enjoyable tool to meet competence and autonomy needs (Reer et al., 2022; Pallavincini et al., 2019; Peng et al., 2019; Shelstad et al., 2017; Pasanen et al., 2021; Marasco et al., 2018; Krishna & Schwarz, 2014). To understand why players could have responded the way they did towards the prototype, one can reflect on the principles of Digital Game-Based Learning (DGBL), as combining educational content with video games provides an opportunity to challenge individuals by promoting them to explore new and diverse problem-solving approaches (Nadolney et al., 2020; Pan et al., 2021). As a result, there is the potential to foster creativity and critical thinking, which can satisfy autonomy and competence needs, which Kosa et al. (2020) imply could positively correlate to enhanced enjoyment and technology acceptance. This can provide some explanation as to why players not only found VR to be enjoyable but were intrigued about the possibility of using VR for self-development.

Despite the majority of players demonstrating a positive attitude towards using VR and the prototype, two players expressed difficulty and dissatisfaction with their experience, which can be linked to previous research. For instance, previous studies have referred to ‘VR-induced symptoms’ often referred to as ‘cybersickness’ which can include nausea, dizziness, disorientation, postural instability and fatigue (Weech et al., 2019; Lundin et al., 2023). Other negative aspects highlighted within the literature include physical fatigue (Smith & Burd, 2019), eye fatigue (Cao et al., 2019), and physical discomfort (Wibirama et al., 2019). The majority of literature that discusses negative connotations towards VR, is predominantly associated with physical consequences. Nevertheless, the two players in this study mainly spoke about how the experience was not what they anticipated, which can be linked to their prior experience/understanding of using VR. As a result, what the results could imply is that due to players’ unfamiliarity with VR, there is the potential that autonomy needs might have been reduced, and competence was not achieved as they felt ineffective within the virtual environment. Given that successful need satisfaction of autonomy, competence, and relatedness

can positively predict fame enjoyment, some understanding can be placed on why these two players responded the way they did.

However, the results could suggest that VR might not be for everyone, which aligns with the suggestions of Peck et al. (2021) that VR is designed for a narrow demography, which might exclude 95% of the world's population. As a result, the findings from this study are important when potentially applying VR as a tool for self-development within football, as every single player within a team will not always respond positively to the idea of VR (in general). As such, an individualised approach to using VR for self-development must be taken. A final consideration to try and understand why these two players responded negatively to VR and the prototype, could be linked to the connection they had with the virtual environment. For instance, Jicol et al. (2023) suggest that users need to have a strong emotional response to the simulated environment as powerful graphics alone are not enough to fully immerse users within VR. The two games within the prototype positioned players in a basketball and table tennis environment, which are not typically environments that players are used to. With this understanding, potential links can be made to concepts of relatedness, esteem, and competence needs as to the success of using VR with football players. Therefore, the results from this study suggest familiarity can be important for players when using VR for self-development, as players need to feel connected with what they are doing.

One player in this study mentioned the prototype took his mind away from football. It is hard to interpret if they were referring to VR in general, or the two virtual environments they were positioned in, as it was not in a football environment. Instead, what the player in this study seemed to value more was the concept of 'escapism' through VR. Positive escapism can provide individuals with an opportunity to reflect on ways to promote self-development and personal growth through activities which have limited distractions (Kloppers, 2024; Kiseu, 2020; Siricharoen, 2019). Connotations of positive escapism seemed to correspond with the findings from this study as the player in question spoke about VR's potential to tone down the real world. Therefore, a suggestion is that VR might be a useful tool for self-development as it has the potential to create an active and immersive experience, leading to increased feelings of 'presence'. Consequently, players can cultivate awareness to get to know themselves and better work on their development (Lee, 2004; Kuvar et al., 2023). However, research can challenge this perspective as depending on how a person indulges in escapism, and how far away they become from reality, could lead to negative consequences towards well-being (Warmelink et al., 2009). As a result, a key message from this study is that how often players use VR and the time they spend using VR for self-development in a single session needs to be considered. This might lead to 'unhealthy escapism', potentially causing players to avoid or run away from their

weaknesses, problems, or areas that need development. The results from this study seemed to delve into this slightly in terms of how VR should be used within a football club for self-development. However, the focus was mainly placed on the location as opposed to the time spent using VR.

Findings about the location of using VR for self-development within football varied in this study, although a quiet room at the training ground with limited distractions was the preferred option. Anecdotal reports can support the notion of working on self-development in a quiet space alone, as reduced distraction can emphasise self-awareness and allow individuals to regain inner focus (Shore, 2018; Moncada, 2017). Furthermore, working on self-development alone within football may be preferred due to the culture of the sport, as players might find it difficult to speak openly on areas they need to develop as it could be a sign of weakness (Kvillemo et al., 2020; Kola-Palmer et al., 2020; Miller et al., 2023; Breslin et al., 2017). On the other hand, there is the argument that working on self-development with others can provide individuals with the opportunity to learn from others who are more experienced, which links to the discussions around the benefits of having a mentor (Hoffman et al., 2017; Hallmann et al., 2020; Park et al., 2023; Hoffmann & Loughead, 2016). Furthermore, with the enjoyment correlating to continued engagement with technology such as VR, some understanding can be made as to why some participants still emphasised the element of fun and using VR in small groups. Moreover, using VR for self-development with others could meet the needs of relatedness and love and belonging, which could lead to effective self-development (McLeod, 2024a; 2024b; Ntoumanis & Mallett, 2014; Bartholomew et al., 2011). The result from this study seems to consider both sides of the literature, as using VR for self-development alone or with others would depend on the player. As a result, the findings imply that using VR for self-development needs to be individualised for each player.

Another outcome from this study was that players perceived coaches as a possible obstacle to their use of VR as a tool for self-development. This perception seemed to stem from players feeling that coaches lack a strong understanding of modern technology. This can link to anecdotal reports and literature which suggests Generation X (born between 1965 and 1980), and, in some cases, Generation Y (1981 and 1996) may lack familiarity/confidence with technology compared to Generation Y and Generation Z (Born between 1997 and 2012) individuals (Culp-Roche et al., 2020; BBC, 2019). According to the Statista Research Department (2023), the average age of a Premier League manager in the 2022/23 season was 48 years and 53 days. Given this context, top-flight football managers might be resistant to adopting technologies like VR. This aligns with a previously discussed point that a club's culture or performance level can influence how self-development is valued. However, this

viewpoint could be challenged since players in this study spoke about the importance of taking ownership of their development. Therefore, one might question the relevance of the coach's acceptance, especially if the player finds VR an effective tool to engage with their self-development, which in turn could positively improve performance. On the other hand, considering that only academy players highlighted the value of self-development and the need to take ownership, it might be difficult to make this argument at higher performance levels. Overall, the finding from this study suggests that players performing at higher levels may struggle to use VR as a tool for self-development due to them feeling as though coaches will not allow them to use VR due to a lack of familiarity. However, suggestions can also be made to the culture of football as to why this finding was alluded to within our study.

A final finding from this study indicated that players believe there should be ongoing collaboration between football players, game designers, and developers in creating VR as a tool for self-development. This could be linked to players at different performance levels having varying needs and areas for development, which is supported by the Holistic Athlete Career Model (Wylleman, 2019) and the Football Model of Transitional Development (Richardson et al., 2013). Furthermore, players of different age groups may have varying responses to virtual environments, which could influence their enjoyment (Jicol et al., 2023). Considering this, incorporating insights from players, game designers, and developers can make sure that the VR tool is built on relevant teaching and learning principles to make sure the tool does not fall short of its intended purpose (Froehling, 2020). Moreover, collaboration could provide a better opportunity for players to meet autonomy, competence, and relatedness needs, which can lead to effective development (Johnstone & Finney, 2010; Bratko et al., 2022; Menard et al., 2017).

6.9 Limitations

Reflecting on this study, it can be proposed that some limitations warrant discussion. These will be important to inform future research that considers the potential of using VR as a tool for self-development within football (which is further outlined in Chapter 8). Firstly, the researcher had significant problems with recruitment and experienced poor communication between coaches and players. As a result, all participants were male, which makes it hard to generalise findings to female football players. Moreover, the average time between the completion of observations and the focus groups was 16.4 weeks. This was quite a significant period which could have impacted how players were able to reflect on their experience using the prototype within the focus group. In addition, due to the time gap, there were multiple dropouts from participants using the prototype and completing the focus group.

Another limitation was that the majority of players were performing at an academy level. Only one focus group consisted of first-team players, and while this was beneficial, they were playing at a low level. As a result, findings might have been different compared to first-team players performing at the higher end of the football pyramid. Continuing along the line of performance level, focus group one consisted of academy players performing at a category three academy. Linking back to the discussion in Chapter 2 and the EPPP, it would have been more insightful to gain the opinions/perspectives of players in categories 1 and 2 to make comparisons. As alluded to within this chapter, there were problems with the prototype which could have influenced how players responded within the focus groups. Due to the fact the prototype doesn't necessarily show a full walkthrough of what the final version would entail, it may have resulted in some players mistaking VR for a physical performance tool, compared to a tool for self-development. Moreover, due to the prototype being prone to certain glitches and bugs, it could provide some context as to why some players may not have responded positively to the experience.

6.10 Conclusion

This chapter has illustrated the perceptions football players had on the use of VR as a tool for self-development. Three themes and three sub-themes were presented, which helped achieve objectives three, four, and five of this PhD:

- Objective three - Observe football players' reactions to a Virtual Reality prototype aiming to support players with self-development
- Objective four - Observe practitioners' reactions to a Virtual Reality prototype aiming to support players with their self-development
- Objective five - Explore the perspectives of football players regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

Football players feel that developing oneself is important, but consideration should be placed on developing as people as well as footballers. To try and achieve this, players valued the support of a mentor (typically in the form of a coach). However, players felt that despite having a mentor, taking ownership of their development is essential. Reflecting on their time using the prototype, the majority of players felt it was an engaging and enjoyable experience. This holds promise towards VR as a tool for self-development, as enjoyment could lead to repetitive use. However, some players found it difficult to grasp and provided different perspectives on the location where they would use VR for self-development. As a result, the suggestion is that VR for self-development would need to take an individualised approach. Nevertheless, players felt

that VR has a future within football, given today's technology-driven world, but stressed that VR should be viewed as an enhancement tool and not a replacement for traditional methods. It was hard to quantify if players were referring to VR as a tool for tactical performance or self-development, which again links to the fact that players might still have difficulty grasping what is trying to be achieved. Players did seem to acknowledge this, and as a result, felt it would be beneficial for them to be involved with the creation process with game designers to make sure the tool meets the objective of what it is aiming to achieve. This study acted as the first step in understanding the potential of using VR as a tool for self-development within football; however, future research is needed.

Chapter 7 – What Do the Experts Think? Exploring the Perceptions Practitioners Within Football Have Towards Virtual Reality as a Tool for Self-Development

7.1 Introduction

The following chapter illustrates the perceptions practitioners have of using Virtual Reality (VR) as a tool for self-development. As outlined in the previous chapter, the methods of study two and three are identical. The differences include the Participant Information Sheet (Appendix 14) sent to participants, the questions asked during the focus groups (Appendix 15), and the sample selection. Therefore, for details on the methods employed for this study, readers should refer to Chapter Six. This study received ethical approval (ETH2223-2508) from the College of Science and Engineering Research Ethics Committee at The University of Derby.

7.2 Sample

During the first phase of testing (observations), the researcher managed to recruit six teams (with a total of 23 practitioners). However, when completing the focus groups, one team withdrew from the research (a total of four participants) as they did not respond to any communications for over six weeks. Therefore, all the data they provided was removed. As found in Study Two, the researcher encountered difficulties when trying to arrange a date and time for the remaining participants to engage within the focus groups (which can be outlined in the following section). This can be considered unsurprising given the difficulty associated with completing research with those working/involved in football (Law, 2019). In total, the researcher completed five focus groups with a total of 13 practitioners.

7.3 Meeting the Participants

To try and maintain the confidentiality of practitioners, pseudonyms will be used when presenting the results. Table 19 on the page below outlines their gender, age group, and years of experience at the time of completing the focus group. Additionally, the table indicates the length of each focus group, performance level, and the time between completing the observations and the focus group. All focus groups were reordered and lasted an average of 17

minutes and 87 seconds. Despite best efforts to complete focus groups within a timely manner after completing the observations, the average time between them was 13 weeks.

Table 19: Meeting the Participants (Study Three)

	Focus group one	Focus group two	Focus group three	Focus group four	Focus group five
Pseudonym	Patrick, Sam, and Tom	Matt, Nick, and Seth	Paul, Tim, and Jayne	Fin & perry	Grant & Victoria
Gender	Male	Male	Two males & one females	Male	One male & one female
Age	33-45	30-51	32-42	19-22	35-45
Performance level	Category three academy	Non-league First team (men's)	Non-league First team (women's)	University level	Category one to three
Years of experience	3-27	Less than a year to 20 years	Less than a year to 12 years	2 years or less	5-10
Length of focus group (minutes)	28.16	11.37	26.10	8.58	15.17
Time between observations to focus group	18 weeks	7 weeks	6 weeks	21 weeks	13 weeks
Location of focus group	Online	Online	Online	In-person	Online

7.4 Overview of Themes

Three themes and seven sub-themes will now be presented:

Theme 1 - Taking a proactive approach towards self-development

- Feeling like our hands are tied
- Ownership is on the players

Theme 2 - Virtual Reality: Perception vs practicality

- Technology is advancing
- Showing potential, but currently off-target
- It's important to distinguish between play and learning

Theme 3 - Crafting new ideas for a brighter future

- Expert to explorer
- Finding a place within the right team

7.4.1 Taking a proactive approach towards self-development

The necessity for players to engage in self-development was highlighted by practitioners, although they felt it could be overlooked depending on the culture and category of the club.

