University of Gloucestershire

THE USE OF A CONSTRAINTS-LED APPROACH IN ELITE NETBALL COACHING: UNDERSTANDING PRACTICAL APPLICATION

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ABSTRACT

Background: For more than two decades the Constraints-Led Approach has gathered considerable interest within coaching research, informing the decisions of sports coaching experts (Renshaw et al., 2019; Renshaw et al., 2012). However, there remains a lack of valid research on the effective implementation of the approach, with extensive gaps between theory and practice, in turn, this has halted its uptake by practitioners and has led to the misinterpretation and incorrect implementation of the approach (Renshaw et al., 2019; Clark et al., 2018).

Purpose: The aim of this study was to investigate whether the Constraints-Led Approach is utilised by coaches within elite netball practice, to comprehend the degree to which coaches recognise this approach and to explore the facilitators and barriers faced in the implementation of this approach.

Design: An interpretivist research design and qualitative research method inclusive of semi-structured interviews and session observations were used in this study. Three participants, representative of a full VNSL coaching staff set up, were selected through purposive expert sampling to be involved in this study.

Findings: Data collected, identified three emergent themes; Understanding the Theoretical Underpinnings of a Constraints-Led Approach; Practitioner Experiences in Linking Theory to Practice, Ensuring a Representative Learning Design and Designing an Environment Suitable for the Implementation of a Constraints-Led Approach.

Conclusions: Results imply that if practitioners can understand, apply and appropriately balance these three themes then a Constraints-Led Approach can be successfully applied. Consequently, a Constraints-Led Approach can be implemented successfully and fully embedded by practitioners within an elite netball context.

Significance: This study provides a significant contribution to research as the successful implementation of this approach remains largely unexplored with no extensive study conducted within elite netball practice. These findings contribute depth and richness to academic work and should encourage practitioners to effect change in their own coaching practice.

DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University

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1.0 INTRODUCTION

Constraints-based pedagogy is continuing to gather significant attention as a nonlinear pedagogic approach, offering a Grand Unified Theory to explain the intricacies of athlete performance (Glazier, 2015; Renshaw, Davids & Savelsbergh, 2012; Renshaw, Davids, Newcombe & Roberts, 2019). The Constraints-Led Approach can provide a greater understanding of skill acquisition and development than dominant, traditionalist approaches which regard learning as a simple and linear process (Cassidy, Jones & Potrac, 2009; Clark, McEwan & Christie, 2018). This approach can be utilised in both individual and team sports and used not merely as a games based approach, instead its foundations in ecological dynamics and dynamical systems theory provide a rich theoretical framework which support practitioners to develop effective learning designs and practices (Renshaw et al., 2019; Renshaw, Araújo, Button, Chow, Davids & Moy, 2015). The Constraints-Led approach is athlete centred and recognises that learners should be given the opportunity to create their own individualised solutions to problems they encounter, thus allowing a greater level of autonomy over their own learning and performance. Constraints-based pedagogy focuses on the ways in which task, performer and environment constraints can affect decision-making and the influence this has on the subsequent actions performed by the athlete. It is evident that in a sports coaching context, many athletes are taught how to demonstrate competency through traditional skill-based approaches, but not how to think, a skill which Light (2014) argues is a necessity. As is highlighted by Clark et al., (2018), the manipulation of constraints can afford positive responses to skill acquisition however, the uptake of the Constraints-Led Approach remains a major challenge, having passed practitioners by with little influence on practice design. Models such as Teaching Games for Understanding and Game Sense have received

considerably more professional attention, being successfully implemented within practice (Thorpe, 2005). Currently there is insufficient evidence to fully advocate the implementation of the Constraints-Led Approach as there still remains no research investigating how to create pressurised training environments across sports (Clark et al*.,* 2018; Stoker, 2017). There have been attempts made to respond to critique facing the approach, however there is still much work to be done in making it a viable approach. Future research focused on bridging the gap between theory and practice is necessary to ensure that practitioners are able to design environments that coincide with the underlying theoretical foundations of constraints-based pedagogy (Newcombe et al*.,* 2019).

In the UK, netball is a sport that is growing in not only popularity amongst the general population but also in competitiveness at elite level. Netball is a team invasion sport where two teams of seven players compete on an indoor court with the aim of scoring more goals than their opposition through individual, group and team interactions (Lamas, Barrera, Otranto & Ugrinowitsch, 2014). Teams must coordinate individual (physiological, anthropometric, and nutrition), team (social and cognitive), environmental and situational (match venue and opposition quality) variables as well as technical, tactical and physical actions in order to achieve success (Almeida, Merlin, Pinto, Torres & Cunha, 2020; Wagner, Finkenzeller, Würth & von Duvillard, 2014). The tactical and organised nature of netball make decision making, problem solving, and creativity highly regarded skills that feature at the forefront of successful performance. England Netball (2019) have reported increased interest, participation rates and funding as a result of the Vitality Roses performances at the 2018 Commonwealth Games and 2019 Vitality Netball World Cup in Liverpool where they

achieved gold and bronze medals, respectively. At both the Commonwealth Games and Vitality Netball World Cup the margin between winning and losing the final has been by only one goal (less than 1% of the total goals scored in the game), these performances demonstrate the current closeness of elite level netball, where a gold medal can be won or lost in the final few seconds. Due to the current closeness of elite level netball, coaches are seeking new avenues from which to achieve marginal performance advantages over their opposition. These performance advantages could be the difference between winning and losing at major competitions and thus impact upon the levels of funding granted and degree of support offered at NGB level. Consequently, it could be argued that high quality performance is now more important within netball than ever before. As a result, practitioners should be fully aware of approaches that when effectively utilised can be used to enhance skill acquisition and development, thus including how to successfully implement these approaches within practice. England Netball have recognised the importance of skill acquisition and development, advocating the use of Game Sense and Teaching Games for Understanding within their coach education and junior programmes. However, the Constraints-Led Approach is yet to be adopted by England Netball to the same extent as its counterparts and consequently it is yet to be seen more widely within netball practice across the board.

Critics have suggested that there is little evidence to support the usefulness of a Constraints-Led Approach within elite sports coaching environments (Renshaw, Headrick, Maloney, Moy & Pinder, 2020). Evidence from a study conducted by Clark et al., (2018) supports this criticism concluding that of all the studies on Constraints-Led Approaches only three involved skilled athletes. For coaches working with elite

performers, identifying the most effective methods to learn and adapt skills is of considerable interest as performers are required to adapt in response to their ever changing sporting context (Renshaw et al., 2020). Therefore, there appears to be a real opportunity to explore the application of constraints within an elite performance setting. Whilst there has been considerable work into the use of constraints in rugby union, cricket and football there has been no study conducted as of yet in netball or in any solely female sporting context. Renshaw et al., (2020) offer some work on the manipulation of task constraints in end-ball, making reference at points to netball, however this is the extent of the work considering the manipulation of constraints within netball practice. Therefore, as a completely unexplored area, understanding the ways in which a Constraints-Led Approach can be applied to netball could provide practitioners with sport specific reference and support others to design effective learning practices for team sports more widely. Consequently, this research will focus upon the application of constraints within an elite performance netball setting consisting of athletes and coaches working and competing in the England Netball Vitality Netball Superleague (VNSL). Subsequently, the importance and originality of this research is conclusive.

1.1 Research Aims

This study explores “The use of a Constraints-Led Approach in Elite Netball Coaching: Understanding Practical Application”. This study aimed to; investigate whether the Constraints-Led Approach is utilised by coaches within elite netball practice, to comprehend the degree to which coaches recognise this approach and to explore the challenges faced in the implementation and application of this approach. To successfully meet these aims and answer the corresponding research questions, a

review of literature was conducted. This review developed a critical understanding of a Constraints-Led Approach and determined the impact this approach could have within elite netball coaching practice. Following this, an empirical investigation was conducted, gathering data through session observations and multiple semi-structured interviews. Data collected unpacked the experiences, thoughts, feelings and opinions of practitioners surrounding a Constraints-Led Approach and demonstrated, with practical examples, the ways in which a Constraints-Led Approach can be implemented, including facilitators and barriers to effective application. By successfully answering these research aims and questions, the divide between theory and practice can begin to be reduced, providing clarification for practitioners.

1.2 Research Questions

Research Question 1: What is the importance of a Constraints-Led Approach to elite netball coaching practice?

Research Question 2: To what extent do coaches recognise and utilise a Constraints-Led Approach in elite netball practice?

Research Question 3: What are the barriers and facilitators when implementing a Constraints-Led Approach in elite netball practice?

1.3 Structure

This paper is organised into five chapters, this first chapter discusses the introduction, inclusive of; rationale, research aims and research questions and is followed by chapters including literature review, method, discussion and conclusion.

Chapter two offers a comprehensive critical review of literature where the theoretical foundations of the Constraints-Led Approach and its underpinning foundations are explored, thus including ecological dynamics and dynamical systems theory. To offer a well-rounded and in-depth discussion of the Constraints-Led Approach and to ensure that a complete understanding of the approach and how it can be used to enhance athlete performance and inform coaching practice could be determined, this review engaged with prominent and up to date theory. This has been a key question within sports coaching which Light (2014) argues is yet to be suitably answered.

Chapter three outlines the method which includes paradigmatic approach, approaches to research methods, qualitative research methods as well as analysis, research design and ethics. To ensure the study had a strong methodological position, the research process and the tools and procedures necessary to collect and analyse data were considered and evaluated to identify the most valid and reliable methods of data collection. Newcombe et al., (2019) advocate that future research needs to take place out in the field at the heart of competitive sports performance and track learning over competitive cycles, seasons and years. Consequently, data collected as part of this study was obtained through real time, open and honest conversations with practitioners out in the field through semi-structured interviews and session observations. The data collection process sought to take place over a full competitive cycle and netball season from November through to July. This process considered the works of previous academic research as studied in the review of literature.

Chapter four includes all necessary findings with in-depth discussions of the results of this study. The discussion of findings addresses claims made in the literature review,

adding contextual depth and clarity in answer to the research questions of the study. In this chapter, results gathered formed themes which subsequently incited discussion. Information gathered from this study adds depth and richness to current work, supporting in the journey to bridge the gap between theory and practice. Overall, the results gathered can provide reference and support for other practitioners wishing to implement a constraints-based framework into their practice.

Chapter five draws deductions from the findings as outlined in chapter four, summarising key points made in relation to the objectives of the study in chapter one. The chapter provides a final critical reflection on the study and its contribution to literature and identifies areas which should be pursued in future research to ensure progressions continue to be made in this field.

2.0 LITERATURE REVIEW

The Constraints-Led Approach has gathered considerable interest within sports coaching research and for more than two decades, has informed the decisions of sports coaching experts, developing understanding of performance, skill and talent development in elite sport (Chow, Davids, Button & Renshaw, 2016; Renshaw et al., 2019; Renshaw et al*.,* 2012). Constraints-Led Approaches are beginning to have more influence on athlete development and practices at elite level (Renshaw et al., 2019). However, concerns have been raised regarding the lack of valid research on the effective implementation of the Constraints-Led Approach, which may have in turn halted the take up of the approach by practitioners (Renshaw et al*.,* 2019; Clark et al*.,* 2018*).* The Constraints-Led Approach incorporates both dynamism and complexity of human movement as a result of its theoretical origins within ecological dynamics and dynamical systems theory. To provide an academically rigorous study this review of literature will engage with these wider theoretical influences on the Constraints-Led Approach. This review of literature will explore and develop an in-depth insight into constraints and the wider theoretical position of the approach including discussions regarding its practical application. This review will explore the Constraints-Led Approach in relation to the founding research questions, hypothesis and methodology of the study.

2.1 Ecological Dynamics

Constraints-based pedagogy is predicated on ecological dynamics theory and incorporates key concepts from ecological psychology, dynamical systems theory, evolutionary biology and the complexity sciences (Adolph & Berger, 2006; Chow, Davids, Button, Renshaw, Shuttleworth & Uehara, 2009; Renshaw et al*.,* 2019).

Ecological dynamics offers a theoretical framework for analysing sport performance, it provides a means of understanding the complex systems that are present within performer-environment relationships, including the social and cultural biases evident within practice (Davids, Araújo, Villar, Renshaw & Pinder, 2013; Roberts, Newcombe & Davids, 2018; Rothwell, et al., 2020; Seifert & Davids, 2016). Within this framework the individual and the environment are considered directly relatable and mutually interdependent (Renshaw et al., 2012). From this understanding, human beings are multidisciplinary living systems of which each individual component plays their role as part of a much bigger system. The interdependencies and interactions involved in the performer-environment and the relationships that form are the fundamental component of this approach (Seifert & Davids, 2016).

2.1.1 Ecological Psychology

Gibson (1986) offers the concept of ecological psychology to ecological dynamics thinking, of which systems thinking is at the core. Systems thinking explores the continuous performer-environment interactions and seeks to analyse human behaviours in relation to performance environments (Seifert & Davids, 2016). Within systems thinking, human actions are considered to be made up of perceptual information gathered from information-rich environments that are dynamic and neither completely stable nor unstable (Davids et al., 2013; Wrisberg, 2007). Consequently, human behaviour cannot be understood without reference to the environment and this coupling of information and movement should be upheld at all times (Chow, Shuttleworth, Davids, & Araújo, 2020; Gibson, 1986). This concept is referred to as information-movement coupling and determines that to achieve set performance goals athletes rely on strong information-action couplings. Gibson (1979) stressed the idea

that this process is continually evolving as movement generates information which then in turn supports further movement. This concludes that there is a direct and cyclical relationship between perception and movement and is summed up by Gibson's (1979) statement: "We must perceive in order to move but we also must move in order to perceive" (pp. 223). Gibson's ideas imply that it is paramount for practitioners to understand the relationships that inform human movement if they hope in anyway to be successful in their practice. Within ecological dynamics, unstructured learning experiences which support aspects of athletic development that are not adult led are highly regarded, this includes activities such as play. Through play, many positive attributes can be developed such as creativity, leadership, autonomy, enjoyment as well as experiencing fun through physically activity. However, considerably more research in this area is required, specifically focusing on the ways in which these concepts could be utilised within programmes and approaches more widely (Chow et al., 2020).