Practitioners felt they could not set aside time within the team's schedule to support players to engage with their self-development, resulting in them discussing the significance of players taking ownership over their own development needs. This is not to say practitioners would not support or guide players, instead, players should take the initiative and demonstrate they are prepared to go the extra mile to improve as footballers and individuals.

7.4.1.1 Feeling Like Our Hands Are Tied

Despite practitioners being aware of the benefits and importance of self-development, those working at an academy level felt only those working in a category one academy have the time to support players to the best of their ability. Patrick discussed this and had an interesting perspective, as although coaches are in the role to support players, they also have their own commitments and/or development needs, which can limit the amount of support or guidance they can provide:

> *I think it depends on category. If you're at category three, so where we are, coaches are doing more than one job…finding time is difficult…other people have a family and so on, and that then takes up time. I think if you're a coach in category one, there will be a minimum of two full-time coaches, maybe a head of coaching. That then frees up more time for personal development or self-development – Patrick*

An assumption from Patrick's extract suggests self-development may not be considered a key aspect within the curriculum throughout the academy system, causing possible discrepancies throughout the football pyramid. As Patrick felt he doesn't have the time to support players, it could suggest that a player's time within the academy system is heavily reliant on physical performance, as opposed to taking a holistic approach in developing a footballer and individual. Therefore, it could indicate what the priority of practitioners is in this setting. One could begin to question why the category of an academy should determine the support levels players are provided to engage with their self-development. A reason for this could be linked to the extract of Grant, who believed clubs might have outdated beliefs whereby clubs might not be adapting to changes in society or appreciate the importance of education:

> *I think there is a hangover in some organisations on perhaps leaders who are out of date with their thoughts and processes. Maybe they don't appreciate why certain education is important in the modern day in comparison to how it was several decades ago. A lack of appreciation of how society has changed as well - Grant*

Patrick and Grant both work at different levels within football (Academy vs elite), yet they do not suggest self-development is not worked on or discussed within their club. Instead, clubs may have different strategies or opinions on how it should be discussed or implemented. This raises a question regarding the standard of support or opportunities players have to engage with self-development, which links to the sentiments of Grant and Victoria in that it could be viewed as a 'tick-box exercise' and not taken seriously. Furthermore, when analysing the perspective of Grant, it could also suggest that personnel can be influential towards the value of engaging with self-development:

> *Are we talking about younger players, senior players, mandated topics, opportunities for career development, diversity. Or inclusion, and them types of topics. A lot links to the club, which is more specifically linked to the personnel who is in charge - Grant*

> *I think it also depends on the context of how it was done and also the resources behind how its supported. So, in one club it may be fantastic, but in another it may not be effective…Whether it's done just to tick a box, or if it's being done to see the benefits of it. I definitely feel in football, it is done because they are tick box exercises based on licences, and it's just done, but not fully done to get the most benefit from it – Victoria*

This sub-theme suggests practitioners recognise self-development as an important area for players, but the level/category a player is performing at could dictate the quality of support practitioners can provide. Not only is the level/category a key factor, but the belief or understanding a club has towards the concept could impact a player's ability to develop themselves as footballers and individuals. This elicits the question of whether players would be in a strong enough position to manage transitional periods inside and outside of football.

7.4.1.2 Ownership is on the players'

As practitioners felt they were limited to how much support they could provide players to engage with their self-development, they believed players should take control over their own development by coming to practitioners prepared to discuss areas they need help with. For instance, Nick suggested that this is *"massively important"* and "*you can only do so much for people, and they need to take responsibility to develop"*. Doing this can demonstrate initiative and self-drive, which are considered key traits in making an elite athlete:

> *It takes a certain kind of player or person to have that mindset…If you don't ask me to do extras or go out early, I will not come and find you. You need to have that self-drive to say, I need help here, let me go and ask the coaches…It's getting them to a point*

where they do come and seek help and more understanding. I think that's when you get the best self-development because it's coming from them and not us all the time – Tom

Being vulnerable and asking questions. The bottom line is they have the opportunity for that, and we have given them an opportunity for that…I think that's elite. We are trying to create an elite environment and elite athletes…To be elite, you have to be committed – Patrick

While practitioners valued a player's ability to ask for help and be vulnerable to better themselves, Sam, Fin, Perry, and Tom felt they had a responsibility to challenge players' thought processes to evoke reflective thinking, which may lead to more effective development. In essence, it is about changing the mindset of a player to promote autonomy as opposed to relying heavily on others to tell them what to do:

I think it's also being inquisitive as well. Question why. Why are things being done that way, even if it's to help yourself…It's a lot of why…why do you think we are doing that for? And trying to get their understanding or their point of view on why we might be doing this session and why we need to do homework at home, and why we need to do this. Then getting to the bottom end of it and delve deeper rather than the first level – Sam

With this sub-theme, practitioners felt that players who take ownership of their development can show they are willing to do what it takes to better themselves as footballers and individuals. Once a player identifies areas they need to develop, it is then the role of the practitioner to not necessarily tell them what to do but instead work in collaboration to help a player refine and/or achieve their goal(s).

7.4.2 Virtual Reality: Perception vs Practicality

Generally, practitioners feel that using virtual reality as a tool for self-development has promise, especially considering that technology is consistently improving. However, based on their experience using the prototype, the impression was that it was not at a level which would be accepted or widely used within football. Nevertheless, practitioners felt that if the prototype could be developed further by showcasing that it can help players work through key learning objectives, then it has the potential to be a useful tool within the sport.

7.4.2.1 Technology is Advancing

> *It's only going to get used more. Technology will improve more. Clubs are probably already using some sort of technologies to get an edge on other clubs. I think it's only going to improve more and more. What you are doing now is the stepping stone – Sam*

Participants believed technology is only going to get better with time, which will then be positively reflected towards advancements in performance and development. Practitioners seemed to feel technology will become more mainstream within football to co-exist with today's technology world. This belief is built on the notion that clubs and players will try or do anything to improve and gain an advantage:

> *Technology is advancing and getting used more. People would want to gain that 1% or clubs would want to gain that 1%...I think as technology is advancing, where we were 100 years ago and where we will be in 100 years' time will be different. More clubs and people will use it to gain that 1% - Sam*

Participants struggled to discuss VR in great detail simply because it is relatively new to them in the sense of using it as a tool to improve performance via self-development. Nevertheless, they felt as though it would have advantages within football due to its portable and engaging nature. Moreover, as VR continues to develop, Tim believes, *"It won't be long before it's a normal part of how we develop or work on things individually"*. Overall, practitioners believe technology is growing in popularity within football and will likely be in demand as it continues to develop and improve. Regarding VR, this was something that many practitioners had never experienced before. However, the impression from observing them use the prototype was that they were interested in understanding more about how it works and its potential use within their club as a tool for self-development.

7.4.2.2 Showing Potential, but Currently Off-Target

The impression from observing practitioners use the prototype and discussing its potential within the focus groups was that they were optimistic about what could be created. This was reflected by their intrigue in asking questions and starting interesting conversations within the group about how using Virtual reality for self-development could work within their team/club. Participants felt virtual reality could provide a unique perspective towards self-development, as the flexibility to change the virtual environment to match that of the club or a stadium could help engage players with their development:

For us, if we can get close as possible to try and relate it to what it looks like in our club, I think that will be beneficial for us and how we can improve these players. Academy players to take steps into the first team would be brilliant – Sam

I think it's useful as it gives you a different perspective. Helps you re-live moments as if you were there. It's a tool that will be used for a very long time once its perfected and more people understand the use of it, how to use it, and how it will be of benefit – Fin

In addition to adapting the virtual environment to meet the needs of the club, practitioners also discussed how they could include club principles or learning objectives within the virtual reality app/game which would be created. The perceived benefits from this are that a bespoke programme could be developed which can meet the needs of players/clubs across the football pyramid, with the impression that it starts to consider factors such as the club's history and approach to developing players, while also including activities for self-development which are created based on practitioner/player feedback and research:

I'm looking at the board, self-awareness, self-confidence, resilience, focus, competitiveness, adaptability, self-control, in this virtual reality space if they can learn and be tested and challenged, for me, that would be an unbelievable programme to give them – Patrick

Despite a positive outlook of what could be created/developed from the prototype and the ideas being discussed, some participants were less optimistic. This stemmed from the notion that certain clubs or individuals could be reluctant to listen to new ideas. Victoria and Matt discussed this within their focus groups as they felt the culture of football is very much set in its own ways, and anything new could be considered a threat to those who have been working in the sport for a long time:

Not to be disrespectful, generally in football, it's a sport that is still set in its ways. I think it would be difficult to get buy-in from old school coaches etc or people still involved in football to get buy-in – Victoria

I think with the way the world is going, the more its going towards technology and the quality of technology I don't see why not. But I do think it's very hard to break the mould of football – Matt

But it wasn't just the club culture that could be seen as a barrier to using Virtual Reality as a tool for self-development within football, as Matt and Nick spoke about the costs involved of

buying virtual reality devices, which clubs as the lower end of the football pyramid may struggle to afford. This would then support the notion highlighted in the first theme, whereby only players (academy and/or elite) would gain the most benefits:

> *Especially in non-league you would struggle because of player commitment, the level they play at and the time they have to do it. I can see it more in the pro game, more than non-league and amateurs – Matt*

While optimism was portrayed across all participants, some still felt stumped or puzzled about how the virtual reality for self-development would work within the typical schedule of an elite or academy environment. This was potentially a result of the current standard of the prototype, where it may not clearly demonstrate what the aim/objective is as it doesn't take users through the full process:

> *What are they learning? What is the objective? What are they trying to get out of it? Are there different things they can take away? I don't know how you do it, but I think the outcome is what I came out and was like why was I in there for – Tom*

It was also the difficulty participants had in understanding how virtual reality works and the errors which occurred when using the prototype. The majority of the participants had never used virtual reality before, so one could predict that their understanding of how virtual reality works would improve over time the more they used it. However, the technical issues with the prototype seemed to be a key barrier in accepting the concept into football at this current time. However, it is important to emphasise that participants only experienced a prototype meaning it can be difficult to reinforce the key learning or take away messages from the whole approach:

> *At this moment in time, I cannot see how this would be used. But again, I'm sure if things continue to develop and there was a useful need for it, then I'm sure there will be people who culturally may be closed off to it, but some will be open to using new methods. But at this time, I cannot see how it would be beneficial to me or any of the players I support…That's not to say I don't think it will be useful. It's just at this moment in time, there would need to be some tangible differences to what the game would look like and how it would work. Technically, the support someone using it would need, because if you weren't there facilitating the session, I wouldn't have had a clue of how to do that…If I had a squad of 25 people, it wouldn't work…kind of the game itself, it was difficult from your perspective to facilitate that, while also going through the topic. The majority of your focus was how to play the game as opposed to what the topic was. I cannot*

remember what the topic was. I can remember the basketball game and it took time to get used to it, but I couldn't draw anything from it. If I was to use that with my players who are senior, I would lose them straight away – Grant

This sub-theme explores the optimism and potential role virtual reality for self-development could play within a football environment. If it is going to work, it would need to be built around key learning objectives and adaptable to different clubs' needs. However, with any new form of technology/intervention within football, innovators will experience barriers from those within the sport (traditionally older generation of coaches). Additionally, based on their experience using the prototype, it would require significant development if it were to be accepted within football.

7.4.2.3 It's Important to Distinguish Between Play and Learning

Practitioners felt as though players (especially those at an academy level) should be viewed as the student, and practitioners as the teacher. In a typical lesson, there will always be a learning objective, so in the end, the student leaves with new/extended knowledge and would have developed in some form. This is what practitioners would want the tool of virtual reality for self-development to be built around. This is something that the full game experience would enable, but as already alluded to, as practitioners only used the prototype, it may have limited participant experience:

If you put a teachers or coaches' hat on, there is always a learning objective or picture you want to see. The same way a maths teacher would set learning objectives and the task, they would then walk around the room and guide them. You would have that discovery and who needs more support than others…The learners or players, they have to be able to distinguish between play and development and learning. So, when they are taking part in these things, this is an opportunity and I know they are having fun, and have to have fun, but they need to see that time they do with virtual reality, they are having that time to learn – Patrick

This links back to the second sub-theme of theme one, as a player's mindset is an important factor. If a player isn't committed to developing themselves, then it doesn't necessarily matter how good the virtual reality app/game is at demonstrating the learning objectives or how effective it is for self-development, the likelihood is that it wouldn't be beneficial for such a player. However, one could question whether this is based on players' (and, to some extent, practitioners') current perception of and attention given to self-development. Nevertheless, the

impression from Patrick was that VR should not be forced onto players, rather, it should be viewed as an available tool that players could use:

> *If they come and see you, there is a menu. This is available, this is the sheet. So, in very basic terms, we have a sheet of paper in the office, you need to book your slot when you want to use it. Then you know your committing your time to that. That's your time, and then we know whose doing it. If you don't want to do it, then no problem. No one is going to force you. But you're doing it because it's your choice and you want to get these outcomes from doing it – Patrick*

Learning objectives were a component that participants discussed, although Patrick and Paul spoke about the benefits of being able to record or measure a player's time while they used the virtual reality headset. The impression was that this could allow practitioners to support players further with their development, as they could 'give them feedback', thus adopting more of a teaching/mentor role as players could better understand what they have learned during their time using the virtual reality device. This sub-theme highlights the importance of having key learning objectives behind the virtual reality game/app that would be created. In addition, having a system whereby a player's time using the headset could be measured or recorded would be beneficial as practitioners could then tailor training sessions or signpost players to the best support to help with their self-development.