2.1.2 Applied Ecological Dynamics in Competitive Sporting Environments

An important task for any coach is to ensure transferability of skills from one context to another for instance from a training or practice environment to that of a competitive performance environment. Competitive sport environments are a complex dynamical system composed of multiple, independent agents with highly integrated interactions, these environments demand successful skill execution yet the multitude of action possibilities upon a performer is vast (Renshaw et al., 2012; Chow et al., 2020*;* Chow et al., 2009). Successful movement patterns are dependent upon the coordination of countless interrelated, interconnected body systems that are interdependent on one another. For instance, within a sporting context, skills may require large degrees of

strength and speed whilst others require high levels of precision and stability. As relationships involved in skill execution can be influenced by the environment, the result will therefore depend how well the performer is equipped to interpret and react to the occurring constraints. In sports such as team games, the environment has more opportunity to influence and dictate the resultant actions as more open skills are required and thus more variables need to interact to produce successful skill execution. Many skills, particularly those within team games require performers to coordinate and control movements effectively and in sequence to produce functional, effective and efficient movement solutions, thus requiring precise timing and execution under competitive pressures. In team games, a multitude of decisions and actions occur within a very short time frame, therefore movements should represent this and cannot be automated and replicable but instead they should be subtly varied and precisely adapted to meet the needs and demands of the changing environment (Davids, Button & Bennett, 2008; Renshaw et al., 2012). For example, in invasion games an individual will need to recognise whether another player is free and available to receive a pass, considering a high number of other components such as the position of a defender and playing conditions before they deliver the action. When working as part of a team, individual players must work collectively to recognise and deploy the most suitable and appropriate tactical strategies in relation to the information supplied by the environment. As a result, it is important for these athletes to develop skills such as reactivity and decision making. In isolated self-paced closed skills, the environment has minimal effect on replication as the athlete holds all of the information necessary to establish and then produce an appropriate movement response. For example, a gymnastic holds all of the information necessary to produce a successful vault. Consequently, skilled performance can be defined as the ability of athletes to perform

actions by tuning into the changing informational constraints of the environment and acting in response to the information provided (Davids et al*.,* 2013).

2.1.3 Representative Learning Design

A study conducted by Renshaw, Oldham, Davids and Golds (2007) looked at the implications of different ecological constraints on premier league cricket batsmen, specifically the implications emerging from the use of a live bowler in comparison to a bowling machine. Results from the study advocated the need for training to be representative of the performance environment and stated that training should include key information sources that occur in competitive environments so that athletes can attune to the necessary stimuli and appropriately react to the environment (Renshaw et al., 2007). Chow et al., (2009) supports the findings of this study and concludes that to be successful in transferring learnt skills from practice to performance environments only activities that are representative of performance demands should be practiced. Athletes that are exposed to a diverse and rich range of affordances present within competition become attuned to the most reliable and relevant sources of information and thus they become better prepared to adapt their actions, make decisions, and respond in a skilful manner (Chow et al., 2020; Rothwell, Davids & Stone, 2018). Brunswik (1955) termed this representative design, latterly referred to as representative learning design. When training is not representative of the performance environment, practice can be useless providing athletes with irrelevant, uncontextualized and inaccurate information-specifying variables. Renshaw et al., (2007) found the use of bowling machines in cricket to be an example of ineffective training design as this practice method is not representative of a human bowler present in competition and therefore athletes attune to incorrect environmental cues. Renshaw

et al., (2019) similarly discuss the limited impact that unrepresentative learning designs can have, adding that practice designs should be representative of, but not identical to performance environments. This does not mean performers should only ever practice skills in a full-sided game, instead the coach should consider the performance environment and decide how representative they want it to be. The more a training environment can emulate a competitive performance environment, the more likely it is that skills learnt will transfer across and thus successful performance will result as desired. Using another example to demonstrate this concept, the way in which a games player sprints during an isolated running drill and the way in which that same player sprints within a competitive game context are not the same. Beek, Jacobs, Daffertshoffer and Huys (2003) stipulate that perceptual variables that remain too constant within practice are useless and should be avoided. Similarly, Clark et al., (2018) discuss the ways in which the breakdown of skills into bite-size movement sequences evidently allow for easier training towards a 'correct' or 'perfect' technique however, this focus often neglects the importance of the affordances gained from training in a representative environment. Instead, aspects of performance should be constrained in an affordance landscape to invite specific actions from performers (Chow et al., 2020). This process should be designed with the individual in mind being specific to their needs, motivations and goals. Therefore, to acquire knowledge variability is essential, athletes should be encouraged to continually and repeatedly construct their own slightly differing and personalised solutions to emerging scenarios (Chow, 2013; Chow et al., 2009). Across the current coaching landscape, it is evident that isolated practice is extremely common with many of these ineffective training examples utilised consistently within practice (Renshaw et al., 2007). Although, coaches may see the athletic development of athletes in circumstances where practice

designs contain limited or no specifying information, the transferability of their skills from a training environment to a performance environment will be greatly inhibited (Chow et al., 2020). These examples show that there are major inconsistencies between what is recommended in theory and what is currently being delivered in practice.

The concluding messages from research surrounding ecological dynamics determines that the environment is a major influencing factor on human movement. To disregard ecological dynamics would ensure an unrepresentative learning design and consequently develop athletes who are unable make intelligent informed decisions (Chow et al., 2009).

2.2 Dynamical Systems Theory

Dynamical systems theory is a viable multidisciplinary theoretical framework which explains the process of human movement, it effectively links behaviours to outcomes due to its process-oriented rather than product-oriented nature (Gréhaigne & Godbout, 2014; McGarry, O'Donoghue & Sampaio, 2013). Dynamical systems theory offers a way of understanding the behaviour of the neuromuscular system, whereby instead of being viewed as machines, athletes are thought of as complex dynamic systems that are self-organised in nature (Kelso, 1999; Kurz & Stergiou, 2004; Torrents & Balagué, 2006). Dynamical systems theory seeks to understand sports performance from a complexity sciences perspective in which, the behaviour of individual athletes is considered an emerging phenomena as individuals self-organise under interacting constraints to respond to a scenario (Davids, Hristovski, Araújo, Balagué Serre, Button & Passos, 2015). Consequently, behaviour is considered to emerge through a process of self-organisation which is shaped by interacting constraints of the individual, task

and environment (Davids, et al., 2008). For Chow (2013), it is a necessity for any practitioner to be competent and well versed in these dynamics of sport in order to have any chance of successfully implementing any nonlinear pedagogic approach. To truly understand the concept of the Constraints-Led Approach, it is necessary to understand dynamical systems and the self-organising process of human movement.

Dynamical systems theory views each learner as a complex system and argues that human behaviour is reliant on the information available to the learner (Chow et al., 2009). From a dynamical systems perspective, the human movement system is a highly intricate network of co-dependent sub-systems that are made up of interacting components (Glazier*,* Davids & Bartlett, 2003). Actions therefore occur as a result of the self-organization of interacting co-dependent sub-systems, thus meaning that no action is isolated but instead actions are influenced by interacting constraints. In highly complex system such as the human mind or body all sub-systems affect each other in an extremely intricate way, thus making them interdependent as isolating one element would result in a very different action occurring (Davids et al., 2008; Clarke & Crossland, 1985). Due to the magnitude of ever-changing constraints involved in the process of human movement it is necessary to consider the mutuality of the performer and the environment, as well as the individual and team constraints and their influence on performance (Renshaw*,* Davids, Shuttleworth & Chow, 2009). Dynamical systems theory considers the specific relations between the environmental and individual conditions involved in human movement processes. According to this theory, an individual spontaneously explores patterns and selects them based on the rare limiters and control parameters available in a given context. Rare limiters refer to the specific relations limiting the natural selection process, and control parameters are the

relations facilitating a selection (Hutzler, 2004). An example of this process taking place within practice can be seen from Burton, Greer & Weise-Bjornstal's (1993) study which explored the dynamic relations of body and ball conditions in relation to the production of a desired movement solution in throwing and catching. Results of this study found that the relationship between ball diameter and hand size can be considered a control parameter (Hutzler, 2004).

2.2.1 Self Organisation

Two of the main concepts of dynamical systems theory are identified by Glazier and Robins (2013) and include Self-Organisation and Constraints. The concept of constraints will be discussed in more depth and form the latter half of this review. Self-organisation refers to the emergence of a structure or pattern that enforces the adjustment and adaptation of system components without specification from an intelligent executive or external regulating agent (Renshaw et al*.,* 2019; Glazier & Robins, 2013; McGarry et al., 2013). Self-Organisation refers to the process in which a pattern at the global level of a system emerges solely from interactions at the lower level (McGarry et al., 2013) The concept of self-organisation was introduced to movement science by Kugler, Kelso and Turvey in 1980, however, in the early years it was generally poorly understood. More recently however, self-organisation has become firmly established as an overarching and guiding principle for investigating human behaviour, although there is still much to be done to develop it as a valid concept (McGarry et al., 2013; Newell & Jordan, 2007; Robertson, Cohen & Mayer-Kress, 1993). As human movement systems are constantly open to continuously changing environments, in order to guide and shape emergent pattern formations it is necessary for self-organisation to encompass and embrace competing and

cooperating constraints (Kugler, 1986; McGarry et al., 2013; Newell, 1986). It is evident that high levels of self-organisation are necessary within all sporting contexts but potentially some more than others, for instance in team games where decision making is paramount and successful strategic and tactical advantage are sought after (Gréhaigne & Godbout, 2014). Rules implemented within game contexts act as constraints as they encourage athletes to self-organise as constraints guide and regulate players actions allowing the exploration of varied solutions to the confinements of the game. To be most effective, practitioners should encourage self-organisation to direct a learner's attention within the environment, informing them of where and what to identify whilst not being overly prescriptive (Renshaw et al., 2019). To conclude, it is apparent that information available within the environment leads to learning as a result of the self-organisation of human behaviour under interacting constraints. Consequently, practitioners should accommodate this premise and design environments accordingly.

2.2.2 Understanding Dynamical Systems in Practice

In practice, players and practitioners alike are faced with constantly changing constraints, therefore understanding dynamical systems theory could be of huge benefit and have a major influence in practice if understood correctly. Constraints may emerge as a result of changes occurring within the individual athlete, task or performance environment, these may include aspects such as growth, climate or the social and cultural aspects of performance. Where changes in constraints occur, instabilities in movement patterns are likely to follow and thus may force a re-organisation of the system forcing the emergence of new behaviours. From the dynamical systems viewpoint, instabilities are classified as an important element of

learning, allowing athletes to act not as machines but as thinking, complex systems (Renshaw et al., 2009). Glazier et al., (2003) discuss dynamical systems theory in practice in their study conducted on cricket bowlers which sought to understand the effects of a variety of bowling techniques on the body. Findings from this study by Glazier et al., (2003) showed that a mixed bowling technique is strongly related to lower back injury as a result of the counter-rotation of the shoulder axis relative to the hip axis during the delivery stride. This information can be extremely useful for practitioners who can consequently amend their practice to minimise the risk of injury and thus avoid the damaging implications player injury has on the wider team.

Overall, these discussions illustrate how essential and invaluable it is to consider the wider theoretical basis of the Constraints-Led Approach. As with any nonlinear pedagogic approach, these approaches are based upon the premise that human movement is a nonlinear dynamical system and therefore these theoretical underpinnings should be consulted (Renshaw et al., 2009).

2.3 A Constraints-Led Approach

The Constraints-Led Approach has emerged as a viable theoretical approach to pedagogy for coaches and teachers alike (Renshaw & Chow, 2018). Practitioners are continually looking to improve performance through the optimisation of physical, technical and cognitive-based training regimes yet, to date, attention has largely focused on physical training alone (Clark et al., 2018). The Constraints-Led Approach offers a well-promoted framework for understanding how humans acquire and organise movement actions to successfully take part in and provide skilled performances in sport and exercise contexts (Araújo, Davids, Bennett, Button &

Chapman, 2004; Davids et al., 2008; Handford, 2006; Renshaw, Chow, Davids & Hammond, 2010). The Constraints-Led Approach articulates that individuals self-organise to generate functional movement solutions through the interaction of constraints (Renshaw et al., 2010). The approach which first originated from the works of Newell (1986) offers a Grand Unified Theory to explain how athlete's function during sport performance (Glazier, 2015). Although a number of different models have been suggested in literature over the years, the most widely cited and implemented model is that of Newell's (1986) model which has since been updated by Newell and Jordan (2007). Original work of Newell (1986) was based upon the dynamical systems model of human movement from Newell's Model of Interacting Constraints. The model proposed identifies three core interacting categories of constraints: Task, Individual and Environmental. Through the interaction of these three categories of constraints, a learner will go through the process of self-organisation, modifying their behaviour in attempts to generate effective and successful movement solutions to problems (Renshaw et al., 2019). The idea that there is no centralised controller and that behaviour is not prescribed but rather individuals can self-organise is a key feature of a Constraints-Led Approach. Through the manipulation of constraints in practice an athlete can find their own effective movement solutions to emerging scenarios, however the movements that emerge are bound by the ever-changing constraints that act upon the performer. More recent work in this field has focused on integrating the ideas of ecological psychology, with the works of Gibson (1986) and Brunswick (1956). Gibson (1986) determines that behaviour is regular, without being regulated as the rules that govern behaviour are not like laws enforced by an authority, instead actions are controlled by information. This framework of environment, task and individual constraints provide a means of understanding how co-ordination patterns emerge

during goal-directed behaviour by channelling and shaping the emergent patterns of coordination and control that underpins human movement (Newell, 1986; McGarry et al., 2013; Renshaw, Davids & Savelsbergh, 2010). In terms of control a constraint is simple and efficient because it makes the most effective use of the dynamical context without falling into the pitfalls of being just a mere description of a given context (Kugler, 1986). To understand the Constraints-Led Approach in its entirety it is first necessary to understand the three categories of interacting constraints in more detail.