7.4.3 Crafting New Ideas for a Brighter Future

This theme underpins the importance of collaboration when it comes to the design and creation process of using virtual reality as a tool for self-development for footballers. From a practitioner perspective, they felt that alongside players, they would like to be involved in some capacity with designers and/or researchers as they felt this would improve their understanding of what's being created, which could consequently improve the quality of the game/app. Moreover, this theme explores the perception that using virtual reality for self-development could be better positioned within academy football due to their familiarity with technology. The belief was that in years to come, academy players who graduate into elite levels may continue to use virtual reality for their self-development, meaning the tool would slowly become a norm across both academy and elite levels. However, further research is needed to understand acceptance rates at different levels of academy and elite levels, as this could help determine the best target audience and topics for self-development that could be included in the next version of the prototype.

7.4.3.1 Expert to Explorer

When considering how the prototype can be developed, participants felt it would be important to continue gaining feedback from those working within football and work in collaboration with several different parties in the sport. This stems from the belief that game designers and/or researchers might not understand what goes on within a football club, meaning the app/game which is developed could be unrealistic and not meet the needs of its audience, which it tends to support:

> *It's really important that we give you feedback because if it doesn't get realistic, it's not really improving…You can only do that by doing testing and getting feedback that knows the sport – Paul*

> *Think if it's going to be used as a tool to help and used as a coaching tool, its important coaches are involved as it cannot just be the computer science side of it from people that don't necessarily understand the game and what we are trying to achieve – Nick*

> *I will probably want to be there and ask questions. The same way you are doing with is to get information. It will be the same of what I would want to get out of them. See how we can make it better and what they learn, what they think about. How that maybe links with a game on a Saturday or training whatever it is. I would probably want to know what they are doing so I can have a better understanding of what their needs are – Sam*

In essence, a holistic approach would need to be taken when developing the prototype and taking the concept forward. This means gaining the opinions of players, practitioners, game designers, and researchers to share ideas and create a tool which can meet the needs of those it aims to serve, thus increasing its acceptance within football:

> *I think there needs to be co-creation of this, and I suppose that's the whole idea of what you are doing. 100% I would say having feedback and people, and players themselves, practitioners themselves, coaches themselves, feeding into what might be useful and what might not, I think you have to – Grant*

> *Alongside the players yes. I think you still need to be able to tap into what they like and enjoy and will buy into. I think it would have to be a 360, you as the designer, because you know what's capable and what's not. The coaches for the knowledge and experiences, and then the young person for that inquisitiveness and longevity of buying into it – Patrick*

This sub-theme reflects the importance of working in collaboration with those working in football and personal development to develop a game/app using virtual reality to support players in engaging in their self-development.

7.4.3.2 Finding a Place Within the Right Team

A pattern within the dataset suggests that the concept of using virtual reality as a tool for self-development may be best positioned for younger players and those within the academy system. This arose from practitioners' belief that they would be more accustomed to new technology compared to older players in football. As a result, when considering the buy-in of the concept, there might be a better chance of getting into the world of football via the academy route. This notion seemed to be rooted in practitioners' recognition of today's technology driven world, whereby children, adolescents, and younger adults have/and are growing up with technology. As a result, an impression from the focus groups was that practitioners need to understand that the ways they have been brought up or taught when it comes to self-development, may not be appropriate for the current and/or next generation of football players:

> *It might be a little bit better for the younger players who have grown up with virtual reality and know more about technology than I had at that age. It may be more beneficial for them. But I would struggle, especially with the first team, I struggle to see how it will be much benefit to them. I can see it in an academy – Victoria*

> *I struggle to see how it might be effective within the environments I operate within. I can see it being something that is engaging in a younger audience like youth players. But I think, I'm a 31-year-old and I struggle to see how it might be effective [compared to] real-life – Grant*

> *I think its modern. If you speak to any of the kids in my group, they are talking about FIFA, Fortnite, Rocket League, they are all playing, they have all got game consoles, iPad, iPhone at their fingertips all the time…I know when I was their age, I was allowed to go to the park and just play. Having that unstructured play. Now it's not as, people don't want to do it as much anymore. Or parents don't want their kids to be unsupervised at the park. So, now they have all this screen time, it could help them have that at their fingertips – Sam*

Although it seems like the concept would be best positioned at an academy level, Grant felt further research is needed, which considers the opinions and ideas of players at different levels.

This also aligns with Seth's belief that *"all players are different"*. As a result, completing further research, which gains more perspectives across the football pyramid can provide more information on where virtual reality for self-development is best positioned, how it should be integrated within a club, and what areas of self-development the app/game should include at different levels within football:

> *A lot of the answers will depend on the context. Are we talking about younger players, senior players, mandated topics, opportunities for career development, diversity or inclusion and them types of topics? Are we talking about anti-corruption, betting, and those aspects too? A lot links to the club which is more specifically linked to the personal who is in charge…The other consideration from a research standpoint is who you are asking. If you were to ask both of us, we work at an elite level and the players we are talking about, I know for a fact that if I was to ask the question to some of my players, the general consensus would be what we are talking about now, as opposed to yeah it sounds fun. If you were to ask a group of student-athletes at college level who are not doing this full-time as their profession, I can't see them looking at self-development and just say this is fun – Grant*

Overall, this sub-theme suggests virtual reality for self-development is most likely best positioned at an academy level due to players' familiarity with technology. However, further research is needed that includes the perspectives of those throughout the football pyramid, which also links with the previous sub-theme of working in collaboration with others.

7.5 Discussion

This section of the chapter will examine the results of this study by comparing and contrasting them with existing literature, interpreting what the findings might imply, and offering a brief conclusion on its original contribution to the literature. This discussion will be expanded upon in more detail within Chapter 8, where the results of all three studies will be synthesised.

A finding from this study highlighted practitioners' doubts about the importance placed on self-development throughout football, specifically within the academy system. A variety of literature and anecdotal reports highlight that further work is needed to optimise the development of players (Blake & Solberg, 2023; Calvin, 2018). However, empirical evidence can support the findings from this study in that football (more so at academy levels) is falling short in terms of supporting players to help fully prepare them for a career as a professional footballer or prepare them for life after football (Blake & Solberg, 2023; Blakelock et al., 2016). Taking into account

the Holistic Athlete Career Model (Wylleman, 2019) and the Football Model of Transitional Development (Richardson et al., 2013), one could begin to question why this is the case, and despite the Elite Players Performance Plan (EPPP) (The Premier League, 2012), it is still an area that requires more focus (Blake & Solberg, 2023). To try and understand why this result could have occurred, one could reflect on the culture of football, which was suggested by practitioners in this study. There was the sense that practitioners felt clubs might not adapt to changes in society or appreciate the importance of education or self-development. This can be supported by Champ et al. (2018), who reported that academy staff still perpetuate a 'macho-masculine' culture which does not convey positive psychological well-being (Cushion & Jones, 2006; Wixey, 2023). This can suggest the notion of integrating VR as a tool for self-development within football, given the benefits of Digital Game-Based Learning (DGBL).

Another potential reason why practitioners may have felt in this study that self-development may not be a key component within football (specifically at academy levels) could be the differences between the academy categories within England. As discussed in Chapter 3, the EPPP was introduced in 2012 as a long-term strategy to enhance the development of home-grown academy players (Webb et al., 2019; Susan, 2018; The Premier League, 2012). The EPPP was integrated into the academy system throughout England and endorsed as a framework capable of producing a world-class youth system via enhanced programmes, holistic education, coaching development, and elite performance strategies (Champ et al., 2019; Gervis et al., 2019; Pain & Harwood, 2004; Wixey, 2023). However, differences have been reported depending on the academy category, with players associated with Premier League Clubs being exposed to different programmes compared to those connected with clubs within the Football League (Championship, League 1 and 2). For instance, although the EPPP was designed to develop players holistically, psychological profiling and support were only made mandatory within category one academies, meaning psychological support at lower categories with fewer resources is down to the discretion of individual academy managers (English Football League, 2018; Barraclough et al., 2024). What this could reflect is that exploring different ways of providing players and practitioners support in integrating self-development strategies could be useful to try and better work towards the primary aims of why the EPPP was introduced, in terms of enhancing the development of home-grown players on a much wider scale (players not only within category one academies).

Traditionally, the focus when developing football players has been on technical/tactical and physical attributes (Koopman et al., 2020). However, this contrasts with a growing body of literature highlighting the necessity of psychological factors in player development (Green et al., 2020; Hardy et al., 2017; Moodie et al., 2023; Till & Baker, 2020). Despite this, practitioners

in this study emphasised that they could struggle to provide holistic support for a player's self-development, which seemed to result from a lack of time. Time could refer to the fact that the majority of practitioners do not work within a category one club or have multiple roles in the academy. However, another consideration could fall towards practitioners overlooking the importance of self-development due to it not falling under their role as a coach. This can align with research by O'Gorman et al. (2020), who interviewed 12 part-time coaches working within a Category 3 academy. They found that coaches felt the 'administrative' duties of the EPPP distracted them from their role as a coach. However, the Football Association (FA) assesses coaches in England on their ability to enhance players across performance, technical and tactical, psychological, and social areas (FA, 2020). As a result, it should be in the remit and job description of coaches to support players' self-development, which expands beyond just physical performance. While practitioners in this study did not seem to suggest nothing is being done, there was the suggestion that practitioners are doing things with players. However, the quality may vary significantly as it could be viewed as a tick-box exercise. Therefore, the potential benefits of employing VR within clubs to help provide adequate support (not only for players but practitioners) are highlighted.

Another finding from this study was that practitioners wanted their players to show initiative when it comes to engaging with self-development and for them to be the ones in control. This can be supported by literature which highlights the importance of autonomy over one's development and the power of self-discovery towards achieving 'esteem needs' highlighted within Maslow's Hierarchy of Needs (Wang et al., 2024; Cherry, 2024a; Serdiuk et al., 2018; Deci & Ryan, 2008; Ntoumanis & Mallett, 2014). However, a thought for consideration is whether there could be a clash between a practitioner's perception and expectation versus that of a player when engaging in self-development. This raises the question of whether coaches assume that players have sufficient self-awareness to identify what support they need. Considering the Zone of Proximal Development, this could be viewed as a missed opportunity, as this theory highlights the importance of support in learning (Shabani et al., 2010; McLeod, 2024). This can support the idea behind the two prototype games and 'the whole' approach of My Energy Game (MEG). This is because the medium of VR can allow practitioners and players to work with one another to understand what areas require development but can also provide players with a sense of belonging and connection to practitioners, which can result in them being more likely to engage in tasks autonomously (Blake & Solberg, 2023).

Turning attention towards the idea of VR as a tool for self-development, a finding in this study was that practitioners felt it could be a unique tool. As highlighted in Chapter 3, research suggests positive connotations towards using VR within football (Greenhough et al., 2021;

Thatcher et al., 2020) and VR within sports psychology (Baye & Yusuf, 2023). However, the unique contribution that this study seems to provide is the use of VR in the context of it being used as a tool for self-development, primarily within football. While practitioners spoke positively on the possibility of integrating VR with this purpose, a question can arise on whether practitioners responded positively simply because anything that can signify or support the importance of self-development within football is needed. As such, one can reflect and question whether practitioners are supporting the use of VR as a tool for self-development or if they are supporting the need to focus on self-development. Nevertheless, practitioners did go into more detail about the concept of VR as a tool for self-development within football, with a concern or area of clarification being the importance of distinguishing between 'play' and 'learning'.

'Play' and 'learning' are two different things, although they are interlinked (Samuelsson & Björklund, 2020). By combining the two, learner engagement can increase, learning can be enhanced on complex concepts, and learners can apply learned knowledge to the real world (Mebert et al., 2020). The idea of using VR for self-development is based on the theory of DGBL, whereby the fun of a game (i.e. playing basketball within VR) is combined with specific learning objectives (i.e. improving the coach-athlete relationship). In this study, practitioners seemed to emphasise the importance of having strong and clear learning objectives, as this could add value to the concept of VR as a tool for self-development and improve the understanding and potential 'buy-in' of practitioners to the idea.

The value of having clear learning objectives has been documented within the literature, as they are essential for effective learning and help articulate what students should be able to do/know as a result of the task they have performed (Mitchell & Manzo, 2018; Alonso et al., 2008). While the prototype did have learning objectives (i.e. improving the coach-athlete relationship and communicating and reflecting with others), the impression from practitioners was that these were not necessarily clear. Moreover, practitioners seemed to lack an understanding of how these objectives could be achieved based on their experience with the prototype. However, as already outlined, the prototype does not outline the full game process. As a result, this finding, as well as the fact that practitioners do not believe the prototype is at a stage where it could be effective within football clubs, can be understood. Chapter 8 will build on this finding in more detail; however, a recommendation is that more work is needed with the prototype for it to be employed within football. This is something that practitioners did recognise and seemed to spark a sense of optimism towards using VR as a tool for self-development within football, given the idea that technology will only improve. This aligns with reports suggesting that new technologies build on previous ideas, which results in more advanced, efficient, and powerful interventions (Roser, 2023). Furthermore, a variety of literature and anecdotal reports highlight

that the economic market of VR is seeing rapid growth (Alsop, 2024). As technology advances and becomes more accessible, it is anticipated that the adoption and integration of VR into a variety of industries will grow (Hamad & Jia, 2022). To help the prototype improve, practitioners felt as though game designers/researchers needed to collaborate with those working within football, which was another finding from this study.

It has been documented in reports and research that collaboration between designers and the target audience can contribute towards the creation of a successful, valuable, and feasible product or idea (Höfling, 2022; Kujala, 2008). To understand why this is the case, one can reflect on concepts within the Self-Determination Theory (SDT), Maslow's Hierarchy of needs, and the four lifeworld essentials in hermeneutic phenomenology. This is because users (in this case, footballers and practitioners) can feel integrated and involved within the design and creation process (spatiality, competence, relationality, and love and belonging) and feel their opinions and insights are being acknowledged (corporeality, relatedness, and love and belonging), and that they can build on the ideas of those who do not have the unique experience or identity of working within the world of football to create something unique (corporeality, spatiality, relationality, esteem needs, and love and belonging. When combining the insights of designers and users, the impression in this study was that there is the possibility to create a bespoke programme with broad and narrow learning objectives. A consequence which can make a real difference towards supporting footballers to engage in their self-development. Not only was there the sense of improving what could be created via collaboration, but practitioners also felt that working with researchers and game designers could give them a more in-depth understanding of VR as a tool for self-development. This is because practitioners still had questions about how it would work within a 'typical day' and raised concerns about finances to allow more than one player to use a VR headset.

While practitioners reported being keen to work with game designers, researchers, and players on the concept of using VR as a tool for self-development, the consensus was that the target audience for this concept should start at the academy level. The reason behind this came from the fact that practitioners felt that players at this level and age may be more accustomed to new technology. This can align with the notion of autonomy as players at this level and age may feel comfortable within VR. To support these findings, technology has changed rapidly over the years and is considered an integral part of daily life. This can be supported by statistics which suggest that 5.44billion users have access to the internet in 2024 (Petrosyan, 2025). However, there is research available which highlights positive perceptions adults and older people have towards accepting and using technology such as VR (Plechatá et al., 2019; Cohavi & Levy-Tzedek, 2022; Liu et al., 2020). While this literature does not necessarily surround self-

development or an athletic population, it touches on psychology and well-being. As a result, one could reflect upon the analysis and postulate that first-team players might miss out on using an alternative tool which could help them engage with their self-development. Another important aspect to consider is whether the initial target audience for using VR as a tool for self-development should also include women's football. What this does raise is the need for future research to understand the target audience in more depth. This brought to light another finding from this study.

Practitioners felt that to better understand where the use of VR for self-development may fit (either initially or permanently), researchers would need to gain perspectives across the football pyramid (male and female) as it is probable that players and practitioners may respond differently towards the idea. To understand this further, one can refer back to the Football Model of Transitional Development (Richardson et al., 2013) in Chapter 2, whereby the level of psychological, psycho-social, environmental/cultural, and nature of support varies as footballers develop from the academy to first-team levels. Additionally, when taking into account the Holistic Athlete Career Model (Wylleman, 2019), some explanations as to why gaining the perspectives of footballers at different stages within their career could alter their perception towards using VR as an additional tool to help them engage with their self-development.

7.6 Limitations

The limitations highlighted in this study are very similar to what has been discussed in the previous chapter for Study 2. The researcher had difficulty with recruitment as the aim was to include participants beyond coaches. The researcher intended to include coaches, medical staff, and psychologists in this study. While the researcher was able to gain the perspective of coaches and psychologists, unfortunately, the insights of medical staff were missed. This would have been insightful given the discussions touched upon in Chapter two, whereby injury and illness can represent a significant transitional period within a player's career. As a result, gaining the opinions of medical staff could have added value towards using VR as a tool for self-development when a player is injured.

Similar to Study two, the length of time between completing the observations and focus groups could have impacted how practitioners could reflect on their experience using the prototype. The average time between the observations and focus groups was 13 weeks. In between this time, the researcher saw one group not respond to accepting to participate within the focus groups. As alluded to in the previous chapter, there were some problems with the prototype

which could have influenced how practitioners responded within the focus groups. Moreover, as the prototype does not necessarily show the full walkthrough of 'the whole' idea of MEG, it could have added to why some participants did not necessarily feel the concept was ready to be integrated within football or why they struggled to understand what the learning objectives were.

7.7 Conclusion

This chapter illustrated practitioners' perceptions of using VR as a tool for self-development. Three themes and seven sub-themes were presented, which helped achieve objectives four and six for this PhD:

- Objective Four - Observe practitioners' reactions to a Virtual Reality prototype aiming to support players with their self-development
- Objective Six - Explore the perspectives of practitioners regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

Practitioners felt self-development could often be overlooked, which could be the result of the culture within football but also due to practitioners outside of a category one club lacking the time or knowledge to support players. Practitioners were not necessarily saying self-development is not worked on, but rather, it could be seen as a tick-box exercise currently, meaning the impact towards helping players may be sub-par. Practitioners seemed to expect players to take ownership when it comes to their self-development, but this raises the question of whether the expectations and experiences of practitioners are different to players when engaging with their self-development.

Regarding the use of VR as a tool for self-development, practitioners felt it shows promise, although based on their experience with the prototype, it is not at a level where it would be accepted by the majority of those working within football. Nevertheless, with the perception that technology will continue to improve, practitioners spoke with promise towards VR being used as a tool for self-development within football in the future. To try and improve the chances of this happening, practitioners felt it is important to make sure the concept includes key learning objectives so there is value towards players using VR. To make sure these learning objectives and the concept are effective, practitioners felt that they, along with footballers, should work alongside designers and researchers to make sure the concept meets the target audience and can be effective in achieving what it is designed to achieve. Consequently, further research is needed to explore different perceptions of VR as a tool for self-development across

the football pyramid in both the men's and women's games to try and make sure the tool can meet the needs of footballers performing at different levels.

Chapter 8 – Synthesis and Critique

8.1 Introduction

This PhD aimed to explore the perceptions players and practitioners in football have on the use of VR as a tool for self-development within the sport. This was achieved by the following objectives:

1. Acquire insights towards received and wanted support for players and the general well-being of those working within football
2. Explore initial perspectives of footballers and practitioners regarding the integration of technology (specifically Virtual reality) to support the delivery of self-development and well-being
3. Observe football players' reactions to a Virtual Reality prototype aiming to support players with self-development
4. Observe practitioners' reactions to a Virtual Reality prototype aiming to support players with their self-development
5. Explore the perspectives of football players regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology
6. Explore the perspectives of practitioners regarding the integration of Virtual reality to enhance the delivery of self-development within sports psychology

8.2 Overarching Themes

To achieve these objectives, a mixed-method approach was used to collect both quantitative (Study 1) and qualitative (Studies 2 and 3) data. This was underpinned by a pragmatic research philosophy as the researcher held the view that there are multiple ways of knowing and a mixed-method approach could overcome the limitations of other philosophies by avoiding strict subjectivity or objectivity, using both quantitative and qualitative data to facilitate a deeper exploration of the topic (Kelly & Cordeiro, 2020; Alghamdi & Li, 2013; Weaver & Olson, 2006; Kaushik & Walsh, 2019; Turin et al., 2024). To try and address discrepancies between the quantitative and qualitative data, the researcher adopted a convergence model (a traditional triangulation design) whereby quantitative and qualitative data are collected concurrently, analysed separately, and then merged together (illustrated in Figure 34) (Fetters et al., 2013). This method provided a structured way of interpreting the data and helped turn any possible discrepancies into useful insights.

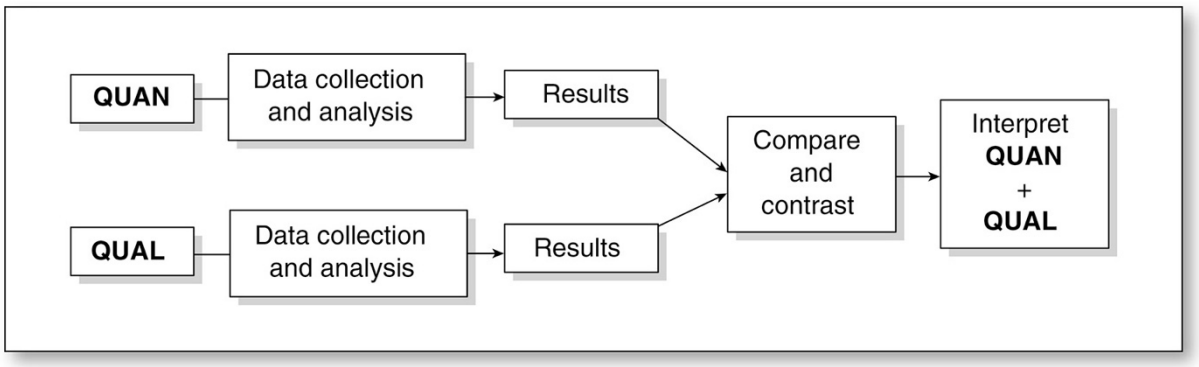

Figure 34: Convergent Approach (Cresswell & Clark, 2018; Edmonds & Kennedy, 2017)

Three overarching themes will now be presented to illustrate the interpretation of both the quantitative and qualitative results and provide a more cohesive understanding of VR's potential use as a tool for self-development in football.

8.2.1 A Call for Action

This overarching theme highlights the psychological distress and strain of current football players and why self-development is an important focus. **Study 1** indicated that players had a high level of psychological distress and strain, particularly towards performance concerns[23]. Kilic et al. (2021) indicated similar findings, showing that sport-related psychological distress was a prevalent symptom for both current and former professional footballers. Moreover, findings from Pillay et al. (2024) highlighted that the prevalence of distress was a common symptom among active professional male footballers. In terms of why players in our study reported psychological distress and strain towards performance can be linked to a variety of factors. For instance, one can reflect on the common transitions highlighted in Chapter 2 (fear of deselection, injury, transfers/loans, and assuming the role of team captain) (Nelly, 2022; Brand, 2022; Jarvis, 2019; Stambulova, 2003; Cotterill, 2015; Apizsch, 2009; Fransen et al., 2015). However, another contributing factor could be the culture of football in that it is categorised as an unforgiving and cut-throat environment (Kerai et al., 2019). Given that players in this study are indicating high levels of psychological distress and strain, it can be highlighted that focusing on strategies to help support players is of benefit.

Another finding from **Study 1** was that as the prevalence of well-being issues increases, the amount of received support may decrease. This finding can be linked to discussions within Chapter 3 regarding issues around help-seeking behaviours and stigma within football (Stevenson, 2020; Castaldelli-Maia et al., 2019). However, this result can also suggest that players may not be being provided with the support they need. This can help provide some

[23] Based on the cut-off scores provided by Rice et al., 2019; 2020

understanding towards players' reporting that the effectiveness of accessing support was more ineffective than it was effective. Another finding from **Study 1** was that as the prevalence of well-being issues increases, so may wanted support. This can also help to understand why both players and practitioners felt the delivery methods used to help players need to be improved. Given that technology is becoming more popular in sports, the findings from this thesis support the notion that considering alternative ways that can complement traditional methods to support self-development (and, in turn, well-being) is a topic of interest (Watson & Coker-Cranney, 2018; FIFA, 2020; 2023). Finally, **Study 1** indicated that for every domain within the PERMA, practitioners had 'Normal functioning'. However, the OWB mean score ranked practitioners as having 'Sub-optimal functioning'. This result is intriguing as it could suggest that practitioners may also benefit from engaging in self-development but could influence their responses as to why they were (on the whole) accepting of virtual reality as a tool for self-development.

8.2.2 While There is Promise, it Won't be for Everyone

In **Study 1**, both players and practitioners expressed that they would be open to using VR and spoke positively about its perceived usefulness. This finding is of interest given the TAM, which suggests that perceived usefulness is a marker of intention to use and actual use of technology (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). However, players and practitioners in **Study 1** did not seem willing to pay more than £149.99 for a new VR headset. At the time of writing this chapter, the Meta Quest 2 (used in **Studies 2 and 3**) was not as widely advertised as it was before completing the observation testing. This can largely be related to the release of the Meta Quest 3 in October 2023 (Meta, n.d). However, in 2023, the Meta Quest 2 cost approximately £227.22. Comparing this with the findings in **Study 1**, there can be some concerns over the acceptance of VR as a tool for self-development in football. On the other hand, one could reflect on the economic power of football (alluded to in Chapter 1) and suggest that the money is available in the sport to invest in player development. However, given that the financial wealth of clubs can vary throughout the football pyramid (Plumley et al., 2018) and that working on anything other than physical/tactical performance is not necessarily a priority in most football clubs (Champ et al., 2018; Parker, 2016; Wixey, 2023), one could begin to question how easy it would be for football to integrate VR as a tool for self-development.