2.3.1 A Constraints-Led Approach Framework

Task constraints are usually more specific to performance contexts and include specific performance goals, rules of a specific sport, performance surfaces and boundary markings. The functional movement patterns of an individual performer may vary, even within seemingly highly consistent activities such as Gymnastics, as task constraints differ from performance to performance. McGinnis and Newell (1982) proposed that task constraints are not physical but instead implied that they are constraints which must be met within certain boundaries or within a range of boundaries to produce a successful action. For example, in badminton an individual can use any movement solution they like to execute a serve as long as the shuttle travels diagonally across the net to their opponent, is underarm and below the server's waist. Timmerman, Farrow and Savelsbergh (2017) sought to study the effect of manipulating task constraints on game performance in youth hockey. Results from this study found that the reduction of the number of players on the pitch led to an increase in the number of successful passes, skilled actions, and high and low pressure instances (Timmerman et al., 2017). These results are consistent with studies conducted in both basketball and football and confirm that successful performance

outcomes can be gained from utilising task constraints such as conditioned games with smaller sided teams as this creates more opportunities for the execution of key skills (Casamichana & Castellano, 2010; Klusemann, Pyne, Foster & Drinkwater, 2012; Timmerman et al*.,* 2017). Timmerman et al., (2017) also suggest that such conditions provide individuals with more opportunities to attune to key affordances as they are able to control information movement couplings to create effective movement solutions. Findings from this study and others alike suggest that constraints can guide movement and positively shape athlete decision making.

Individual constraints, also known as organismic or performer constraints, are those constraints that reside within the boundaries of individual movement systems and refer to characteristics of individual performers (McGarry et al*.,* 2013). Individual constraints can be categorised into structural constraints, which tend to be physical and remain relatively consistent over time and functional constraints, which are typically either physiological or psychological and vary considerably over time (McGarry et al*.,* 2013). Individual constraints include factors such as body size including; height, weight, and limb lengths, fitness including; strength, speed, aerobic capacity, and flexibility, mental skills including; concentration, confidence, emotional control and motivation, perceptual and decision-making skills including; recognising patterns of play, anticipating by reading the movements of opponents and personality factors including; is an individual a risk-taker, or do they like to play it safe (Renshaw et al., 2010). Perhaps the most prominent and influential organismic constraint that can shape movement coordination is the intentions of the performer (Kelso, 1995).

Environmental constraints are external to the movement system and include both physical and social environmental factors. Physical environmental constraints include factors such as: gravity, temperature, natural light and terrain. Social environmental constraints can include cultural norms as well as family support networks, peer groups, spectators and societal expectation. Gravity is a key physical environmental constraint that is experienced by all athletes and influences movement co-ordination in all tasks. Likewise, spectators provide an influential environmental social constraint during sport performance, creating concepts such as home-away advantages (Renshaw et al., 2010). It is necessary to consider that not everything is always a constraint, for instance mid-level wind is not necessarily an environmental constraint in hockey as it would be extremely unlikely for mid-level wind to affect the game. However, the same environmental constraint would have considerable effects in football, altering the available movement solutions, forcing a performer to consider playing a shorter less aerial game. Newell and Jordan (2007) modified the definition of an environmental constraint to include any physical constraint beyond the boundaries of the organism. Consequently, any equipment, tools or apparatus which were classified in Newell's original (1986) definition as task constraints under this new definition may now be classified as environmental constraints.

The Constraints-Led Approach is a broader framework than many other non-linear pedagogic approaches and is in many instances theoretically richer, allowing opportunities for performers to prepare effective movement solutions to problems in high intensity, game-like situations (Chow, 2013; Chow et al., 2009). If skill acquisition is to be considered the development of a functional relationship between the performer and their environment then the task, individual and environment are inextricably linked

and continuously influence each other, interacting to shape behaviour (Chow, 2013; Zelaznik, 2014). On the topic of skill acquisition, many have disregarded the term and argued that the term skill adaptability is better suited when discussing the results that emerge from the implementation of a Constraints-Led Approach. This argument is founded on the premise that the process does not necessarily require the individual to acquire a new skill but more so to adapt the skills that they have already developed to a range of context specific environments (Araújo & Davids, 2011; Renshaw et al., 2020).

2.3.2 Practice Design

When designing practice, it is necessary for practitioners to have a clear understanding of constraints and the impact they can have on performance so they can provide effective practice for their athletes (Timmerman et al., 2017). The risks of overloading athletes by over-constraining and under-constraining the environment should be carefully considered and under no circumstances should practitioners introduce rules or restrictions to force desired outcomes (Renshaw et al., 2019). It should be acknowledged that constraints interact whether intended or not and as a result, some practitioners have been manipulating constraints, using aspects of a Constraints-Led Approach without being aware of the theoretical context behind it (Newell, 1986; Renshaw et al., 2019). If, even albeit unintended, the continual re-organisation of behaviours to adapt is already happening this in turn could affect training design if not adequately accounted for, thus resulting in the possible ineffective implementation of the approach. This issue of appropriate use and effective implementation has been discussed in academic literature and the idea of practitioner

misinterpretation and lack of understanding of learning processes has been considered to be one of the most prominent critiques of the approach.

2.3.3 Interacting Constraints

Through the interaction of constraints disturbances in the motor system occur and cause instability thus forcing a re-organisation of the movement system resulting in new and improved movement solutions to a problem (Renshaw et al., 2019). Within practice, the introduction of passive defenders in a game context offers some instability but it is when those passive defenders become active that really mimics a game context of an opposing team in pursuit of team success and thus, athletes are able to construct their own relevant solutions to the issues that arise within the game. Even challenging the most skilled performers to produce the same movement in a slightly different way can have huge benefits and marginal gains on performance as minor alterations made to performance enable athletes to become more efficient and effective than before. The environment created through the employment of a Constraints-Led Approach should be representative of competition involving real game and context specific scenarios that are dynamic and variable (Chow et al., 2009). If practice environments are not varied in nature or representative of competition, then performers may respond with ineffective movement solutions and thus display poor performance. To avoid this pitfall, Bernstein (1967) advocates ‘repetition without repetition’ thus allowing athletes the opportunity to adapt desired skills and apply these skills within a multitude of differing game like environments. During this process athlete’s should be placed in dynamically varying contexts where they have to repeat the problem solving process to find their own solutions to given tasks. Without Bernstein’s (1967) notion, athletes would have minimal opportunities to

adapt their actions and reorganise to be able to achieve their goals (Renshaw et al., 2019).

2.3.4 The Learning Process

One of the fundamental premises of a Constraints-Led Approach is the deliberate move away from technical development to problem-based learning processes (Barrows 1986; Tan, Chow & Davids, 2012). Coinciding with its constructivist nature, a Constraints-Led Approach advocates that there is no ideal way in which to perform a technique or skill (Chow et al., 2009; Quay & Stolz, 2014). The process should be specific to the athlete and scenario and depend on the constraints at hand. This is much unlike many of the claims made in traditional skill-based pedagogy. Traditional methods typically follow the same format of a very prescriptive warm up and cool down that are both usually unrelated to the goals of the session in any way, a decontextualized skills based practice, followed by a generic full-sided game (Renshaw et al., 2019). Coaches that embed their practice in traditional methods tend to provide highly structured practices and design tasks that learners explore under narrow constraints and in isolation, thus ensuring that athletes can repeat the 'perfect' technique or desired movement pattern (Renshaw et al., 2019). Practicing skills in this way fail to reflect competitive, real-life sports contexts and consequently encourages athletes to develop irrelevant solutions to problems as the coupling of information and movement become detached. Even elite practice often involves breaking down deeply learned complex movement patterns in attempts to achieve the 'perfect' technique, this can be extremely damaging to the athlete, producing negative psychological effects and instead time should be spent productively, seeking ways to make the performer more adaptable (Renshaw et al., 2019). A clear example in netball practice

can be seen when athletes are required to conduct static passing at low intensity with no defensive pressure. Decomposing a task in this way provides minimal environmental information and should be avoided for successful performance (Renshaw et al., 2019). As a result, athletes remain unable to adapt and to make decisions for themselves. Heft (2003) argues that athletes knowing when to use an available affordance is perhaps just as important as knowing how to use it. If used appropriately, a Constraints-Led Approach can develop autonomous intelligent performers who are able to understand their own performance as well as think and make decisions for themselves. Under this approach athletes are provided with plenty of opportunities to adapt their actions in a variety of different performance environments so that they are challenged to repeat the process of problem solving (Renshaw et al., 2019). A Constraints-Led Approach encourages practitioners to create individualised problems and challenges for their athletes which reproduce key aspects that would likely be experienced in a performance environment. Renshaw et al., (2015) advocate a Constraints-Led Approach and state that it is an effective theoretical framework from which researchers, teachers and coaches alike can develop effective learning designs and practices. However, poor application of a Constraints-Led Approach can, as with the poor application of any approach, create ineffective learning designs which provide no benefit or enhancements to learning. Therefore, practitioners should take time to understand the theoretical foundations and underpinnings of the approach, as well as dedicate time to planning and gaining quality delivery experience implementing the approach. Only then can practitioners begin to answer questions such as What do I want to change in athlete performance? How can I constrain the environment to encourage the performer to find a better solution?

Research has proposed that the process of learning is not linear and thus coaching approaches should reflect this (Chow & Atencio, 2012; Tan et al., 2012). From a constraints-based perspective, the learner is described as a non-linear, open dynamic system and constraints are considered the influential factors within the learning environment that guide the acquisition of movement co-ordination and control (Davids, 2010; Newell, Broderick, Deutsch & Slifkin, 2003). Constraints-based pedagogy focuses on the ways in which decision-making can be constrained and the influence this has on the subsequent actions performed by an athlete. By understanding which affordances are important within a given context, practitioners are able to manipulate key constraints to support athletes in their search for effective movement solutions (Roberts et al., 2018). Within the Constraints-Led Approach it is recognised that learners should be given the opportunity to create individualised solutions and thus take ownership over their own learning and performance (Chow, 2013). Under this approach, actions are not caused by constraints, but rather the performer comes up with their own actions via the internal process of self-organisation. Constraints should be considered not as boundaries, limitations or restrictions but rather a means of shaping or guiding the organisation of the degrees of freedom of a complex adaptive system. Coaches can manipulate the choices available to athlete's to focus their attention and assist them in their pursuit of a successful movement response. Consequently, the Constraints-Led Approach can streamline the available responses to an athlete and make coming up with suitable resolutions to problems experienced easier. However, to gain these much-desired results the Constraints-Led Approach should involve principled practice design which has direction, planning and considers the task, environment and individual.

Renshaw et al., (2010) discuss constraints in relation to stages of learning and coin the early learning stage the coordination stage where completion of a given task can be done at a basic level, at this stage individuals are challenged with harnessing available motor system degrees of freedom to complete a task. As performers become more experienced, they move through to the control learning stage where performers have the flexibly to adapt a stable co-ordination pattern for use in changing performance environments, from this stage some will move to become expert performers where they can vary the degrees of freedom used in a coordination pattern in an energy-efficient, creative manner to fit changing circumstances in dynamic environments (Davids et al., 2008; Newell, 1986; Renshaw et al*.,* 2010). Savery and Duffy (1995) also discuss constraints in relation to the process of learning and conclude that what is learned cannot be discussed separately from how it is learned.

2.3.5 The use of a Constraints-Led Approach within Invasion Games

Research into the manipulation of constraints from an invasion, team sports perspective has largely focused on understanding how skills such as coordination emerge in competitive performance. There have been a number of studies which have focused on manipulating constraints in basketball, yet constraints manipulated focused heavily on the manipulation of task constraints alone (Arias, Argudo & Alonso, 2012, 2009a, 2009b; Chase, Ewing, Lirgg & George, 1994). Due to the dynamic nature of team games there are more challenges for practitioners when implementing the Constraints-Led Approach, as there are many more possible responses that may emerge as a consequence of the dynamic interactions that occur (Chow, 2013). The actions of performers can be constrained within a game context through co-positioning and re-aligning teammates and opponents (Renshaw et al., 2019; Davids et al., 2015).

Similarly, manipulating rules, equipment and playing areas can create a modified game setting where certain tactical concepts can be tried and tested and, in some instances exaggerated. Within a game context, constraints are forever emerging and changing as differing scenarios within the game appear, including changes in opposition strategies and tactics may occur as well as changes in the environment such as the quality of playing surfaces due to weather conditions. By creating modified game settings, practitioners can change the perceptual information available to a performer, encouraging them to engage in exploratory behaviour and co-adapt, collaborate and coordinate to achieve their goal. From this design, the performer can attune to key perceptual information sources such as their position in relation to the playing area, their team-mates and their opponents (Beek et al*.,* 2003). Morley et al., (2016) demonstrate the performance benefits that can emerge from the implementation of modified games, providing comprehensive comparative data from actual performance settings.