In **Study 2**, players spoke about the excitement and enjoyment they experienced when using the VR prototype. There is a multitude of literature which highlights that VR can induce positive feelings and enjoyment, resulting in individuals feeling a sense of competence and autonomy (Reer et al., 2022; Pallavincini et al., 2019; Shelstad et al., 2017; Marasco et al., 2018). Despite the VR prototype not showing a complete walkthrough of the game process, it was built on

Digital Game-Based Learning (DGBL) principles. Consequently, there is the potential to foster creativity and critical thinking, which can satisfy autonomy and competence needs, leading to enhanced enjoyment and technology acceptance (Kosa et al., 2020). Reflecting on the Technology Acceptance Model 3 (TAM3), enjoyment is a key determinant of perceived ease of use (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). This can be a positive takeaway message in that the use of VR as a tool for self-development (that incorporates DGBL principles) could contribute to intention to use and actual use (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024).

Another indication that VR as a tool for self-development has promise comes from the fact that players expressed their experience with the prototype provided an avenue of escapism. Positive escapism can allow individuals to think and reflect on ways to promote self-development and personal growth through activities that limit distractions (Kloppers, 2024; Kiseu, 2020; Siricharoen, 2019). As a result, using VR as a tool for self-development could create an active and immersive experience, which could lead to increased feelings of 'presence', cultivating awareness to get to know themselves and work on their development (Lee, 2004; Kuvar et al.,2024). While these findings are positive and demonstrate that the concept of using VR as a tool for self-development has promise, some players experienced some difficulty using the VR prototype and felt dissatisfaction with their experience. The majority of literature mainly surrounds the 'physical' discomfort of using VR (Weech et al., 2019; Lundin et al., 2023; Smith & Burd, 2019; Wibirama et al., 2019; Cao et al., 2019). However, in Study 2, players spoke about how the experience was not what they expected and was unfamiliar to them. As such, it was hard for them to experience autonomy, competency, relatedness, love and belonging, or esteem needs. This finding is important, given that actual/perceived ease of use contributes to the intention to use and actual use of technology (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). Research has indicated that VR is designed for a narrow demography, which might exclude 95% of the world's population (Peck et al., 2021). Moreover, given that **Study 3** indicated that some football clubs have outdated beliefs and are reluctant to change with society, it could suggest that VR as a tool for self-development won't be for everyone. This can link to 'social influence' from the TAM2/3 as external influence (in this case, football clubs or those within it) can impact the adoption of technology (Venkatesh & Davis, 2000; Marikyan & Papagiannidis, 2024).

From a practitioner's perspective, **Study 3** highlighted that VR as a tool for self-development has promise based on their experience with the prototype. This reflected the fact that technology is constantly improving, leading to more advanced, efficient, and powerful interventions (Roser, 2023). However, in **Study 2**, players perceived coaches as a possible obstacle towards the

acceptance/use of VR as a tool for self-development in football. Players had the impression that coaches do not have a strong understanding or appreciation for modern technology. This can be supported by literature suggesting that Generation X (born between 1965 and 1980) and (in some cases) Generation Y (born between 1981 and 1996) individuals may lack familiarity and/or confidence with technology (Culp-Roche et al., 2020; BBC, 2019). This literature is of interest given that belief in one's ability and fear of using technology are key determinants of perceived ease of use in the TAM2, influencing intention to use and actual use (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024). The average age of Premier League managers[24] is 45 years and 3 months. With this in mind, there is the possibility that VR as a tool for self-development may not be easily accepted at the top level of English football.

However, it isn't just familiarity with technology that can hinder practitioners' acceptance of VR as a tool for self-development in football. Practitioners in **Study 3** emphasised that they can sometimes struggle to provide players support regarding their self-development, primarily due to a lack of time. This is an interesting finding as it aligns with research by O'Gorman et al. (2020), who interviewed 12 part-time coaches working in a Category 3 academy. Findings showed that coaches felt the 'administrative' duties of the EPPP distracted them from their role as a coach. However, the Football Association (FA) suggest that all coaches across England should be able to enhance players across performance, technical/tactical, psychological, and social areas (FA, 2020). This links to the FA Four Corner Model (FA, 2020), which is designed to help coaches understand that a holistic approach needs to be taken towards player development, no matter their age or ability (English Football Learning, 2020). However, as this research and O'Gorman et al. (2020) suggest, it appears that the focus of player development is open to subjective interpretations by those within football (Diouf et al., 2024; Kelly & Williams, 2020). As such, there could be challenges towards the acceptance/integration of using VR as a tool for self-development in the sport. Moreover, given that **Study 3** indicated that some football clubs have outdated beliefs and are reluctant to change with society and literature suggesting that academy staff still perpetuate a 'macho-masculine' culture (Champ et al., 2018; Cushion & Jones, 2006; Wixey, 2023) could suggest that football might not be ready to use VR for self-development.

On the other hand, one could reflect on the results of **Study 3** (in regard to the 'lack of time practitioners perceive they have to support players to work on their self-development') and suggest that providing players with the opportunity to engage with VR autonomously/independently can show initiative and put the player in control (as suggested by

[24] All current Premier League managers as of the 6th of March 2025

players in **Study 2**). Practitioners in **Study 3** agreed with this notion, which can be supported by literature as autonomy over one's development and the power of self-discovery can achieve esteem needs in Maslow's Hierarchy of Needs and work towards achieving self-actualisation (Cherry, 2024a; 2024b; Serkiuk et al., 2018; Deci & Ryan, 2008; Ntoumanis & Mallett, 2014). However, a thought for consideration is whether there could be a clash between the perceptions players and practitioners have on what constitutes working on self-development. This raises the question of whether coaches assume that players have sufficient self-awareness to identify the support they need. Considering the Zone of Proximal Development (Roosevelt, 2008), this could be viewed as a missed opportunity as this theory highlights the importance of support in learning (McLeod, 2024). This is a phenomenon that players spoke about in **Study 2** as they valued the support of a mentor (typically in the form of a coach).

8.2.3 Bridging the Gap: Gimmick to Something of Value

Following their experience of using the VR prototype and playing the two included games, players and practitioners provided a number of ways which can help turn the concept of using VR as a tool for self-development into something of value. The first came from **Study 3**, where practitioners spoke about the importance of distinguishing between 'play' and 'learning'. Although they are two different concepts, they are interlinked (Samuelsson & Bjöklund, 2022). By combining the two, learner engagement can increase, learning can be enhanced, and learners can apply their learned knowledge better in the real world (Mebert et al., 2020). The concept of using VR as a tool for self-development is based on the principles of DGBL, whereby the fun of a game is combined with specific learning objectives. Given that the prototype did not show a full walk-through of the 'whole' approach, it was challenging to easily identify the learning objectives behind the two games. This can be a reason why practitioners struggled to grasp the concept of the prototype and why they emphasised the need for key learning objectives. Having clear learning objectives is essential for effective learning, to help articulate what students should be able to do or know as a result of the task they have performed (Mitchell & Manzo, 2018; Alonso et al., 2008). As a result, to take the prototype further, it is important that the learning objectives are clear. This can lead to another key finding from this thesis in that VR as a tool for self-development needs to be adapted to the needs of its users.

Studies 2 and 3 highlighted that both players and practitioners would want to contribute to developing the concept of using VR as a tool for self-development. Literature has documented that collaboration between designers and the target audience can contribute towards the creation of a successful, valuable, and feasible product or idea (Höfling, 2022; Kujala, 2008). To understand why this is the case, one can reflect on concepts within the Self-Determination

Theory (SDT), Maslow's Hierarchy of needs, and the four lifeworld essentials in hermeneutic phenomenology. This is because users (in this case, footballers and practitioners) can feel integrated and involved within the design and creation process (spatiality, competence, relationality, and love and belonging) and feel their opinions and insights are being acknowledged (corporeality, relatedness, and love and belonging), and that they can build on the ideas of those who do not have the unique experience or identity of working within the world of football to create something unique (corporeality, spatiality, relationality, esteem needs, and love and belonging. Practitioners in **Study 3** felt that this collaboration between designers, players, and researchers could result in the creation of something "bespoke" and make a real impact towards supporting footballers to engage in self-development. Practitioners also felt that engaging with these stakeholders could improve their understanding of the concept of using VR in this manner. This can be beneficial given the TAM3, which suggests that feeling more confident with technology and making sure the product can adapt to the user's needs can improve technology, increasing intention to use and actual use (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024).

Another way of developing the concept of using VR as a tool for self-development into something of value is by targeting academy football, which was a finding from **Study 3**. This finding relates to what has been discussed in the previous overarching theme, in that individuals in this age group are more accustomed to technology. However, there is literature available which suggests that adults and the elderly have positive perceptions towards accepting and using technology such as VR (Plechatá et al., 2019; Cohavi & Levy-Tzedek, 2022; Liu et al., 2020). However, it is important to put these findings into context as this research mainly focused on well-being or mental health with non-athletic populations. Nevertheless, the findings suggest that players at first-team levels could be missing out. This leads to another finding in that more research is needed to understand where the concept is best suited. For instance, practitioners in **Study 3** spoke about the need to gain perceptions from more individuals throughout the men's and women's games, as it is probable that perceptions may differ. This can also be put into context when reflecting on the Holistic Athlete Career Model (Wylleman, 2019) and the Football Model of Transitional Development (Richardson et al., 2013).

8.3 Practical Implications

1. This research can support previous literature and anecdotal reports by highlighting that more needs to be done to support players, given that they reported high levels of psychological distress and strain, felt well-being is stigmatised in football, expressed

that accessing support is ineffective and that the delivery methods to help support them needs development

2. Players' experience with a VR prototype designed to be used as a tool for self-development was positive, with players reflecting on the excitement and enjoyment of their experience. However, players struggled to grasp the concept fully, which can be understood given that the prototype did not show a full walkthrough of the 'whole' approach
3. Practitioners spoke in a positive light towards the concept of using VR as a tool for self-development, but based on their experience with the prototype, felt it was not at a stage where it would be accepted within the sport. Practitioners struggled to understand how the concept would work in 'the real world' given their experience with the prototype. However, should the prototype and concept be developed further, practitioners felt that something bespoke and unique could be created. In order to achieve this, they discussed the importance of having clear learning objectives to make it easier for them to distinguish between 'play' and 'learning'. In essence, practitioners spoke about how it is important not to lose track of what the concept is aiming to achieve.
4. While players' experience with the prototype was mostly positive, some found it difficult and not what they expected. Moreover, players perceived practitioners as a potential barrier to the acceptance of VR as a tool for self-development within football. Based on these findings, a key implication is that the concept of using VR as a tool for self-development will not be to everyone's taste and should be viewed as a possible enhancement tool, not a replacement for traditional methods.
5. Practitioners perceived VR as a tool for self-development is best positioned at academy levels. This was linked to the familiarity players at these levels will have with technology such as VR. Taking into consideration the Holistic Athlete Career Model (Wylleman, 2019) and the Football Model of Transitional Development (Richardson et al., 2013), integrating VR as a tool for self-development at an academy level could be beneficial given the possible normative and non-normative transitions they may face.
6. Both players and practitioners would like to participate in developing the concept to build their understanding and ensure that the tool meets the needs of its intended user group. Doing this can help improve the perceived ease of use and perceived usefulness, ultimately increasing intention to use, and actual use according to the TAM1, 2, and 3 (Venkatesh & Bala, 2008; Marikyan & Papagiannidis, 2024)

8.4 Limitations

While this research provides a unique contribution to knowledge, like any research, it has a few limitations, all of which have been touched upon in Chapters 5, 6, and 7. Nevertheless, the researcher felt it would be beneficial to provide an overview of the limitations of this PhD as it can provide some context when outlining recommendations for future research.

The first limitation relates to the sample used in all three studies. As alluded to in chapters five, six, and seven, recruiting individuals who work in football to participate in research can be challenging (Kelly, 2010; Parker, 2016; Roderick, 2006; Law, 2019; Bryman, 2012, p.201; Tomlinson, 1982, p.151). The researcher acknowledged this before starting the project, which is why they utilised a gatekeeper with many contacts within the sport. However, recruitment still proved to be a significant challenge, as a large number of contacts that both the researcher and gatekeeper thought would participate never did. Consequently, the sample which was obtained for all three studies can be critically analysed. For instance, in study three, the researcher was unable to recruit a practitioner who worked as a medical professional (i.e., a doctor or Physiotherapist). Given the literature discussed within Chapter 2 regarding the impact being injured has on a player, it would have been valuable to gain perspectives from medical professionals about the use of VR for self-development for players who are injured.

Furthermore, in study two, the researcher was unable to recruit academy players above category three or players performing at an elite level. Given the discussion in Chapter 2 around the EPPP (The Premier League, 2012) and the Football Model of Transitional Development (Richardson et al., 2013), gaining participants from different levels in football would have been advantageous. Additionally, no female players engaged in the study[25]. This could impact the generalisability of results throughout the football pyramid and be viewed as a missed opportunity to provide further unique findings towards literature. For instance, given the unique challenges female athletes face compared to their male counterparts (i.e. pregnancy, differences in pay, access to certain facilities, and the physical and physiological challenges of menstruation), gaining perceptions of female players would be insightful (Gomez-Gonzalez et al., 2023; Datson & Kryger, 2021). Finally, for study one, only 21 players engaged in the survey despite it being available for individuals to complete for two years. While the researcher utilised a snowballing sampling procedure to try and mitigate these challenges, the literature does highlight that this comes with limitations. For instance, there could have been the possibility of

[25] Although it is important to highlight that a group of female football players did participate in the observations. However, no one replied when trying to organise a date for the focus group. The researcher and gatekeeper tried to gain contact for a period of 5 weeks with no reply from anyone within the club.

an overrepresentation of particular groups (i.e. responses from one club), which may have led to limited generalisability (Sedwick, 2013; Kennedy-Shaffer et al., 2021).