2.3.6 Decision Making, Problem Solving and Creativity

It is clear the more movement skills an individual possesses the more choices that individual has to be able to successfully respond to a problem with an appropriate movement solution (Hutzler, 2004). However, if attention is only directed at developing a range of high quality movement skills, then an athlete will undeniably struggle to make the high quality choices which are required for successful performance. Cognitive abilities such as decision making are considered integral to goal-directed behaviour and regarded as the highest level of choice due to the masses of knowledge they require (Araújo, Davids & Hristovski, 2006; Bouffard & Wall, 1991). Hutzler (2004) discusses the Constraints-Led Approach in relation to athlete choice and decision

making, concluding that constraints offer a concept for understanding the provisions and restrictions on choices. Increasing an athletes capacity to make decisions and to be aware of the consequences resulting from those decisions, therefore becomes crucial. As a result, decision making goes beyond simply making a preferred choice, decisions can be ranked and ordered in terms of importance. Hristovski, Davids, Passos and Araújo (2012) highlight the importance of creativity and problem solving, these concepts along with the decision making process are yet to be fully explored in relation to the Constraints-Led Approach. Decision making, problem solving, and creativity commonly feature in sessions embedded within constraints-based pedagogy with constraints manipulated to evoke higher levels of these concepts.

2.3.7 The Coach-Athlete Relationship

The role of the coach within the Constraints-Led Approach should not be passive or hands off, instead the coach should direct learners attention, not prescribing in anyway but facilitating and encouraging the learning process (Renshaw et al., 2019). The performer and coach should work together to co-create sessions, developing a shared understanding of the intentions and desired outcomes of the practice (Renshaw et al., 2019). A positive coach-athlete relationship should form part of an effective learning design in which goals, motivations and values are explored and discussed in an open and honest way. Within this, the influence of the wider socio-cultural environment should be considered as this forms much of the DNA of a sports team or organisation (Renshaw et al., 2019). When designing the learning environment, it is paramount that mistakes should be considered part of the learning process and not punished in any way as advocated by the very foundations of the Constraints-Led Approach.

2.3.8 Barriers and Facilitators to a Constraints-Led Approach

Chow (2013) highlights one of the most prominent barriers to a Constraints-Led Approach, which surrounds the challenges practitioners face in managing the intricacies and dynamism that is present within nonlinear pedagogy. Managing these intricacies, can both overwhelm and perplex even the most experienced of practitioners, therefore, this can prove a very challenging barrier specifically for practitioners who have minimal resources or who are just starting out in their coaching journey. Clark et al., (2018) add that coaches often lack support to experiment with these types of training methods and consequently this barrier is amplified. Renshaw et al., (2015) support Chow's (2013) conclusion and determine that a misinterpretation of the approach has emerged and a consequent apprehension towards the adoption of the approach within practice, as a direct result of these barriers. With little advice offered from current literature, practitioners remain unsupported and unaware of how to successfully implement a Constraints-Led Approach, and how they can use the approach to achieve their desired and intended outcomes (Roberts et al*.,* 2018). Roberts et al., (2018) remain one of few studies that have investigated the intricacies involved in the application of a Constraints-Led Approach, and who have attempted to provide some clarification for practitioners. Consequently, it appears that many practitioners use aspects of constraints-based pedagogy, but they never fully immerse it within their practice.

Alternatively, practitioners should consider whether a Constraints-Led approach is compatible with their own coaching philosophy and spend time planning, developing and integrating the approach into their practice. Support from the whole club including the coaching team and wider support team is also crucial and can facilitate the

effective implementation of the approach. Weaving the concepts of constraints-based pedagogy into the club ethos and values can encourage the core principles and underlying theoretical foundations of the approach to drive club actions and guide day-to-day decision making processes. Practitioners should utilise their own ideas to create their own innovative approaches that are directly applicable to their own practice (Renshaw et al., 2019). For effective implementation, practitioners must firstly understand the; relevance, usefulness, purpose and rationale of their design including the time and place for manipulating constraints. Although practitioner experience may to some degree help to facilitate the effective implementation of a Constraints-Led Approach, developing a sound understanding of the theoretical underpinnings of the approach may also provide considerable benefit to practitioners.

2.3.9 Criticisms of a Constraints-Led Approach

Whilst the benefits of the Constraints-Led Approach are clear, the Constraints-Led Approach has also been faced with academic critique leading to hesitancy from practitioners. One criticism emerges from the premise that constraints only promote the understanding of how a skill is acquired and how behaviour occurs and does not provide a framework for designing programmes and thus there is an emerging gap between theory and practice (Chow, 2013). Intertwined within constraints-based pedagogy is a huge pressure on the practitioner to be able to identify coachable moments. For many practitioners developing game awareness and tactical understanding without missing technical instruction and feedback is difficult and, in many instances, coaches are missing out on this vital element (Chow et al., 2009). Chow et al., (2009) conclude that many of the challenges associated with constraints-based pedagogy stem from practitioner misunderstanding and a lack of attention

towards the underlying theoretical principles. Renshaw et al., (2019) have begun to make developments offering the first theoretically rich guide to support practitioners in adopting and implementing Constraints-Led Approaches, focusing specifically on the implementation of constraints within; hockey, track and field and golf. However, for many sports, there still remains limited guidelines or informational support on what implementing a Constraints-Led Approach really looks like in practice. Renshaw et al., (2019) do go on to provide step-by-step planning resources which incorporates Whitmore's (2017) GROW principle thus enabling a coach to begin to develop their own Constraints-Led founded sessions. However, with limited examples of how the Constraints-Led Approach can work in a given coaching context and near non-existent support in dealing with common misconceptions accompanied by apprehension towards the approach may become, in the long term, the downfall of the approach.

It has long been argued that non-linear based pedagogic approaches are leading to a development of overly passive practitioners under the misconception that the game is the teacher. It should not be forgotten that the role of the practitioner in Constraints-Led pedagogy is as a facilitator who is responsible for designing learning activities that provide meaningful and real opportunities for individuals to self-organise and co-adapt to changing constraints resulting in the creation of meaningful and functional responses to problems (Renshaw et al., 2019; Renshaw et al., 2015*;* Chow et al., 2009). At the heart of this should be discussion and questioning. Roberts et al., (2018) therefore believe the practitioner should be thought of as an environmental architect. Overall, this misinterpretation has led to practitioners implementing a hands off approach that lacks purpose and any form of targeted development (Renshaw et al., 2019).

Newell (1986; 1989), Newell and Jordan (2007) and Newell, Van Emmerik & McDonald (1989) argue that the unpredictable results that transpire from the manipulation of interacting constraints, coupled with the fact that constraints can be interpreted differently by different performers leads to an extremely erratic and unpredictable approach. This argument of unpredictability is further ignited by critics who argue that the approach only identifies the source and not the actual nature of the impinging constraints, therefore drastic changes to performance can occur even from the smallest or most minor manipulations of constraints. The fact that some constraints are clearly more influential than others can further contribute to unwanted performance modifications, this can then transpire, becoming uncontrollable and detrimental to overall performance objectives. Consequently, some question the usefulness of the Constraints-Led Approach and argue that the approach is extremely limited.

From this discussion it is apparent that there is currently insufficient evidence to support this approach and to advocate whether the manipulation of constraints has any real benefit to individuals (Clark et al., 2018). Renshaw et al., (2020) speak more specifically about the use of a Constraints-Led Approach in elite practice, similarly, suggesting that due to the lack of empirical evidence, the usefulness of a Constraints-Led Approach within elite sports coaching environments remains inconclusive. Recent research in this field has sought to further understanding in this area, attempting to give the adoption and implementation of constraints-based pedagogy within elite practice more academic traction. For example, a study into elite baseball conducted by Gray (2018) focused on improving batting technique over a six week programme, involving two control groups, one of which were exposed to a constraints-based

approach. Results from the study, found that the group exposed to the Constraints-Led Approach were most effective in achieving their intended outcomes (Gray, 2018). However, although this research is promising, there currently still remains insufficient evidence in this area to make a well balanced judgement on the usefulness of a Constraints-Led Approach in elite practice. Evidence from the study conducted by Clark et al., (2018) supports the judgement made by Renshaw et al., (2020) and highlights that the usefulness of constraints-based pedagogy in elite practice cannot be determined, as only three studies have actually involved skilled athletes in elite performance contexts.

Overall, it is evident that as with all coaching approaches, the Constraints-Led Approach can be employed both successfully and unsuccessfully (Roberts et al., 2018). Questions and concerns raised around implementing a Constraints-Led Approach in practice seem to be most common and remain largely unanswered. Questions regarding whether those practitioners delivering the approach truly understand the intricacies of the approach at all, also appear common and largely unanswered. In comparison, the Teaching Games for Understanding and Game Sense models have, to a more considerable extent, been successfully implemented and developed within practice (Thorpe, 2005), however, this is not the case for the Constraints-Led Approach as there remains a major challenge with the uptake of the approach (Renshaw et al., 2015). Without answers to the critique as outlined above, there is likely to be little change in the uptake of the approach and for many, the Constraints-Led Approach will continue to pass practitioners by with little influence on practice design.

2.3.10 Response to Critique of a Constraints-Led Approach

In order to ensure that the true intentions of a Constraints-Led Approach are met, practitioners need to provide carefully designed environments adhering to the underpinning theoretical perspective of ecological dynamics and dynamical systems theory. Roberts et al., (2018) support this notion and add that it is the understanding of the philosophical and theoretical underpinnings of the approach, coupled with support and information on successful design of learning environments that will likely facilitate validating the Constraints-Led Approach. It is evident that in some instances, constraints-based pedagogy is being successfully utilised within practice (Chow et al., 2009). For example, Renshaw et al., (2019) add comment on the successes witnessed within team invasion games such as football. Some practitioners have been using variants of a Constraints-Led Approach within their work without being aware that the approach exists, therefore there may be many more practitioners using the approach than initially thought (Renshaw et al., 2019).

A systematic review by Clark et al., (2018) summarised evidence which supported or rejected the use of a Constraints-Led Approach within training interventions. Results from this review found that nearly three quarters of studies reported a positive effect in skill acquisition following the manipulation of constraints (Clark et al., 2018). Consequently, Clark et al., (2018) concluded that this was sufficient evidence to confirm that Constraints-Led training has a greater benefit for technical skill development compared to more traditional training regimes. This is one of few examples of a response to critique that provides evidence in support of the application of the Constraints-Led Approach. However, Newcombe, Roberts, Renshaw and Davids (2019) reported a number of issues with this study that need to be further

addressed. The biggest criticism Newcombe et al., (2019) posed, stipulated that future research needs to take place out in the field at the heart of competitive sports performance and track skill learning over competitive cycles, seasons and years. Longer duration studies have a higher degree of validity and mimic real-life scenarios to a greater extent than shorter ones, as they provide participants with adequate opportunity to learn and develop. In summary, it is evident that there are attempts being made to respond to the critique facing the Constraints-Led Approach, however there is still much work to be done in making it a viable and credible approach.

2.4 Chapter Summary

Overall, advancements in research need to consider the application of a Constraints-Led Approach in practice and it's wider theoretical foundings in ecological dynamics and dynamical systems theory. It is evident that theoretical clarity has been established from the extensive literature in this area, however there is still a significant sum of work required to establish the same clarity to facilitate effective implementation (Chow et al., 2016; Davids et al., 2008; Handford, Davids, Bennett & Button, 1997; Renshaw et al., 2009; Roberts et al., 2018). Consequently, future studies should observe the application of the Constraints-Led Approach in real coaching contexts, hold the role of the practitioner at the forefront and involve real discussions with those individuals who are affecting the development of current and future athletes. Studies of this nature can begin to challenge some of the misconceptions regarding the Constraints-Led Approach to really uncover why, for many there has been no real influence on practice design. More in-depth discussion surrounding the implementation of this approach, with a solution orientated focus to challenges faced can reap major advancements in this area. As a result, this study will seek to gain an

understanding of what application of the Constraints-Led Approach really looks like in practice by reporting on observations and conversations with practitioners. When making methodological considerations, this study will consider the works of previous academic research as is considered in this review of literature.

This critical review of literature has determined the importance of a Constraints-Led Approach to coaching practice. Discussions in this chapter clearly develop a critical understanding of the approach, highlighting the subsequent impacts on practice. This review can provide substantial support to the entirety of this study, adding greater depth and contextual clarity throughout. Overall, the literature reviewed within this chapter provides substantial evidence in answer to research question one: What is the importance of a Constraints-Led Approach to elite netball coaching practice?

3.0 METHOD

This chapter will consider the researcher's general approach, focusing on the research process and the tools and procedures necessary to collect and analyse data (Leedy & Ormrod, 2010; Babbie & Mouton, 2008; Mouton, 2001). The need to seek out and utilise appropriate methodological techniques that are representative of the nature of the phenomena being studied is paramount. Consequently, this chapter will discuss the philosophical assumptions and design strategies underpinning this study, with considerations made to the research paradigm, methodological position, methods, research design and ethics.

3.1 Research Paradigms: The Wider Research Approach

All research is based on a set of underlying philosophical assumptions, these assumptions dictate what constitutes valid research and signifies which research methods are most suitable (Thomas, 2010). Research is organised by an underpinning paradigmatic approach, this governs the assumptions, beliefs, norms and values of research, providing a set of philosophical assumptions about the nature of reality (ontology) and how this knowledge can be gained (epistemology) (Mallet & Tinning, 2014; Maxwell, 2005). Guba and Lincoln (1994) and Lincoln and Guba (1985) add that a paradigm should comprise of four foundational elements rather than just the two outlined by Maxwell (2005), adding methodology and axiology. The position adopted within these four elements differentiates the paradigmatic approaches from each other. To carry out effective and efficient research it is necessary for the researcher to be aware of the paradigmatic approach, underlying methodologies and methods in which they operate (Mallett & Tinning, 2014; Cibangu, 2010). Guba and Lincoln (1989) and Pocwardowski, Barott and Peregoy (2002) argue that researchers

should explicitly state and discuss paradigms to critically assess the value and contribution they provide. If this process does not take place then the research will lose some of its context and meaning.

Within sports coaching research, three paradigms have been explicitly utilised; positivism, interpretivism and critical theory (Mallet & Tinning, 2014). The positivist paradigm is common within the natural sciences, it explores cause and effect relationships in reality and assumes the ontological position that reality can be measured through quantitative methods (Kivunja & Kuyini, 2017; Mallett & Tinning, 2014). Within sports coaching research this approach is largely utilised to predict and control behaviour and to observe and measure practitioner behaviour. From an ontological perspective, positivists advocate a degree of dualism where the mind and world are completely separate, implying that meaning exists independently of consciousness (Sparkes, 1992). Positivist epistemological assumptions argue that there is a single objective reality (Carson, Gilmore, Perry & Gronhaug, 2001; Cohen, Lawrence & Morrison, 2000; Hudson & Ozanne, 1988). It is assumed that the positivist researcher is unbiased as they have no direct involvement in the research process. Positivist research allows the precise measurement and analysis of observable facts which in turn that allows the development of theories that can be easily replicated to achieve the same results (Jones, 2015). However, this search for ideal and perfect standards in social phenomena is the principal downfall of this approach, as many argue this objectivity is not possible when studying matters that cannot be observed such as thoughts, feelings and emotions (Boru, 2018). The lack of empathy, emotion and subjectivity ingrained within the positivist approach in turn creates a lack of consideration for the unique characteristics evident within social phenomena.

The interpretivist paradigm, founded in the social sciences considers a more subjective set of assumptions of knowledge and reality (Mallett & Tinning, 2014). This approach does not attempt to predict or generalize behaviour, but rather to understand the subjective nature of experience and its context (Mallett & Tinning, 2014). The interpretivist paradigm is underpinned by internalist-idealist ontological assumptions which consider the social processes involved in reality to be a network of assumptions which individuals construct and co-construct with others (Potrac, Jones & Nelson, 2014; Walliman, 2011). Interpretivists seek to uncover the unique meanings, feelings, thoughts and experiences that individuals ascribe to phenomena. This paradigm holds subjectivist epistemological assumptions which encourage an interactive relationship between the researcher and subject (Curtis & Curtis, 2011; Walliman, 2011; Collins, 2010). As a result of this interaction, the researcher is deemed integral within the research (Johnstone, 2004). However, if these values and biases are not acknowledged then the researcher can become too emotionally involved, thus steering the process and thus providing inaccurate results.

The critical paradigm largely concerns exposing and challenging inequalities and power relations in relation to issues of social justice and equity, it also places a strong emphasis on historical and social contexts in order to make sense of social phenomena (Boru, 2018; Mallett & Tinning, 2014). The critical paradigm considers realities as socially constructed entities that are under constant internal influence, as both reality and knowledge are considered to be socially constructed by power relations within society. In a similar way to the interpretivist paradigm, the critical paradigm utilises qualitative methods, albeit in a different way and for different

purposes. Within sports coaching, researchers operating within the critical paradigm seek to understand their own assumptions and the assumptions of others, with the aim of promoting the drive for structural and behavioural change by challenging reproductive coaching practice (Mallett & Tinning, 2014). This paradigm adopts a transactional epistemology as the researcher interacts with the participants, an ontology founded in historical realism, as this approach deals with oppression, a methodology characterised by communication and dialogue, and an axiology that respects cultural norms (Kivunja & Kuyini, 2017). However, its reliance on subjective social values to guide communication is a major disadvantage of this approach, as when values conflict, a debate between whose values are better emerges (Paynton & Hahn, 2014).

Overall, there is no single approach that is able to view reality in its totality (Burrell & Morgan, 1979). However, having an awareness of the assumptions on which research is based is paramount, as the direction the research journey takes is ultimately guided by the philosophical assumptions of the paradigmatic approach. The weaknesses and boundaries of paradigms should be acknowledged when making paradigmatic choices and the rationale behind research decisions should be explicitly stated to ensure coherence and rationality.

3.1.1 Paradigmatic Decisions

Following consideration of the dominant philosophical assumptions, my ontological views aligned with an internalist-idealist viewpoint and my epistemological views were extremely subjective. I consider knowledge gained to be a direct result of the interactive processes between the investigator and respondent as both co-create to

generate understanding (Ratner, 2008; Nelson, Treichler & Grossberg, 1992). Consequently, taking this into account, the paradigm most relevant and appropriate to this research was interpretivism. A positivist approach was not considered for this study due to its scientific, objective and quantitative nature. A critical paradigm was also deemed ineffective for use in this study due to its focus on social values. The humanistic and subjective nature of interpretivism provides this study with the flexibility to engage with coaches and to understand their thoughts, feelings and experiences in relation to a Constraints-Led Approach. Overall, this was paramount in answering the research questions and meeting the research objectives of this study. More specifically, an interpretivist approach allows time to be spent in the field with coaches to determine emerging themes, a concept Newcombe et al., (2019) consider crucial in future research. Overall, the interpretivist approach represented my own philosophical assumptions as well as those that were appropriate for this study.

3.2 Approaches to Research Methods

A research method refers to the ways in which knowledge and understanding can be acquired involving procedures for collecting and analysing data (Veal & Darcy, 2014). There are two broad approaches to research: quantitative and qualitative (Smith, 2018). The quantitative, positivist method has monopolised sporting literature, however following its successful adoption within sports coaching research, qualitative research methods have become increasingly popular (Jones, 2015).

Qualitative research approaches understand opinions and behaviours through the exploration of an individuals' experiences, examples of methods include interviews, focus groups and observations (Atkinson, 2012; Gratton & Jones, 2010; Henninck,

Hutter & Bailey, 2010). The aims of qualitative studies are to subjectively interpret and reinterpret events with a focus on process, this much unlike a quantitative study which uses an objective stance to control numerical data (Boru, 2018; Curtis & Curtis, 2011; Bryman, 2004). Qualitative studies are rich in quotation, description and narration and attempt to capture conversations, experiences, perspectives, voices and meanings from participants, often utilising small sample sizes which are purposively selected (Boru, 2018). In qualitative research, the researcher does not manipulate phenomena in any way, but instead studies it as part of its unique context. Consequently, research within sports coaching is usually conducted within the natural environment of the participant such as their training facilities, school or club facilities. Qualitative research gathers data on participants own meanings, thus providing an understanding and description of people's experiences of phenomena (Smith, 2018). However due to the extreme subjectivity of qualitative research, data can be extremely difficult to collect and evaluate compared to data collected in quantitative research, which can be collected and analysed relatively quickly, and comparisons made with ease (Rahman, 2016; Choy, 2014). Qualitative data analysis is not only time consuming but can also be costly (Griffin, 2004). Some consider qualitative research to be inadequate as the knowledge produced cannot be generalised outside of the study, some also consider it to be unreliable due to the biases that may arise from the personal interpretations and involvement of the researcher (Boru, 2018; Smith, 2018).

In contrast, quantitative research uses numerical data to explain phenomena, examples of methods include questionnaires, experiments and surveys. Quantitative research constructs objective comparisons and predictions to evaluate numeric data without contamination from the researcher, consequently, this approach can reduce

bias, ensure anonymity and provide structured data that is easily comparable (Hastie & Hay, 2012). Within the context of sports coaching, there is usually a hypotheses and research question that the researcher seeks to test, and it focuses on measuring or coding numbers such as performance levels (Smith, 2018; Hale & Graham, 2012). Quantitative research methods can; test and validate established theories, provide credible precise numeric data, study large groups of people, collect data quickly and generalise findings to a wider population (Smith, 2018). However, there is little or no opportunity when using quantitative research methods to probe and there is the potential for poor responses as the accuracy of data relies upon the quality of participant recall (Veal & Darcy, 2014). Quantitative research fails to understand the context or setting of data, as data collected never involves communication with participants (Boru, 2018). The researcher may also miss out on phenomena due to the extreme focus on hypothesis testing and knowledge produced may be too abstract and general for application to specific contexts (Smith, 2018).

3.2.1 Research Decisions

In respect of the interpretivist foundations of this study, a qualitative research method was deemed the most suitable method. Conclusions drawn suggested that the use of quantitative methods would restrict and limit the knowledge gained within this study and thus make the data collection process challenging and inadequate in providing the data necessary to answer the research questions. Studies that are interpretivist in nature show a preference to methods that do not merely produce facts but also analyse and describe meaning. Taking account of examples from literature, it is apparent that research embedded within the interpretivist paradigm most commonly adopt qualitative methods, whilst research founded in the positivist paradigm adopt

quantitative methods. Overall, the conclusion could be drawn that quantitative methods are better suited to the positivist paradigm and qualitative methods to the interpretive paradigm (Boru, 2018; Kivunja & Kuyini, 2017).

3.3 Qualitative Research Methods

Qualitative methodologies encompass this search for meaning and offer tools that can be utilised to understand and explain the sociocultural complexities involved within sports coaching (Hastie & Hay, 2012). The research method unpacks the ways in which methods are applied to gather the data required to adequately answer the research questions of the study. There are numerous different ways of collecting qualitative data such as questionnaires, surveys, observations, interviews and focus groups, with interviews and observations being the most common in coaching literature (Hastie & Hay, 2012). All qualitative research methods share similar characteristics, namely, all are rich in description, involve some form of fieldwork and include inductive research strategies that are managed solely by the researcher during the data collection and analysis process (Hastie & Hay, 2012).

3.3.1 Participant Selection

Prior to the data collection process, it is crucial to make informed decisions regarding the selection of participants as it is rarely practical, efficient or ethical to study whole populations (Suri, 2011; Marshall,1996). Sampling refers to the process of arranging a given population to a manageable size through the selection of a representative group from a larger population (Devers & Frankel, 2000; Scott & Morrison, 2007). The results gathered from the representative population can then be generalised back to the population in question (Marshall, 1996). The optimum sample size depends on the

type of phenomena being studied. A small sample size is particularly necessary in qualitative studies as they focus on gathering a depth of understanding rather than a breadth (Boddy, 2016; Jones, 2015). A study that gathers too little data can be detrimental, producing results that are unreliable and invalid, likewise a study that gathers too much data can drain resources such as time, thus forcing a rushed and weaker analysis. In the majority of qualitative research, it is necessary for studies to identify specific participants rather than gather participants from a random sample. Therefore, a purposive sampling technique may be used which identifies and selects participants based on the specific characteristics they hold in relation to the research questions (Hastie & Hay, 2012). Within sports coaching, purposive expert sampling can allow the researcher to identify highly skilled coaches who hold a high degree of knowledge in a given study area (Marshall, 1996). However, these techniques may not be representative of the true population and thus findings may be limited to the constraints of the given study (Yin, 2010; Engel & Shutt, 2009). Alternatively, the random sampling technique produces an extensive list of a larger population, randomly selecting individuals to make up the sample, in turn providing a generalised and unbiased representative of the population as all individuals have had an equal chance of being selected (Gratton & Jones, 2010; Guthrie, 2010). This technique is extremely popular within quantitative research and reflects many of its philosophical underpinnings, therefore, its suitability for use within qualitative studies should be questioned. Overall, choosing an appropriate participant selection method should depend not only the research questions and aim of the study but also on practical considerations such as, geographical location and access to the necessary participants (Marshall, 1996).