Another limitation of this thesis was that the time between completing observations and the focus groups in studies two and three was quite significant. This was largely influenced by the challenges the researcher experienced when trying to organise a date, time, and location to complete the observations and focus groups. Additionally, the focus groups could not be completed until all observations had been finished, as questions within the focus groups were influenced by the observations of players/practitioners using the VR headset. Overall, the average time between completing the observations and focus groups for study two was 16.4 weeks, and for study three, it was 13 weeks. This limitation could have contributed to why one team in studies two and three did not reply when trying to arrange a focus group. Moreover, as this time gap is lengthy, external influences could have impacted participant engagement. For instance, in study two, a player who engaged with the observations could not participate in a focus group as they transferred to a different club. While the player and club reassured that they were all on good terms, the player's schedule no longer aligned with their old teammates and, therefore, had to withdraw. Another limitation of a long wait between the observations and focus groups is that memory/recall bias could have occurred, thus impacting the quality of the results (Hassan, 2013).

In studies two and three, players and practitioners had the opportunity to use a VR prototype to help them better grasp the concept of VR being used as a tool for self-development and facilitate a more detailed discussion in the focus groups. However, given the exploratory nature of this research, the observations completed in these two studies were unstructured. While the researcher tried to mitigate the limitations of unstructured observations (i.e. video recordings and a research assistant), there is still the possibility that researcher bias could have occurred (McLeod, 2024). Given that the observations helped to inform the questions asked within the focus groups, the subjective nature of the unstructured observations could have impacted the direction the focus groups took. However, although a guide was used when completing the focus groups, a benefit of completing a focus group is that participants could share perspectives freely, leading to possibly unexplored insights (Brown, 2022; George, 2024; Gill & Baillie, 2018).

Another limitation pertained to the VR prototype used in studies two and three. As already highlighted, the prototype was used to facilitate a better understanding for participants when exploring perceptions on the potential of VR as a tool for self-development in football. However, as illustrated in Chapter 6, the prototype was prone to a number of glitches and bugs.

Furthermore, the two games included in the prototype did not show the full process of the game. Consequently, this could have influenced the results gained in studies 2 and 3 (i.e. players and practitioners struggling to grasp how the current version would work as a tool for self-development). The survey in Study 1 was split into three parts (player-specific questions, practitioner-specific questions, and VR-specific questions). While the researcher used validated questionnaires for the player and practitioner-specific questions, the VR questions had not undergone any prior testing. While the questions were discussed among the supervisory team (enabling a level of validity), there were questions that could be viewed as leading. For instance, "Do you feel well-being and mental health are stigmatised in football?" assumes that stigma exists, possibly influencing the reliability/validity of results.

8.5 Recommendations for Future Research

Findings from this research have indicated a number of interesting results regarding the potential of using VR as a tool for self-development within football. In order to further explicate this phenomenon, future research may wish to consider the following:

1. In study one, the VR-specific questions were more exploratory in nature and developed using previous literature. However, the questions asked in this study had not undergone any testing. Consequently, some questions could be viewed as leading, possibly affecting the reliability and validity of the survey results. However, questions were discussed among the supervisory team, which enabled a level of validity. Nevertheless, future research might wish to complete a pilot survey when asking questions about VR's potential within football as a tool for self-development and/or well-being.

2. Findings from study three highlighted that practitioners feel using VR for self-development is likely best suited for those performing at academy levels. This is due to the familiarity practitioners think players would have with technology at this level/age group. However, academy football covers three phases: Foundation (under 9 to under 11), Youth Development (under 12 to under 16), and Professional Development (under 17 to under 23). Therefore, knowing exactly what phase VR for self-development would be best suited to can be challenging. As a result, future research may wish to gain perspectives from players at all three phases and compare the perceptions of players and practitioners at each level to better determine VR's potential as a tool for self-development.

3. While players and practitioners within this thesis spoke positively about the potential of using VR for self-development within football, some struggled to comprehend what the

final product would look like. This was primarily influenced by the prototype, which only showed a small aspect of what the intended final game/app would consist of. Additionally, there is nothing else within the market that players or practitioners can refer to that could help improve their understanding of what aims to be achieved. Therefore, future research could wait until a complete walkthrough of what one game would look like before repeating a similar process to what has been completed within this research to improve their understanding of what VR for self-development would look like. Alternatively, researchers may wish to use alternative aids to enhance participants' understanding, such as a storyboard. Providing players and practitioners with a more comprehensive look at what VR for self-development would look like could help to further inform perspectives on the concept.

4. Although the survey gained the views of medical professionals (e.g., Doctors and Physiotherapists) in Study 1, they were missed during the observations and focus groups in Study 3. Given the impact being injured has on a player, it would have been insightful to understand what medical professionals think about using VR as a tool for self-development when a player is injured. As such, future research may wish to explore this phenomenon.

5. Practitioners mentioned that working on self-development is engaged with in football, although it could be viewed as a 'tick-box exercise'. As a result, future research may wish to explore this phenomenon in more depth by understanding what is currently being done around self-development at all levels within football. This could be insightful, given theoretical models indicating that players are provided less support as they advance to elite levels. However, one could question that working on self-development is a continuous process throughout a sportsperson's career, and given the transitions players can face, working on self-development can be justified.

6. Although women's football is growing in popularity and continuing to develop, it can be difficult to generalise the findings from this research into the women's game. Female players face many unique challenges compared to their male counterparts, such as pregnancy, differences in pay, access to certain facilities, and the physical and physiological challenges of menstruation. Therefore, future research may seek to understand the perceptions those working in women's football have on using VR as a tool for self-development.

7. The focus of this thesis surrounded the 'potential' VR could play as a tool for self-development within football, as opposed to its 'actual' impact. This was because the

prototype did not show the whole game process, meaning it would be challenging to measure its impact on players. Once the prototype has been developed further and incorporates 'the whole' of what My Energy Game is trying to achieve, it may be beneficial to switch focus to investigate the efficacy of using VR as a tool for self-development via the impact of the games included. Future research may wish to complete longitudinal studies in order to discover this.

8.6 Conclusion

This research explored how VR could be used as an alternative self-development tool for footballers to engage with. This was a topic that hadn't been explored much within the literature until now, as the focus has primarily been around VR's potential to improve tactical awareness, heading technique, and its role within rehabilitation settings. Findings from this study indicate that players often perceive existing methods for accessing self-development and well-being support as more ineffective than effective. Moreover, both players and practitioners expressed that current approaches to self-development and well-being within football require further development, highlighting the relevance and need for this research. Using a mixed-method approach, the findings suggest that VR holds potential as a self-development tool within football, particularly at academy levels where players are typically more comfortable with technology.

From a research perspective, this project reinforced the reality that applied research often involves unexpected challenges. Despite these difficulties, I have thoroughly enjoyed the experience, especially engaging with a diverse range of individuals across the football landscape in England. Personally, this journey has helped me develop valuable skills and build professional networks. Resilience proved especially important during both the logistical challenges of data collection and the personal difficulties that coincided with the project. Completing a PhD can at times be a lonely experience, but despite this, I am very proud of the work I have produced.

In conclusion, this research offers several recommendations for future research, key stakeholders in football, and for My Energy Game. If organisations recognise the value of these findings and apply them within the evolving use of VR in football (beyond enhancing physical performance), there is a real potential to address a gap in the market and create something innovative. This could offer substantial benefits to players, practitioners, and organisations throughout the football pyramid.

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Appendix

Appendix 1 – Six Mini Theories of the Self-Determination Theory

Theory	Explanation and link
Cognitive Evaluation Theory	This theory is focused on how social environments facilitate or undermine intrinsic motivation (Martela, 2020). To support an individual's intrinsic motivation, one must strive for autonomy and competence, while encouraging personal development (Mandigo & Holt, 2013). This theory is pertinent to this PhD as environment events (transitions) can influence intrinsic motivation, but social contexts (VR) and intrapersonal events (game-based learning) can help improve intrinsic motivation.
Organismic Integration Theory	This theory highlights the importance of promoting autonomous forms of regulation to foster higher-quality motivation (Ryan & Deci, 2000). The theory looks at how tasks which an individual may have only completed due to rewards, can be completed for intrinsic enjoyment through a process called internalisation. This process tends to happen when autonomy and relatedness are present (Drew, 2023). This is relevant to this PhD as making the process of engaging with self-development enjoyable via VR could prove to be beneficial for footballers, as it could lead to improved and long-lasting benefits towards motivation and engagement.
Causality Orientations Theory	The Causality Orientations Theory describes individual differences in tendencies to orient towards environment and regulate behaviour in different ways (Deci & Ryan, 1985; 2000). The theory specifically looks at three orientations: the autonomy orientation (the person is generally intrinsically motivated and feels a strong sense of self-competence); control orientation (the person is strongly focused on external rewards and reacts strongly to tasks they feel more competent with which provides relatedness/social connections); and impersonal or a motivated orientation (the person has general anxiety about their own competence and feel out of control of most situations causing reduced motivation) (Drew, 2023).
Basic Psychological Needs Theory	This theory indicates that one must meet basic needs of autonomy, competence, and relatedness to succeed which is at the centre of the SDT. When these needs are met, individuals have strong intrinsic motivation and self-esteem (Drew, 2023). This theory can be translated to this PhD in the sense that the researcher is looking at how VR (incorporating game-based principles) could incorporate these three psychological needs to promote a better sense of SDT, leading to progress toward self-development (in turn promoting a positive well-being).
Goal Contents Theory	The Goal Contents Theory looks at the differences between intrinsic and extrinsic goals and posits that intrinsic goals will usually lead to greater self-esteem, wellbeing, and personal wellness. This illustrates why a focus on using technology has been taken in this PhD, given that technology can enhance student interest and trigger motivation from within (Parong & Mayer, 2018; Dohn et al., 2016; David & Weinstein, 2023).

Relationships Motivation Theory	The final mini theory of the SDT is the Relationships Motivation Theory, which indicates relatedness as a key competent for personal wellbeing and personal development. While individual skill and talent is important, teamwork is at the heart of football as it can be the difference between success and failure. Having highlighted common transitions that footballers may face, some can significantly impact feelings of relatedness which could then correspond with a negative experience during a transition. A consequence of this, players may see a decline in performance, which can not only impact the individual, but the rest of the team. This therefore highlights why strategies looking to incorporate relatedness for self-development is key. However, it also suggests the need to look at transitional models, as this provides a detailed understanding of the perceived support needed to help players through a transition (which will be outlined in the Football Model of Transitional Development). Furthermore, the theory emphasises that autonomy and competence is fostered by positive relatedness, therefore, a 'whole' approach when incorporating the three psychological needs within the SDT can be effective.

Appendix 2 – Email Sent by the Gatekeeper to Recruit Participants for Study 1

Hi [Name]

Hope all's well. Please can you get as many players, coaches, and practitioners as possible to complete Liam Richardson's survey for his PhD exploring the use of virtual reality as a tool for self-development in football?

[Survey Link]

We need a big push over the next couple of weeks 😊 It only takes 5-10mins

Many thanks

Appendix 3 – LinkedIn message to recruit participants for Study 1

Hi *[Name]*

Looking through your profile, I can see that you work in football. One of my studies for my PhD is a survey that explores the thoughts and feelings those within football have on technology and psychology. The survey only takes 5 minutes to complete and is very simple to fill out!

I am aiming to get at least 100 players and 100 staff (any role) to complete this survey. Any help you can provide by sharing and/or completing this survey would be greatly appreciated!!

Here is the link – *[Link]*

If you would like more info on my PhD, please email me – *[Email]*
Thanks,
Liam 🙌

Appendix 4 – Information sheet and consent form for Study 1

What will it involve
The survey should approximately take between 5-10 minutes to complete, and is entirely voluntary

Page Break

Confidentiality
All information collected for this study will be anonymised and stored securely on a password-protected computer. Researchers on the project with access to the data are supervised by highly qualified and experienced staff and will ensure the security of your data. The study will only be conducted once ethical approval from the ethics committee at the University of Derby is obtained.