3.3.2 Interviews

Interviews have become increasingly popular in sports coaching research as they allow the researcher to gain a rich insight into people's experiences including their thoughts, feelings and emotions, which in turn provide a means of understanding perspective and behaviour (Purdy, 2014; Curtis & Curtis, 2011). Jones (2015) argues that qualitative approaches have become over reliant on interviews as a research method, thus potentially constricting the quality of data collected. The goal of any qualitative interview is to understand the research topic from the participants perspective and determine why they hold that particular perspective (King, 1994). The interview is a social relationship that is both interactive and situation specific, it is designed to encourage the exchange of information between the participant and the researcher (Boru, 2018; Purdy, 2014). How an interview is designed should reflect the study's methodology, research questions, context and setting, as this may influence the dynamics, direction and content of the interview (Purdy, 2014; Sin, 2003; Manderson, Bennett & Andajani-Sutjahjo, 2006). Deciding whether to conduct individual interviews or focus groups should take priority on the agenda when designing the research method, due to the influence this has on the rest of the design. Individual interviews encourage close communication between the participant and the researcher and provide the researcher with the ability to control the direction of the conversation (Hastie & Hay, 2012; Morgan, 1997). In many ways, focus groups are very similar to interviews, but rather than a single interviewee they involve multiple participants who are encouraged to actively interact and discuss topics to provide a wide range of ideas, experiences and understandings (Purdy, 2014; Veal & Darcy, 2014). The role of the researcher in focus groups should be that of facilitator, guiding discussion and encouraging contribution from all participants to gather a variety and

range of viewpoints. The main advantage of this method is its extreme flexibility, allowing data collected to be adapted to the needs of the research, this method can also generate a greater depth of data as a greater number of individuals can be reached at any one time (Morgan, 1997). Focus groups can be more time effective than individually interviewing participants and can also allow the researcher to compare and contrast similarities and differences in participant's opinions and experiences (Hastie & Hay, 2012). Whilst focus groups are a valuable method, they need to be carefully managed by the researcher so they are not dominated by one or two individuals within the group, otherwise valuable data and opportunity for discussion can be lost (Krueger & Casey, 2015; Gratton & Jones, 2010). Focus groups can provide less depth and detail on individual participants when compared to individual interviews, this depth and detail can be crucial within qualitative research and so should be carefully considered when planning research design. Individual interviews can pose a suitable alternative and can be easier to manage as attention is concentrated on only one person at a time and participants do not have to compete with group dynamics in order to contribute to discussion (Flick, Kardorff & Steinke, 2004). The researcher should consider the form of interview used, determining the way in which the interview is organised whether that be; structured, semi-structured or unstructured (Purdy, 2014). Structured interviews organise the interview to a strict set of pre-determined questions, whereas semi-structured interviews allow more flexibility, utilising an interview guide rather than a rigid set questions and even more flexible the unstructured interview highlights key areas for discussion with the main focus being around the natural flow of conversation (Purdy, 2014). Structured interviews are more commonly utilised in research that requires very specific information as the less structured the interview the less structured the data gathered,

however less structured interviews do provide a greater depth of data and provoke discussion (Hastie & Hay, 2012). Multiple forms can be utilised within the data collection process, for instance a researcher may start off with a more structured interview technique and then once rapport has been built with the participant, they then may gradually become more unstructured. Semi-structured interviews in particular have become a popular method in sports coaching research as they allow the researcher to take advantage of the balance between gathering rich, in-depth data and allowing time and flexibility for elaboration as individuals discuss their experiences, attitudes, opinions, beliefs and values (Atkinson, 2012; Curtis & Curtis, 2011; Fylan, 2005). Debanne and Fontayne (2009) and Olusoga, Butt, Hays and Maynard (2009) similarly advocate the use of semi-structured interviews within qualitative research and provide multiple examples of their work in which sample sizes ranged from one to twelve people and the duration of interviews lasted between 45 and 135 minutes. When designing the interview schedule, Purdy (2014) promotes starting with easier introductory ice-breaker questions. Questions should then gradually increase in difficulty as the interview proceeds and rapport is built, questions should also become open ended to allow the participant the flexibility to decide on the direction of their response. Where necessary, questions should be followed up by the interviewer to probe for more information and to incite discussion. To ensure the quality and relevance of the questions, Abramson and Abramson (2008) advocate the use of a pilot study. A pilot study is a small study conducted before data collection takes place to determine whether the methodology, sampling technique, data collection tools and data analysis processes are adequate to gather the data needed for the study (Bless, Higson-Smith & Kagee, 2006). A pilot study should be as reflective of the intended data collection plan as possible, for example, using

participants similar to those that will take part in the study. Conducting a pilot study can have many benefits, for instance, it may highlight topics not previously considered and give the researcher the opportunity to refine questions and identify any flaws to be rectified before starting the data collection process (Purdy, 2014). Another key consideration to take into account is whether interviews can be conducted face-to-face or whether there is a more suitable alternative. Whilst interviews have traditionally taken place on a face to face basis, telephone and online-based communicative tools such as Skype, Zoom and Microsoft Teams have also proven to be successful methods. Using these methods can be particularly useful when resources such as, access or time are limited. In recent qualitative studies, online-based communicative tools have been employed more than telephone interviews. Many suggest that this is because these tools overcome the limitations of telephone interviews as they offer a video option that can be easily recorded and can provide visual cues such as body language and level of engagement, which in turn adds to the depth and quality of the research gathered (Purdy, 2014). To minimise the risk of making mistakes, including the risk of human error, it is common practice for researchers to record interviews, thus ensuring that a complete and accurate record of the data collected is gathered. Recording interviews allows the researcher to concentrate on a given topic, as well as the dynamics of the interview rather than having to note take, the record also gives the researcher the ability to be able to review and re-listen to the dialogue (Kvale & Brinkmann, 2009). By gathering recorded data, this can then be transcribed following the interview. King and Horrocks (2010) advocate transcribing interviews verbatim which involves typing the recording up word for word to produce a written record, they conclude that this brings the researcher closer to the data which is crucial during the data analysis process. When transcribing verbatim the participants original language

must remain accurate and unchanged from the recording (Bryman, 2008). Ensuring these qualities remain, will in turn, add to the authenticity and credibility of the data gathered. However, interviews can be subconsciously led by the researcher and the participant, and bias can occur through verbal and non-verbal reactions from the interviewer (Curtis & Curtis, 2011; Gratton & Jones, 2010). Nevertheless, by ensuring the interviewer only speaks when asking questions, using examples and asking for elaboration, the interviewer can avoid some of these pitfalls.

3.3.3 Naturalistic Observation

Alike interviews, observations have become increasingly popular as a viable research method in sports coaching research. Observations allow a researcher to observe, record and analyse events and behaviours (More & Franks, 2004). Observations can be formatted in many different ways and can be utilised in both quantitative and qualitative studies (Öhman & Quennerstedt, 2012; Bryman, 2008). Observations provide context specific understandings of the true behaviours of participants by studying participants in their natural setting (Jones, 2015). When conducting observational studies, field notes should be gathered to capture what the researcher is witnessing, field notes should be detailed, reflective and descriptive and include personal thoughts, feelings and experiences of what was heard and seen during the observation (Smith, 2018; Jones, 2015; Hastie & Hay, 2012). Taking field notes is a skill that requires careful and considerate development and therefore conducting a pilot study with someone more experienced in collating observational data may be of benefit. Observations can be a useful and necessary data collection tool when others prove inadequate as observational data can provide reliable, first hand evidence of ongoing practices that cannot be gathered by other methods (Öhman & Quennerstedt,

2012). When utilising observational methods as a data collection tool, the researcher should first of all decipher an observational strategy to adopt which is representative of the aims of the study and inclusive of the wider research approach. From the naturalistic perspective, observations should be unstructured and uncontrolled, recording behaviour as it happens in the natural setting of the participants (Smith, 2018). Alternatively, systematic observation tools consider observation to be objective, controlled and structured, offering a method in which to quantify coaching practice and behaviour (Smith, 2018; Morgan*,* Muir & Abraham, 2014; Lacy & Darst, 1985). This is a popular method used to study coaching behaviour however, it can often reflect behaviourist assumptions and provide mere descriptions which lack the valuable contextual information necessary in qualitative studies (Morgan et al., 2014; Abraham & Collins, 1998). Observations take up a position somewhere between participant and non-participant based on the continuum of researcher involvement. At the non-participant end of the spectrum, observations involve the researcher observing the phenomenon from a distance with no engagement or effect on either the activity or the subjects (Jones, 2015; Öhman & Quennerstedt, 2012). At the other end of the spectrum, participant observations involve the researcher taking part in the phenomena being studied (Jones, 2015). Due to the qualitative nature of this study, an observational approach that provides the opportunity for the researcher to get familiar with the sample was necessary. When utilising observational methods in qualitative research, many academics have advocated a more flexible, unstructured approach which is not pre-determined in anyway or bound by a tight framework (Newcombe et al*.,* 2019*;* Clark et al., 2018; Smith, 2018; O'Donoghue, 2010). Utilising a structured tool in data collection can be both restrictive and ineffective in gathering quality data, particularly for what may be required in qualitative studies. As is

advocated by Clark et al., (2018) and Newcombe et al., (2019), effective observational data can be collected without a formalised tool, using an unrestrictive and clear outlook with considerations of wider theoretical foundations. Morgan et al., (2014) share the complexities and difficulties they faced when adopting and implementing formalised observational tools and advocate that specialist training is necessary to utilise formalised tools successfully. When determining whether to conduct single or multiple session observations it is necessary to consider the access, time and resources available for the study. Smith (2018) and Morgan et al., (2014) advocate conducting multiple session observations over a significant period of time to develop an in-depth understanding of practice. Morgan et al., (2014) go as far as to conclude that the more you observe, the more accurate the data that is gathered. However, conducting multiple observations can also pose challenges. Morgan et al., *(* 2014) discuss their experiences of conducting multiple session observations in youth football, of which their main difficulty faced was the consistency of the variables observed in practice, as the mixture of sessions observed ranged dramatically from solely game play, to preparation for fixtures, physical development sessions and typical coaching sessions, thus influencing data considerably in the study. If relying solely on the observer to gather data *in situ*, then difficulties in data recording could arise and mean that valuable data is missed. Therefore, the researcher should consider whether to code live *in situ* or to video record the sessions. Whilst capturing a permanent record of events via recording has numerous benefits, it is also necessary to consider the effects that this may have on the reactivity of participants (Darst*,* Zakrajsek, & Mancini, 1989). It is possible that the presence of the researcher may impact on the environment, this altering the behaviour of the participants being studied. Morgan et al., (2014) discuss the difficulties they faced when attempting to utilise technology to video record

observations, namely, effects on reliability as participants construct their actions in response to the known observation taking place. Ultimately, observations are context specific and can only detect what is observable, thus potentially limiting the data gathered and leading to misinterpretation of the phenomenon studied (Öhman & Quennerstedt, 2012; Van der Mars, 1989). Although observations can understand the 'what' and the 'how' of a phenomenon, session observations are unable to rationalise 'why' phenomena occur, as a result, additional methods may be required to support this data collection method to obtain a suitable answer to the research questions of the given study (Morgan et al., 2014; Öhman & Quennerstedt, 2012). However, through the careful implementation of appropriate measures, these impacts can be reduced to a minimum.

3.3.4 Alternative Qualitative Methods

Aside from observations and interviews a number of other methods can be valuable in collecting qualitative research such as questionnaires, ethnographic approaches, recording of critical incidents and documents including data such as official records, letters, diaries and newspaper accounts (Jones, 2015; Hastie & Hay, 2012). When considering questionnaires as a data collection method, it is necessary to acknowledge that many formats are only appropriate for quantitative studies. Interviewer completion questionnaires provide a format appropriate for qualitative data collection and in practice are much like structured interviews. However, due to the structured nature of this approach, interviewer completion questionnaires are unlikely to yield the depth of data that many qualitative studies require. Ethnographic approaches rely on observation, yet unlike naturalistic observations, the observer becomes fully immersed within the culture of what is being observed. Ethnography

has had limited applications within sports coaching due to access issues which can arise when trying to implement the research tool. Autoethnography incorporates the foundations of ethnography but focuses specifically on the researcher's own life experiences, and thus the researcher becomes the primary participant and the source of data (Jones, 2015). However, many consider this approach to be self-indulgent and narcissistic (Gearity, 2014; Delamont, 2009; Sparkes, 2002). Record keeping involves gathering secondary data from already existing documents and similar sources. However, this approach requires the existence of reliable and relevant documentation in the area of study, this is not always possible, particularly in new and emerging areas within sports coaching research. The research methods selected should be the most suitable for obtaining the data required to answer the research questions. This decision should also take into account the wider research approach, inclusive of the research aims and objectives to ensure coherence and consistency throughout the methodological approach.

3.3.5 Analysis

In qualitative research, data analysis refers to the process of systematically searching and organising interview transcripts, observation notes and other non-textual materials to increase understanding of a given phenomenon (Wong, 2008). The aim of the data analysis process is to make sense of the data gathered, however, when discussing qualitative data analysis, it is necessary to acknowledge that this process can be vast, unstructured and appear messy, confusing and contradictory (Taylor, 2014; Hastie & Glotova, 2012). Analysis of qualitative data is largely text based and can prove challenging particularly in comparison to the more objective means involved in quantitative data analysis (Jones, 2015; Wong, 2008). Miles and Huberman (1994)

tried to clarify this process and proposed that there are three key aspects of qualitative data analysis: data reduction, data display and conclusion drawing. During the data reduction phase, data is meaningfully condensed and the processes of coding involving the identification of themes often takes place. Coding refers to the organisation of research data into categories or themes, this process should accurately reflect the phenomena being studied and be exhaustive (Jones, 2015; Hastie & Hay, 2012; Bell, 2010). A theme refers to a group of codes that are comparable in nature and which share similar values, themes can be ordered to provide insight and to provoke ideas of underlying social processes. During the conclusion drawing phase, meaning is derived from data to build a logical chain of evidence (Wong, 2008; Patton, 2002). Tesch (2013) identifies around twenty six different analysis techniques but concludes that it is not necessary to consider all in-depth, but rather to ensure that the analysis process is both effective and comprehensive for use in the given study. Qualitative analysis techniques include but are not confined to; content analysis, narrative analysis, discourse analysis and grounded theory analysis (Spencer, Ritchie & O'Connor, 2003). Alternatively, some have suggested using computer software to analyse qualitative data, utilising thematic analysis software packages such as Computer Aided Qualitative Data Analysis and NVivo. The benefit of this form of analysis is that it can be quicker and more objective, however in comparison to manual analysis it can make the analysis process mechanistic, reduce creativity and researcher familiarity with the data (Jones, 2015). Whilst there are no universal rules and procedures for analysing qualitative data, the approach used should be the most appropriate and suited for obtaining the data required to answer the research questions.

3.3.6 Research Decisions

After due consideration, the purposive expert sampling technique was chosen to gather participants with the prerequisites necessary for this study (Marshall, 1996). All coaching staff within a VNSL club set up were selected for involvement within this study to gain a full and well-rounded picture of the current landscape. Other sampling methods considered were deemed inappropriate due to the limited participants available who meet the requirements necessary to take part in this study, with only eight VNSL participating clubs within the country. A multi-method approach involving interviews and naturalistic observations was considered the most appropriate method for this study, as the coaching environment is so complex that a single method was considered inadequate (Cushion, 2014; Krane & Baird, 2005). This choice of methods allowed the researcher to collect data in action, whilst also allowing participants to talk through their experiences, encouraging elaboration on areas of particular importance. Other methods were considered inappropriate due to access concerns and their tightly structured and potentially restrictive nature (Denscombe, 2007; Walliman, 2006). Multiple semi-structured, face-to-face interviews were conducted alongside *in situ,* unstructured session observations to observe practitioners in their natural environment and to allow participants the time and flexibility to elaborate, and consequently, provide a high degree of depth on their experiences, thoughts, opinions and feelings (Atkinson, 2012; Curtis & Curtis, 2011; Fylan, 2005). For this study, multiple interviews were necessary to ensure that data collection could capture the evolving experiences gathered throughout the VNSL season and thus provide a complete examination of the topic of interest. Interviews were audio recorded and transcribed verbatim, as advocated by Hastie and Glotova (2012) and King and Horrocks (2010). The possible disadvantages of these methods were fully considered

alongside any advantages, academic advice and examples from practice. It was decided that the pitfalls of these methods could be successfully avoided to ensure effective data collection through the careful implementation of appropriate measures. Observations were overt in nature, the researcher remained a complete observer with no involvement but presence within the environment, and data was gathered *in situ* and recorded in the form of field notes in respect of the participating club's privacy. Following feedback from recent studies which have sought to understand the application of a Constraints-Led Approach, as well as from academic conversations, it was decided that to meet the needs and requirements of this study, no formal observational data collection method other than the collation of field notes was necessary. The analysis process was inductive in nature and used detailed descriptive coding to summarise the primary topic area from the data set in the right-hand column. Thematic analysis was chosen as the most suitable data analysis technique for this study.

3.4 Research Design

A research design was necessary to ensure evidence obtained through the research process enabled the researcher to answer the research questions appropriately and in full, (de Vaus, 2013). The research design outlines why methods have been selected and ordered for data collection and analysis and attempts to minimise the chance of drawing incorrect, causal inferences (Bryman, 2015; de Vaus, 2013; Hale & Graham, 2012; Fraenkal, Wallen & Hyun, 2011) The design provides an overall guide as to how the research methods fit together and how, when and where the data collection tools and techniques will be implemented. Qualitative research designs are flexible and often emergent; therefore, the research design of this study will be

considered in a much looser sense than quantitative research designs, as is advocated and supported by Flick (2018), Hammersley and Atkinson (1995) and Hastie & Glotova (2012).

A total of three participants were selected through purposive expert sampling to be involved in this study, representative of a full VNSL coaching staff set up including one head coach and two assistant coaches. Clubs were firstly considered for participation in this study through their involvement within the VNSL, secondly by the level of access that could be offered in working with the VNSL coaching staff and finally by the geographical location of the club. The research design was split into three main data collection phases each representing three months of the full netball season from pre-season to the end of the season: phase one (November to January), phase two (February to April) and phase three (May to July). Naturalistic observations took place consistently throughout all phases taking place twice a week during the VNSL squad court based training sessions, with three and a half hours of observational data gathered each week. Prior to observational data collection, to ensure value and reliability, a pilot study was conducted where recorded sessions were moderated by an external observer who shared similar experiences in gathering observational data from performance netball contexts. Field notes collated were detailed, non-judgmental and included the researcher's own feelings, reactions and reflections of; descriptions of the given context/physical settings, observed practices, the social environment, complex actions, events, interactions and behaviours as well as decisions and how these were communicated (O'Donoghue, 2010). In addition, to ensure relevance for this study, field notes also recognised: the coaches in attendance, relatability to the Constraints-Led Approach, coaches use and facilitation of questioning, any necessary

coaching behaviours, athlete input and response to practices as well as any other pieces of data deemed necessary by the researcher. Towards the end of phase one and early phase two, the second research method of one-to-one, face-to-face, semi-structured interviews were implemented, gathering data from each of the three participants and lasting anywhere from 45 minutes to 90 minutes in length. In preparation for the interview process, a pilot study was conducted with a participant representative of the sample, following this process a de-brief took place in which the results were used to incite changes in both the interview questions and format to produce the final interview schedules (see Appendices 3 and 4). To ensure participants felt at ease when being recorded during interview, all were informed that they could stop the recording at any time, they were told what would happen to the recordings following the interview, they were made aware of my role as the researcher and their rights to confidentiality. As advocated by Purdy (2014) all participants were asked where they would like the interview to take place, of which all opted for the training facility prior to training sessions. As a result, participants felt comfortable and this was not deemed to have influenced or impacted the data collection process negatively in any way. The aim was to repeat this same interview process towards the end of phases two and three, gathering data throughout the VNSL season when saturation would be reached. Phases two and three would utilise the same interview methods but became slightly less structured during the continuation of the research process as rapport was built with the participants. Overall, this totalling nine semi-structured, face-to-face interviews, three from each of the participants, one from each phase. From the audio recordings obtained through the interview processes all of the responses were verbatim transcribed, ensuring the participants original language remained accurate and unchanged. Transcripts and session observations were then

coded and subsequently analysed using thematic analysis. From this process, three main themes were derived from the thirty codes identified (see Appendix 9).

It is important to recognise the position of the researcher within the research process. The researcher should not ignore or avoid their own biases, instead they should be reflexive, reflecting upon and clearly articulating their position and subjectivities so that a greater understanding of the questions asked, data gathered and analysed, and reported findings can be determined (Sutton & Austin, 2015). As the lead researcher, I acknowledge that I am a white British, upper-middle class, straight, non-disabled female in my early twenties, who has spent most of my adult life living in predominantly white rural areas and small towns. I hold a BSc (Hons) degree in Sports Development and Coaching as well as three years of experience working professionally within the Sports Development industry and over five years of experience working within sports coaching, predominantly in junior netball coaching. No-one within my immediate family has previously attended higher education or has any experience within the Sports Development or Sports Coaching sectors. It should also be noted that all participants involved in this study were white British, middle class, non-disabled females. My own interests in the subject area and the expertise of my supervisors drove the writing of this piece of research. The research design reflected my own epistemological and ontological outlook. My involvement within the process was overt in nature with my role being to coordinate one to one semi-structured interviews and session observations to access the thoughts and feelings of the participants involved in the study with minimal influence. As a qualitative piece of research, this process was subjective and contextual, occurring during the 2019-2020 VNSL season between myself as the lead researcher and the VNSL coaching team that participated within

this study (Dodson, 2019). The most pertinent aspects to reflect upon situate around my role within the data collection process. As a practising netball coach myself, I was aware that when interviewing participants involved in this study that I needed to try and remain neutral, setting aside my own views and reactions and to listen from the perspective of a researcher. It was at times however, difficult to be totally objective and to set aside my own personal experiences. Throughout the interview process, I was concerned that despite my attempts at directing discussion, at times, we seemed to be going off topic. During the data analysis process, when transcribing the data, it became evident that, at the time, what I had considered was not potentially relevant information was, in fact, building a more balanced picture and adding to the wider discussion. Throughout this piece of work I have subjectively considered what information I deem relevant to include within this thesis and what information I deem less relevant, whilst still attempting to offer a robust and unbiased argument. Consequently, it should be concluded that the above cultural, political, social, and ideological origins of my own perspective have affected this piece of research.

3.5 Change in Research Design: Covid-19 Global Pandemic

Due to the outbreak of the Covid-19 global pandemic and the government guidlines and restrictions consequently imposed, a number of changes had to be made to the study. Following restrictions imposed, the VNSL season was halted during the fourth round of fixtures on Monday 16th March 2020 and subsequently cancelled. Consequently, no further further training sessions were conducted and hence no further session observations could be conducted. Due to the restrictions imposed in lockdown thus stopping any non-essential travel and non-essential contact, no further face-to-face interviews could be undertaken. Following university advice and

guidance, it was decided that due to the circumstances, this study should seek to make changes to the plans for phases two and three. It was decided that this study should culminate with one final phase of semi-structured interviews via online video call to support the first stage of interviews and twenty one session observations conducted up until this point. Although, the intention of this study was to observe a full competitive season from November to June, due to the circumstances this was not possible and data gathered represents half of the season.

3.6 Ethical Considerations

To ensure this study met basic ethical standards it was developed in correlation with an academic supervisor and went through both a project approval process and research ethics approval process. The study was continually developed alongside and evaluated against the University of Gloucestershire's Research Ethics: A Handbook of Principles and Procedures (2008) before being submitted to the University of Gloucestershire's Ethics Committee for approval. Project approval for this study was granted by the Postgraduate Research Degree Lead for the School of Sport and Exercise Science (see Appendix 5) and research ethics approval granted by the Ethics Committee (see Appendix 6).

Potential participants, including club representatives and coaching staff were initially informed about the study through informal conversations via email. Clubs suitable for this study, were issued with an information sheet which provided further details regarding the processes involved in the study (see Appendix 1). As advocated by Jones, Brown and Holloway (2012), the information sheet included an in-depth description of the study including it's aims, what participants would be asked to do,

how participant data and information gathered would be used, participant rights to withdraw, benefits of taking part in the study, potential harm and participant rights to data protection, anonymity and confidentiality. Voluntary informed consent was gathered during phase one interviews from participants in the form of written consent (see Appendix 2) and for the phase two virtual interviews undertaken, verbal consent was obtained. No children or young people were involved in the study and neither were any persons in the 'vulnerable populations' classification (Shivayogi, 2013).

To ensure data protection, the *Data Protection Act 2018* (UK) was considered throughout the development of this study. Under the *Data Protection Act 2018* (UK), participants have the right to: be informed about how their data is being used, have incorrect data updated, access personal data, have data erased and stop or restrict the processing of their data and data portability. To ensure these standards were met, the participant information sheet outlined clearly how participant data was to be used (see Appendix 1). Participants were able to request their data including any transcripts and to see draft versions of the research prior to publication. This is highlighted in the; participant information sheet (see Appendix 1), informed consent form (see Appendix 2), interview schedule (see Appendices 3 and 4) and transcript (see Appendix 7). To ensure anonymity, personal data collected was kept to a minimum and any information that could lead to participant identification was removed including names, job titles, age and gender, (DiCicco-Bloom & Crabtree, 2006; Kvale & Brinkmann, 2009). Confidentiality is an important means of respect and protects participants from harm, as a result, pseudonyms were used within this study (Veal & Darcy, 2014; Jones et al., 2012). Participants were consequently referred to as; participant 1.1, participant 1.2, participant 1.3, participant 2.1, participant 2.2 and participant 2.3 to reflect the two

interviews held with each of the three participants involved in the study. To further ensure confidentiality, data was distributed on a need-to-know basis between the researcher and assigned research supervisors and kept on a personal password secured and encrypted laptop (Gratton & Jones, 2010). Any paper copies including any confidential data were kept to a minimum and transferred to an electronic copy as soon as possible and then shredded into confidential waste. All participants believed the interview audio recordings to be a true reflection of their thoughts and feelings when asked and were provided with the opportunity to add, amend or offer any re-wording of any aspects of the interview (see Appendix 7). Participants were given the opportunity to withdraw from the study at any time without consequence, this is highlighted in the participant information sheet (see Appendix 1) and informed consent form (see Appendix 2). Data will not be used for any other research as this is not mentioned in the participant information sheet (see Appendix 1). Raw data will be kept secure for five years and then destroyed appropriately following that.

From the research ethics approval process, lone working and psychological intrusion from interview schedules and observation techniques were identified as areas which could pose a threat during this study. To avoid lone working, actions were taken to ensure that all interviews were conducted in communal areas of the training centre. Psychological intrusion could emerge from the data collection process, thus affecting the participants day-to-day working, however this may not necessarily have a negative effect instead it may prove beneficial, encouraging participants to consider theory in relation to their practice. To ensure potential psychological effects posed minimal negative effect, throughout the research process participants were made aware that they could; pause interviews and withdraw from the process at any point. Participants

were also made aware of the channels to follow if they did develop any negative psychological effects as a result. Participants were supported throughout the process and it was not reported by anyone during the research process that any negative psychological effects had been or were present.

3.7 Chapter Summary

This chapter focused on the methodology that was used in this study, providing an explanation of qualitative research as a method for data collection and analysis. Discussions within this chapter clearly determined the specific procedures and techniques that were used to identify, select, process, and analyse the data utilised. At the forefront of these considerations remained the context of elite-level netball coaching as the investigative group within this study to ensure coherence and consistency. The beliefs and philosophical assumptions that researchers naturally bring to the research process has also been duly acknowledged and considered within this chapter.

4.0 DISCUSSION

This chapter provides an analysis and discussion of the data collected throughout this study. From the thirty codes identified during the data analysis process, three key themes were derived; Understanding the Theoretical Underpinnings of a Constraints-Led Approach; Practitioner Experiences in Linking Theory to Practice, Ensuring a Representative Learning Design and Designing an environment suitable for the implementation of a Constraints-Led Approach. These will be discussed in further detail alongside academic literature during this chapter to truly unpack “The use of a Constraints-Led Approach in Elite Netball Coaching: Understanding Practical Application”. Specifically seeking to understand; What is the importance of a Constraints-Led Approach to elite netball coaching practice? To what extent do coaches recognise and utilise a Constraints-Led Approach in elite netball practice? What are the barriers and facilitators when implementing a constraints-led approach in elite netball practice?