Page Break

Contacts
If you have any questions about this study or your possible involvement then please contact the research team, using the contact details below: Mr Liam Richardson - (*EMAIL*) Dr Andy Hooton - (*EMAIL*) Dr Charlotte Chandler - (*EMAIL*) Contact details will also be given at the end of the survey

End of Block: Participant Information Sheet

Start of Block: Consent

Consent Form

	Yes	No
I have read and understood the information provided to me regarding this study	○	○
I was provided the researchers contact details and understood that I could have contacted them if I required more information before completing this survey	○	○
I will complete the survey to the best of my ability and complete it within an appropriate timeframe of receiving this link	○	○
I understand that once I submit this survey, I cannot change any of my answers	○	○
I understand the limits to confidentiality in the project and the researcher has provided an explanation that there is a small chance that my anonymised contribution may be identifiable to someone else	○	○
I agree to my data being used in any subsequent work that builds on this current project	○	○
I would like a summary of the project when it is completed (If answering yes to this question, you may need to provide an email address at the end of this survey)	○	○

Skip To: End of Survey If Consent = I have read and understood the information provided to me regarding this study [No]

Skip To: End of Survey If Consent = I was provided the researchers contact details and understood that I could have contacted them if I required more information before completing this survey [No]

Skip To: End of Survey If Consent = I will complete the survey to the best of my ability and complete it within an appropriate timeframe of receiving this link [No]

Skip To: End of Survey If Consent = I understand that once I submit this survey, I cannot change any of my answers [No]

Skip To: End of Survey If Consent = I understand the limits to confidentiality in the project and the researcher has provided an explanation that there is a small chance that my anonymised contribution may be identifiable to someone else [No]

Skip To: End of Survey If Consent = I agree to my data being used in any subsequent work that builds on this current project [No]

Display This Question:

If Consent = I have read and understood the information provided to me regarding this study [Yes]

And Consent = I was provided the researchers contact details and understood that I could have contacted them if I required more information before completing this survey [Yes]

And Consent = I will complete the survey to the best of my ability and complete it within an appropriate timeframe of receiving this link [Yes]

And Consent = I understand that once I submit this survey, I cannot change any of my answers [Yes]

And Consent = I understand the limits to confidentiality in the project and the researcher has provided an explanation that there is a small chance that my anonymised contribution may be identifiable to someone else [Yes]

And Consent = I agree to my data being used in any subsequent work that builds on this current project [Yes]

Consent
I have looked at the consent form and agree to the terms and conditions listed

- ○ I agree, and would like to participate in this study
- ○ I don't agree and do not wish to participate

Display This Question:

If Consent = I don't agree and do not wish to participate

Consent
To confirm, you do not wish to participate within this study?

- ○ I do not wish to participate
- ○ I have changed my mind and would like to participate

Skip To: End of Survey If Consent = I do not wish to participate

End of Block: Consent

Appendix 5 – Athlete Psychological Strain Questionnaire (APSQ)

	Responses				
Question	**None of the time**	**A little of the time**	**Some of the time**	**Most of the time**	**All of the time**
It was difficult to be around teammates	1	2	3	4	5
I found it difficult to do what I needed to do	1	2	3	4	5
I was less motivated	1	2	3	4	5
I was irritable, angry, or aggressive	1	2	3	4	5
I could not stop worrying about injury or my performance	1	2	3	4	5
I found training more stressful	1	2	3	4	5
I found it hard to cope with selection pressures	1	2	3	4	5
I worried about life after sport	1	2	3	4	5
I needed alcohol or other substances to relax	1	2	3	4	5
I took unusual risks off-field	1	2	3	4	5

Appendix 6 – Athlete Received Support Questionnaire (ARSQ)

	Responses				
Question - "In the last week, how many times did someone do the following"	**Not at all**	**Once or twice**	**Three of four times**	**Five or six times**	**Seven times or more**
Cheer you up	1	2	3	4	5
Listen to you	1	2	3	4	5
Show concern for you	1	2	3	4	5
Make you feel they would always be there for you	1	2	3	4	5
Comfort you	1	2	3	4	5
Encourage you	1	2	3	4	5
Emphasize your abilities	1	2	3	4	5
Tell you, you can do it	1	2	3	4	5
Reinforce the positives	1	2	3	4	5
Boost your confidence	1	2	3	4	5
Give you advice about performing in competitive situations	1	2	3	4	5
Give you tactical advice	1	2	3	4	5
Offer you ideas and suggest actions	1	2	3	4	5
Help you put things in perspective	1	2	3	4	5
Help you decide what to do	1	2	3	4	5
Give you advice about what to do	1	2	3	4	5
Help you plan your training	1	2	3	4	5
Help you with transport to training and competition/matches	1	2	3	4	5
Do things for you at training and competition/matches	1	2	3	4	5
Help set sessions in training	1	2	3	4	5
Help you with tasks	1	2	3	4	5
Help manage your training sessions	1	2	3	4	5

Appendix 7 – Modified Athlete Received Support Questionnaire (Modified ARSQ)

	Responses				
Question - "In the last week, how many times did someone do the following"	**Not at all**	**Once or twice**	**Three of four times**	**Five or six times**	**Seven times or more**
Cheer you up	1	2	3	4	5
Listen to you	1	2	3	4	5
Show concern for you	1	2	3	4	5
Make you feel they would always be there for you	1	2	3	4	5
Comfort you	1	2	3	4	5
Encourage you	1	2	3	4	5
Emphasize your abilities	1	2	3	4	5
Tell you, you can do it	1	2	3	4	5
Reinforce the positives	1	2	3	4	5
Boost your confidence	1	2	3	4	5
Give you advice about performing in competitive situations	1	2	3	4	5
Give you tactical advice	1	2	3	4	5
Offer you ideas and suggest actions	1	2	3	4	5
Help you put things in perspective	1	2	3	4	5
Help you decide what to do	1	2	3	4	5
Give you advice about what to do	1	2	3	4	5
Help you plan your training	1	2	3	4	5
Help you with transport to training and competition/matches	1	2	3	4	5
Do things for you at training and competition/matches	1	2	3	4	5
Help set sessions in training	1	2	3	4	5
Help you with tasks	1	2	3	4	5
Help manage your training sessions	1	2	3	4	5

Appendix 8 – PERMA Profiler

#	Label	Question	Response Anchors
Block 1	**A1**	How much of the time do you feel you are making progress towards accomplishing your goals?	0 = never, 10 = always
	E1	How often do you become absorbed in what you are doing?	
	P1	In general, how often do you feel joyful?	
	N1	In general, how often do you feel anxious?	
	A2	How often do you achieve the important goals you have set for yourself?	
Block 2	**H1**	In general, how would you say your health is?	0 = terrible, 10 = excellent
Block 3	**M1**	In general, to what extent do you lead a purposeful and meaningful life?	0 = not at all, 10 = completely
	R1	To what extent do you receive help and support from others when you need it?	
	M2	In general, to what extent do you feel that what you do in your life is valuable and worthwhile?	
	E2	In general, to what extent do you feel excited and interested in things?	
	Lon	How lonely do you feel in your daily life?	
Block 4	**H2**	How satisfied are you with your current physical health?	0 = not at all, 10 = completely
Block 5	**P2**	In general, how often do you feel positive?	0 = never, 10 = always
	N2	In general, how often do you feel angry?	
	A3	How often are you able to handle your responsibilities?	
	N3	In general, how often do you feel sad?	
	E3	How often do you lose track of time while doing something you enjoy?	
Block 6	**H3**	Compared to others of your same age and sex, how is your health?	0 = terrible, 10 = excellent
Block 7	**R2**	To what extent do you feel loved?	0 = not at all, 10 = completely
	M3	To what extent do you generally feel you have a sense of direction in your life?	
	R3	How satisfied are you with your personal relationships?	
	P3	In general, to what extent do you feel contented?	
Block 8	**hap**	Taking all things together, how happy would you say you are?	0 = not at all, 10 = completely

Appendix 9 – VR-Specific Questions

Do you know what Virtual Reality is?

- ○ Yes
- ○ No
- ○ Ive heard of it and have an idea of what it entails, but I wouldn't say I know exactly what it is

Display This Question:

If VR = No

Or VR = Ive heard of it and have an idea of what it entails, but I wouldn't say I know exactly what it is

"Virtual Reality simulates the real world or an imaginary world through a headset and a set of hand and or foot controls"

Page Break

Please look at the five questions below and select an answer in both columns to indicate your viewpoint/experiences both within and outside of football

	Within Football		Outside of football	
	Yes	No	Yes	No
Have you ever used Virtual reality before?	○	○	○	○
Have you ever seen Virtual reality being used before?	○	○	○	○
Have you ever used virtual reality as a tool to improve wellbeing?	○	○	○	○
Have you ever seen virtual reality being used as a tool to improve wellbeing?	○	○	○	○
Would you ever consider using virtual reality as a tool to improve your wellbeing?	○	○	○	○
Have you ever used any forms of technology to improve your wellbeing?	○	○	○	○
Do you believe technology could help improve wellbeing?	○	○	○	○

Page Break

Display This Question:

If VR#1 = Have you ever used Virtual reality before? [Yes]

Or VR#1 = Have you ever used virtual reality as a tool to improve wellbeing? [Yes]

Or VR#2 = Have you ever used Virtual reality before? [Yes]

Or VR#2 = Have you ever used virtual reality as a tool to improve wellbeing? [Yes]

From your experience using virtual reality, how likely are you to use it again

- ○ Extremely unlikely
- ○ Somewhat unlikely
- ○ Neither likely nor unlikely
- ○ Somewhat likely
- ○ Extremely likely

Display This Question:

If VR#1 = Have you ever used Virtual reality before? [Yes]

Or VR#1 = Have you ever used virtual reality as a tool to improve wellbeing? [Yes]

Or VR#2 = Have you ever used Virtual reality before? [Yes]

Or VR#2 = Have you ever used virtual reality as a tool to improve wellbeing? [Yes]

Do you believe this had a positive impact on your wellbeing, when you used virtual reality as a tool for wellbeing?

- ○ Definitely yes
- ○ Probably yes
- ○ Might or might not
- ○ Probably not
- ○ Definitely not

How much would you be willing to pay for a new Virtual Reality headset? (In British pounds £)

- ○ less than 49.99
- ○ 50 to 99.99
- ○ 100 to 149.99
- ○ 150 to 199.99
- ○ 200 to 249.99
- ○ 250 to 299.99
- ○ 300 to 349.99
- ○ 350 to 399.99
- ○ 400 or more

Page Break

Do you feel wellbeing and mental health is stigmatised in football?

- ○ Definitely yes
- ○ Probably yes
- ○ Might or might not
- ○ Probably not
- ○ Definitely not

Do you feel like the delivery methods used to improve wellbeing and mental health needs to be developed within football?

- ○ Definitely not
- ○ Probably not
- ○ Might or might not
- ○ Probably yes
- ○ Definitely yes

Do you feel the way to access support for wellbeing and mental health within football is effective?

- ○ Not effective at all
- ○ Slightly effective
- ○ Moderately effective
- ○ Very effective
- ○ Extremely effective

Do you believe technology (such as Virtual Reality) could be a useful tool to help with someone's wellbeing within football?

- ○ Definitely not
- ○ Probably not
- ○ Might or might not
- ○ Probably yes
- ○ Definitely yes

Do you feel Virtual Reality would be accepted as a tool to improve wellbeing within football?

- ○ Definitely not
- ○ Probably not
- ○ Might or might not
- ○ Probably yes
- ○ Definitely yes

Do you believe technology (such as Virtual Reality) could be a useful tool to help with someone's self-development?

- ○ Definitely not
- ○ Probably not
- ○ Might or might not
- ○ Probably yes
- ○ Definitely yes

Do you feel Virtual Reality would be accepted as a tool to help with self-development within football?

- ○ Definitely not
- ○ Probably not
- ○ Might or might not
- ○ Probably yes
- ○ Definitely yes

Appendix 10 – Participation Information Sheet (Study 2)

The University of Derby
Kedleston Road
Derby
DE22 1GB

The next big thing, or no place within football? **Football players' perceptions of Virtual Reality as a tool for self-development**

Investigators: Liam Richardson, Andy Hooton & Charlotte Chandler

The University of Derby

Dear Participant,

You are being invited to take part in this research study which is looking to make an original contribution towards the development and improvement of sporting performance and wellbeing within football via the use of modern technology. Before you decide whether you wish to participate, it is important for you to understand why the study is being conducted and what it will involve. Please take some time to read the information provided and discuss it with others if you wish. Please ask if there is anything that is not clear, or if you would like more information.

What is the purpose of the study?

To explore the perceptions professional and semi-professional football players' perceptions of a Virtual Reality prototype as a psychological intervention within football

Why have I been chosen?

You have been asked to take part in this study as you meet our inclusion criteria. We are looking to gain valuable information from footballers who perform at either professional or semi-professional levels (including academy) within England, and within the age range of 18 to 55

Do I have to take part?

Taking part is entirely voluntary. If you decide to take part, you will be asked to sign a consent form to confirm that you understand the project and are happy to participate. If you decide to take part and then change your mind, you are free to withdraw from the study or withdraw any data at any point before the deadline which is set 2 weeks after your involvement within a focus group (This date will be given to you once the study starts). To do this, you would need to provide submission of your Unique ID to the researcher which will be given to you at the start of data collection.

What will my participation involve?

Once you have agreed to take part in the study, we would ask you to provide a list of dates that we could come to your training ground, so you can use the Virtual Reality (VR) prototype headset, created by My Energy Game LTD. We will observe you using the headset in a spacious room, which will only include

yourself and members from the research team. Once you have used the VR headset, we will then visit you at your training ground on a different day, where you will take part in a group session of up to six other participants (including yourself) that have tried the prototype headset and work within your club. The aim of this is to get a more in-depth understanding of your opinions on the VR prototype (such as what you liked or didn't like about it). When you use the prototype, you will be video recorded so that the researcher can review the footage at a later date, to capture any behaviours or characteristics that may have been missed on the day. Furthermore, the focus group will be voice-recorded to allow the creation of a transcript. We will not ask for any personal, however, if you did provide any names or revealing information, this will not be included within the transcript to reduce any risk of identification. The focus groups will last between 45 to 60 minutes, and you will be free to provide as much or as little information as you see fit.

What would I be providing consent for?

1) To be video recorded when using the virtual reality headset
2) To be voice recorded during the focus groups
3) To take part in a focus group that will include other members within your team that you will likely know
4) To respect confidentiality and anonymity and to keep whatever is said within the focus groups private

What are the possible benefits of taking part?

The information obtained will be used to improve the Prototype My Energy Game LTD have created in partnership with the University. Furthermore, by participating, you will be providing valuable information that can help work towards improving the way wellbeing and sports psychology could be developed within football, via the use of VR, which can ultimately lead to an improvement in performance.

What are the possible risks or disadvantages of taking part?

We do not anticipate any disadvantages or risks that may arise from your participation in this study.

What if something goes wrong?

If you have any concerns about any aspect of the way you have been approached or treated during this study, please contact the supervisory team of Dr Andy Hooton or Dr Charlotte Chandler whose contact details are listed below.

Will my information be kept confidential?

All information collected for this study will be anonymised and stored securely on a password-protected computer. Researchers on the project with access to the data are supervised by highly qualified and experienced staff and will ensure the security of your data. The study will only be conducted once ethical approval from the ethics committee at the University of Derby is obtained. As previously mentioned, when you use the virtual reality headset, you will be video recorded, and this will be securely stored. Furthermore, within the focus groups, it is likely that you may know other participants who are taking part in this study. Before the focus groups begin, the researcher will set some ground rules in regard to confidentiality, in addition, providing you with a debrief form at the end of the discussion.

What will happen to the results of the study?

The results from this study will be used in the following ways:

- To gain an insight into the responses football players have towards a Virtual Reality prototype game
- To understand the perceptions football players, have towards the Virtual Reality prototype game as a tool for psychological intervention within football
- To gauge an understanding of what footballers think about the use of Virtual Reality within football, and the role it could play as a psychological tool
- Discover how to implement the testing of a Virtual Reality as a psychological tool within a longitudinal (season long) study, within football

Who has viewed the study?

The University of Derby Ethics Committee
Director of Studies
First Supervisor
Second Superior

Contact for further information

If you have any questions about this study or your possible involvement then please contact the research team, using the contact details below:

Mr Liam Richardson
EMAIL

Dr Andy Hooton
EMAIL

Dr Charlotte Chandler
EMAIL

Thank you for taking part in this study

Appendix 11 – Focus Group Structure (Study 2)

1) What are your thoughts on the effectiveness of the delivery of self-development within football?

2) What helps you to engage with your self-development?

3) How do you perceive the use of virtual reality being used as a tool to help football players with their self-development?

4) Can you share your insights and experiences of using the prototype virtual reality headset?

5) What are your thoughts on how coaches and managers would react to players using virtual reality within the training ground to work in their self-development?

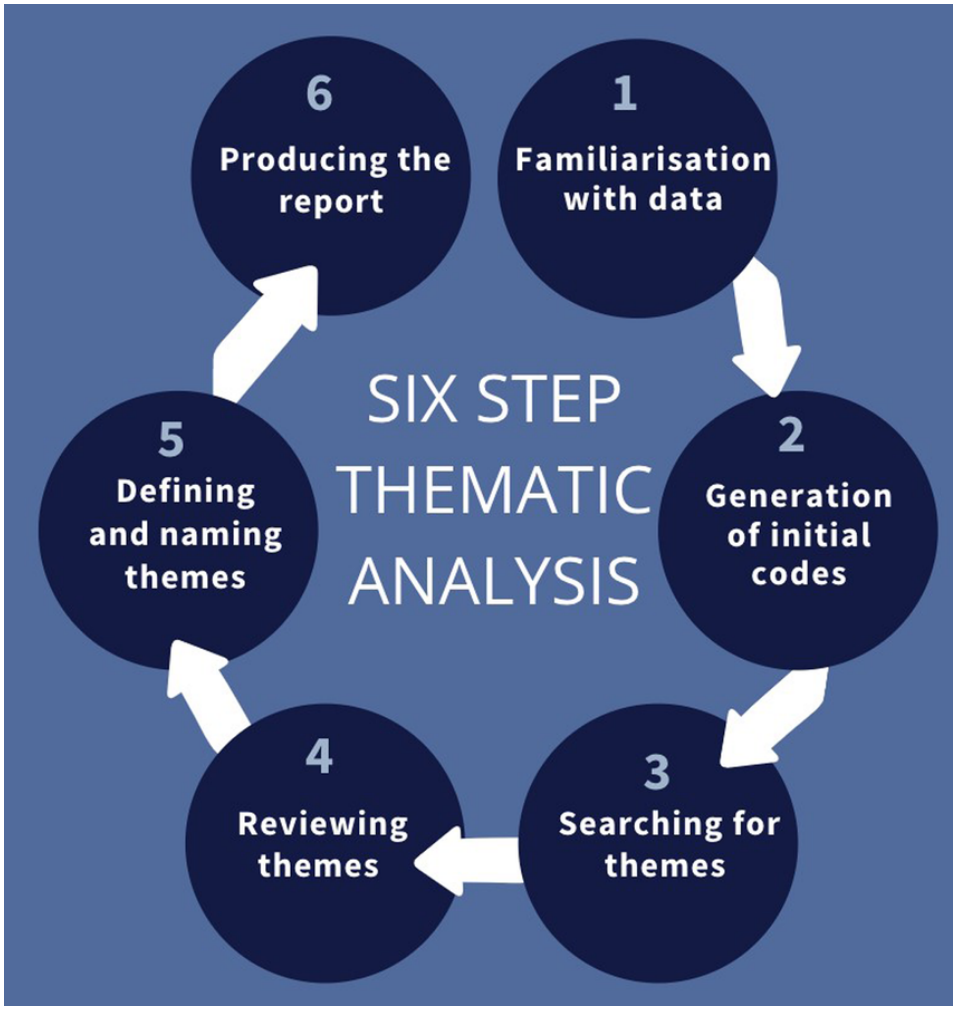
6) If you were to use virtual reality to improve your self-development, would you prefer to do this alone, with other players, or with a member of staff such as a coach, psychologist, or medical staff? **Prompt (and why?)**

7) What do you think is the best environment for players to use virtual reality as a tool for self-development?

8) In your view, what contributions or insights could players bring to the design and creation process when developing a virtual reality game for self-development?

9) What are your perspectives on the longevity of virtual reality within football?

Appendix 12 – Six Staged Thematic Analysis Approach (Braun & Clarke, 2006)



Appendix 13 – Participant Information Sheet (Study 3)

The University of Derby
Kedleston Road
Derby
DE22 1GB

What do the experts think? **Exploring the perceptions Practitioners within football have towards Virtual Reality as a tool for self-development**

Investigators: Liam Richardson, Andy Hooton & Charlotte Chandler

The University of Derby

Dear Participant,

You are being invited to take part in this research study which is looking to make an original contribution towards the development and improvement of sporting performance and wellbeing within football via the use of modern technology. Before you decide whether you wish to participate, it is important for you to understand why the study is being conducted and what it will involve. Please take some time to read the information provided and discuss it with others if you wish. Please ask if there is anything that is not clear, or if you would like more information.

What is the purpose of the study?

The aim of this study is to explore the perceptions select staff within a football club have on a virtual reality protype as a psychological intervention within football

Why have I been chosen?

You have been asked to take part in this study as you meet our inclusion criteria. We are looking to gain valuable information from managers, coaches, psychologists, and medical staff who work within a football club within England at either professional or semi-professional levels (including those working in an academy). Importantly, you have also been chosen as you are over the age of 18.

Do I have to take part?

Taking part is entirely voluntary. If you decide to take part, you will be asked to sign a consent form to confirm that you understand the project and are happy to participate. If you decide to take part and then change your mind, you are free to withdraw from the study or withdraw any data at any point before the deadline which is set 2 weeks after your involvement within a focus group (This date will be given to you once the study starts). To do this, you would need to provide submission of your Unique ID to the researcher which will be given to you at the start of data collection.

What will my participation involve?

Once you have agreed to take part in the study, we would ask you to provide a list of dates that we could come to your training ground, so you can use the Virtual Reality (VR) prototype headset, created by My

Energy Game LTD. We will observe you using the headset in a spacious room, which will only include yourself and members from the research team. Once you have used the VR headset, we will then visit you at your training ground on a different day, where you will take part in a group session of up to six other participants (including yourself) that have tried the prototype headset, and work within your club. The aim of this is to get a more in-depth understanding of your opinions on the VR prototype (such as what you liked or didn't like about it). When you use the prototype, you will be video recorded so that the researcher can review the footage at a later date, to capture any behaviours or characteristics that may have been missed on the day. Furthermore, the focus group will be voice recorded to allow a creation of a transcript. If you happened to provide any revealing details (such as names of people or clubs), this information will not be included within the transcripts to reduce the risk of identification. The focus groups will last between 45 to 60 minutes, and you will be free to provide as much or as little information as you see fit.

What would I be providing consent for?

5) To be video recorded when using the virtual reality headset
6) To be voice recorded during the focus groups
7) To take part in a focus group that will include other members within your team that you will likely know
8) To respect confidentiality and anonymity and to keep whatever is said within the focus groups private

What are the possible benefits of taking part?

The information obtained will be used to improve the Prototype My Energy Game LTD have created in partnership with the University. Furthermore, by participating, you will be providing valuable information which can be used to help develop the delivery of psychological interventions within football, which can ultimately lead to an improvement in performance

What are the possible risks or disadvantages of taking part?

We do not anticipate any disadvantages or risks that may arise from your participation in this study. However, there could be the potential of you developing nausea, dizziness, or headaches occurring while or after using the VR headset. To try and reduce the chance of this happening, we will be using the headset in a room that has access to fresh air (via a window), we will be providing you with re-assurance, make sure the headset is fitted correctly, allow you to get used to the headset before you enter the specific game, and allow you to take frequent breaks if needed. Should you start using the VR headset and develop abnormal symptoms, you are free to withdraw if you no longer which to use the headset. If you experience any symptoms (including vomiting) which then last over 2 hours (after using the headset) we will ensure that we will consult a health professional for VR motion sickness.

What if something goes wrong?

If you have any concerns about any aspect of the way you have been approached or treated during this study, please contact the supervisory team of Dr Andy Hooton or Dr Charlotte Chandler whose contact details are listed below.

Will my information be kept confidential?

All information collected for this study will be anonymised and stored securely on a password-protected computer. Researchers on the project with access to the data are supervised by highly qualified and experienced staff and will ensure the security of your data. The study will only be conducted once ethical approval from the ethics committee at the University of Derby is obtained. As previously mentioned, when you use the VR headset, you will be video recorded, and this will be securely stored. Furthermore, within the focus groups (which will be voice recorded), it is likely that you may know other participants who are taking part in this study. Before the focus groups begin, the researcher will set some ground rules regarding confidentiality, in addition, providing you with a debrief form at the end of the discussion. If at any point you wish not to participate, you can inform the lead researcher. All data which we collect from you, will be stored for 7 years before being destroyed. In regards to the audio and video recordings, once the PhD has been completed and successful, this can and will be destroyed.

What will happen to the results of the study?

The results from this study will be used in the following ways:

1) To gain an insight into the responses managers, coaches, psychologists, and medical staff have towards a virtual reality prototype game
2) To understand managers, coaches, psychologists, and medical staff's perceptions of the virtual reality game as a tool for psychological interventions within football
3) To gauge an understanding of what managers, coaches, psychologists, and medical staff think about the role virtual reality could play to help amateur and professional footballers improve their wellbeing
4) To discover if the use of virtual reality could be uses as a psychological tool for the 'team behind the team' to improve staff wellbeing within a football club

General Data Protection Regulation (GDPR)

This study will be collecting data from your participation. As we would be collecting data from yourself, we would have obligations towards you to:

1) Not seek more information from you than what is essential and necessary for the study.
2) Make sure that you are not identified by the data by anonymising it using ID codes
3) Use your anonymised data only for the purposes of this study and for any relevant publications that arise from it
4) Store data safely in password-protected databases to which only the named researchers have access.
5) Not keep your information for longer than is necessary (usually for seven years)
6) Safely destroy your data by shredding or permanently deleting them

Who has viewed the study?

The University of Derby Ethics Committee
Director of Studies
First Supervisor
Second Superior

Contact for further information

If you have any questions about this study or your possible involvement then please contact the research team, using the contact details below:

Mr Liam Richardson
EMAIL
Dr Andy Hooton
EMAIL
Dr Charlotte Chandler
EMAIL

Thank you for taking part in this study

Appendix 14 – Focus Group Structure (Study 3)

1) What are your thoughts on the effectiveness of the delivery of self-development within football?

2) What strategies do you, or your club provide to encourage and support players to engage with their self-development?

3) How do you perceive the use of virtual reality being used as a tool to help football players with their self-development? **(You could prompt re-acceptance and barriers)**

4) Can you share your insights and experiences of using the prototype virtual reality headset?

5) What are your thoughts on letting players use virtual reality at the training ground to work on self-development?

6) What do you think would be the most effective way for players to use virtual reality to work on self-development - independently, with teammates, or under the supervision and guidance of a specific staff member? **Prompt (and why?)**

7) What do you think is the best environment for players to use virtual reality as a tool for improving self-development?

8) In your view, what contributions or insights could staff bring to the design and creation process when developing a virtual reality game for self-development?

9) What are your perceptions on the longevity of virtual reality within football?