4.1 Understanding the Theoretical Underpinnings of a Constraints-Led Approach; Practitioner Experiences in Linking Theory to Practice

From the findings of this study it is evident that a Constraints-Led Approach was utilised consistently throughout all aspects of the season studied. Within this study, the Constraints-Led Approach was interpreted differently between coaching staff but with collective aims, objectives and collective wider club ethos and culture a Constraints-Led Approach was able to be adopted and implemented with success. As discussed in the review of literature, the poor application of a Constraints-Led Approach can, as with the poor application of any approach, create ineffective learning designs which provide no benefit or enhancements to learning. Consequently, with

real time examples, this section will unpack how coaches in this instance were able to successfully adopt and implement a Constraints-Led Approach within an elite netball setting and overcome some of the challenges experienced during their journey. In this section, the clear themes identified include the successful implementation of task, individual and environmental constraints, examples of the general application of the approach and the use of interacting constraints within practice. The overarching message derived from the task constraints theme determined that this was the most successfully utilised constraint within practice, predominantly being used to add focus to scenario specific and conditioned gameplay. Whilst individual constraints were similarly well utilised, environmental constraints were the least utilised. Emerging data within this theme suggests that a lack of clarity and gaps within practitioner understanding of how to fully embed this particular constraint within practice, may be the underlying reason for this. However, when environmental constraints were utilised in conjunction with another constraint, more successful results were witnessed. Consequently, conclusions drawn from the theme of interacting constraints determined that when constraints were combined and utilised in conjunction with each other, the more encouraging the results were.

From session observations and discussions with coaches, task constraints transpired to be the most prominent and successfully used constraint, occurring in all but one session, which was arranged gameplay, during preseason (Participant 1.1; Participant 1.2; Participant 2.1; Participant 2.2; Participant 3.1; Participant 3.2; SO1; SO3; SO4; SO5; SO6; SO7; SO8; SO9; SO10; SO11; SO12; SO13; SO14; SO15; SO16; SO17; SO18; SO19; SO20; SO21). Specifically, practitioners concluded that:

> “The task… I think it's the… easiest one for us to sort of control” (Participant 2.1).

This conclusion is supported by participant 2.2 who similarly commented that:

> “I think for… us I think task and performer is the… ones that we… generally easily… applied within those sessions” (Participant 2.2).

Renshaw et al., (2020) concur that task constraints lend themselves easily to modification by practitioners. A variety of task constraints were utilised within practice, including changes and variations to; rules, scoring systems, boundaries, starting positions, space, time, feedback, coaching methods, court markings, the use of video and images, number of attackers and defenders, equipment as well as skills and set plays. Task constraints were utilised to either simplify and reduce the successful solutions available to performers or to make the practice more difficult, reducing the number of available successful solutions to performers. Task constraints implemented within practice involved players competing in a two versus two scenario from a restart centre pass position with the attackers aiming to get the ball to the top of the circle as quickly as possible (SO10). In order to achieve this aim, attackers soon realised that the quickest way down the court was in a straight line and therefore they soon amended their movement solutions to reflect this. Attackers amended their movements to draw a defender out of the middle channel of the court to lose them so they could then drive back into the middle space, receiving the ball as narrowly as they could, thus increasing their efficiency. The set-up of this practice was extremely effective in challenging the attackers to work out the most effective movement

solutions. From this practice, athletes successfully worked together to create space within the middle channel, whilst also amending and varying their movement solutions to continue to outwit the defence as they began to pick up on their thought processes. This practice allowed athletes to problem solve and self-organise without prescription from the coaches, through the manipulation of task constraints, athletes were guided to the most effective movement solutions to successfully complete the skills practice. Another example of the implementation of tasks constraints discussed by coaching staff involved applying the scoring system as used in tennis, to netball, coining the game ‘netball tennis’:

> “Netball tennis which is the scoring of tennis but playing netball so say we would have one team… like pinks versus purple's pink's would get… a serve which is a centre pass if they take it to goal… it's… fifteen love if they miss it… the purple's or the other team get the ball they get one opportunity to take it to goal and if they miss that it's a let so they get another opportunity and it's first to a game” (Participant 1.2).

Within this game, task constraints were utilised to alter the scoring system, the addition of a ‘let’ following a missed shot ensured a focus for attackers on keeping possession of the ball whilst defensively focusing on turning over possession, limiting the opposition of a second opportunity to convert the ball to goal. Participant 2.2 explains, and session observations corroborate, full sided seven versus seven games were very rarely utilised within training, with the only exceptions being when coaching staff wanted to test out learning, in this circumstances bringing in athletes from the under twenty-ones pathway squad. This is something that is potentially unique to this setting,

as observed on the adjoining court in a basketball context, a full-sided game was extremely common occurring in the majority of their sessions. Instead, within the context of this study, training design consistently incorporated task constraints within individual, unit and team work, testing and trying new combinations in a variety of scenarios. Working groups in skills practices were consistently organised by coaching staff to represent units that would likely be working together on court within formalised match play. Within training design, small sided games were common occurring in all but one of the sessions observed. These involved the facilitation of five versus five scenarios playing through half court from either a back-up option offering on the transverse line or from a centre pass, backline or side-line. Small sided and conditioned games such as this condense and specify constraints to provide an opportunity for athletes to practice performance in a sub-scaled version of the game (Hill-Haas, Dawson, Impellizzeri & Coutts, 2011; Ometto, Vasconcellos, Cunha, Teoldo, Souza, Dutra et al., 2018; Renshaw et al., 2019). In team games in particular, practicing small sided conditioned games assist learners to make intelligent decisions based on their team mates and opposition (Fajen, Riley & Turvey, 2009). Specifically, the presence of active defenders provides a more representative context for enhancing decision making than when defenders are not present (Chow et al., 2020). Results of this study are therefore consistent with other studies conducted in both basketball and football and confirm that successful performance outcomes can be gained from utilising task constraints such as conditioned games with smaller sided teams, as this creates more opportunities for the execution of key skills (Casamichana & Castellano, 2010; Klusemann et al., 2012; Timmerman et al., 2017). Task constraints were consistently used to focus on scenario specific work such as back-line and side-lines, and then constraints would most commonly be eased, opening

play up to become more representative of competitive gameplay. Participant 1.1 discussed the rationale behind utilising task constraints in this way to focus scenario specific work as without constraining the task, athletes:

> "Might only defend two centre passes… that come their way… whereas you've got through like fifteen in five minutes just in a smaller environment" (Participant 1.1).

Chow et al., (2009) and Maloney, Renshaw, Headrick, Martin and Farrow (2018) support this implementation of task constraints within a representative learning design. Overall, a broad range of task constraints that were representative of performance demands were utilised to develop the tactical intentionality of athletes, providing them with an opportunity to experience the structural and functional patterns that emerge in full-sided play (Renshaw et al., 2019). This variability ensured that training design remained interesting and relevant to the athletes and ensured that they remained motivated throughout sessions and the season more widely.

Following task constraints, the next most utilised constraints were the manipulation of individual constraints. Coaches acknowledged that in addition to task they found individual constraints relatively easy to implement successfully often utilising the two constraints through interaction together (Participant 2.2; SO11; SO14; SO16). Results showed that performer constraints mainly focused around; physical capacity including cardiovascular aerobic and anaerobic fitness capacities, flexibility, balance, coordination, strength and speed. Cognitive capacities including concentration, motivation, confidence, perceptual decision-making skills, personality factors, mental

toughness, response to pressure and emotional control were also utilised. Training practice largely involved testing physical strength, balance and mental toughness by designing environments in which athletes were overloaded by defenders or subjected to receiving high amounts of physical contact. For example, session observation 14 focused on the players abilities to take contact and keep a strong body position to play the ball up and around the defence and release to another player. During this skills practice additional defenders were inputted into the practice with rugby pads to enforce contact wherever they deemed fit to cause pressure and force errors. Sessions that utilised this method proved popular with the athletes as it incorporated fun and variability within training, however it was noted these sessions were considerably less representative of a competitive performance environment. Another performer constraint utilised consistently was the use of time pressure to challenge athletes response to pressure and mental toughness. Within training design, this largely utilised the scoreboard which was observable by all as would be in a competitive game. These practices focused on scenarios such as one minute, thirty seconds, ten seconds left on the clock, with the team being one or two goals up or down, thus challenging athletes to maintain or extend a lead or to convert ball and take it to goal to, in both instances, win the game. The manipulation of this individual constraint in this way challenged athletes to think and create solutions, amending their intentions simultaneously with the overall aim of achieving a winning performance. This performer intention is perhaps the most prominent and influential individual constraint that can shape movement coordination (Kelso, 1995). Following a successful season the previous year, participant 2.1 acknowledged that one of the key contributing factors to this success was:

> [We were] “used to being under pressure whether it was a time constraint whether it was physical pressure… and we were getting beaten up or whether it was scoreboard pressure” (Participant 2.1).

However, following the start of this season, it was acknowledged that this could have further been developed as participant 2.1 reflects:

> “I don't think we'd combined it enough so we hadn't kind of put players under physical fatigue and then put them under scoreboard pressure… or allowed players to kind of be hit with pads or whatever and then put them under scoreboard pressure so… it was probably something that we needed more of” (Participant 2.1).

Bar-Eli and Tractinsky (2000) advocate this use of a scoreboard, particularly to exacerbate time and score pressure thus increasing anxiety within training. Preseason training design mainly situated around athletes getting to know each other and during this time individual constraints were implemented to support this. For instance, athletes were encouraged to determine personality traits of their teammates such as are they a risk-taker or do they like to play it safe? Athletes were challenged through the manipulation of individual constraints to recognise patterns of play and to read the movements of opponents to predict their next move. Overall, as with task constraints, a range of individual constraints were implemented throughout training design across the season, however they were evident within far fewer sessions observed.

The manipulation of environmental constraints was deemed the most difficult to implement within training design by coaching staff, as they were deemed to be embedded within the set-up of the club in the culture and ethos (Participant 2.2; Participant 2.3). Consequently, the implementation of environmental constraints was only observed in a handful of sessions. Of the environmental constraints: cultural expectations, peer group pressure, commercialisation and social media, access to high quality training facilities, access to high quality learning opportunities and teaching and physical constraints such as lighting and noise levels were utilised. However, family support and networks, physical constraints such as gravity, altitude, and temperature as well as social construction of age, gender and race were not accounted for (Renshaw et al., 2019). Due to the nature of the study this club were inundated with high quality training facilities, access to high quality learning opportunities and teaching for example access to, physiotherapists, nutritionists, psychologists, strength and conditioning coaches, performance analysts, physiologists, elite level coaches, managers and other extensive wider support staff. To further explain the extent of this infrastructure, one example of how this is used in practice is through the use of athlete Individual Performance Plans:

> “Individual… performance plans… that's pretty much set with… the sports science and medical team so nutrition their… S&C goals their goals for the season technical and tactical goals so… that was set out at the beginning of the season [and] reviewed throughout” (Participant 1.2).

Included within that plan is:

> “Every aspect of…what an athlete should look like… they have their nutrition support they have… S and C they have… kind of physical whether that's physio… assessment… how physically okay are they… and if they need any support” (Participant 2.2).

This is then monitored, as:

> “The MDT [Multi-Disciplinary Team] will… meet weekly to talk about it formally… but they'll also probably speak daily about how the athletes are” (Participant 2.3).

Athletes also had the opportunity to work with other coaches from different sports, this was witnessed in particular with a shooter who was able to gain advice and support regarding how to protect space (Participant 2.2). As a result of the current England Netball performance pathway set-up, franchises participating in the VNSL are also responsible for academy squads at under thirteen, under fifteen, under seventeen, under nineteen and under twenty-one age groups within their assigned geographical location. As a result, the club have seventeen academy squads with roughly three hundred and twelve athletes involved in the pathway (Participant 1.2). With these environmental benefits in place, the club would not have the accessibility to the affluence of high-quality players that is witnessed under this study. This was particularly essential when injuries occurred at the start of the season with many under twenty-one players called up to train with the VNSL squad to ensure quality of training. Within training design however, the biggest environmental constraint was the access to high quality professional performance analysts. Participant 1.3 describes that:

> “All [of] our games are [and] a lot of our training is filmed… so we have general… stats that we take for all of our games” (Participant 1.3).

This importance was acknowledged by another member of coaching staff who added that:

> “Video analysis tasks are really important because teams change during the year but also we want the girls to be able to see a picture from a video and then translate it to the court so if they can do that for themselves without us having to sit over their shoulder you would hope they'd be able to translate that much more [background noise] easily when it comes to facing those oppositions” (Participant 2.3).

The use of performance analysis was utilised to pause, replay, rewind, fast forward and highlight aspects of training to go over and retrace aspects of importance (SO10). The ability to utilise performance analysis in training allowed athletes and coaches alike to benefit from live playback which allowed more specific discussions around why certain decisions were made, this ability of instant replay proved more successful than just talking a player through what could have happened or what should have happened (Participant 2.1). During these sessions athletes were able to work through the arising phenomena present, with the opportunity to facilitate discussion with peers and coaches to discover appropriate movement solutions. Within training practice, VNSL officials attended training to officiate gameplay to create different dynamics to the training environment, thus adding to the mental pressure experienced by athletes

(Participant 2.3). Prior to the start of the season, to enhance atmosphere and noise levels, loud music was played to mimic what might what would be witnessed during the competitive season, again adding mental pressure and challenging the athletes concentration (Participant 2.1; SO16). Coaches also:

> "Tried to… be quite silent in the environment because… we're quite vocal as a little trio so… trying to pass the onus back to the players where one there's noise so… it's harder… for them to communicate and two the coaches aren't communicating so they have to do it for themselves" (Participant 2.3).

As a relatively underutilised constraint within training, coaches discussed how they planned to enhance the manipulation of environmental constraints, for example bringing in local clubs and local coaches to provoke some kind of crowd feeling and incite cognitive pressures (Participant 2.3). Overall, environmental constraints were more evident within off court sessions and instilled within the general set-up of the club in their day to day operations.

Results from session observations clearly showed that a Constraints-Led Approach was implemented most effectively when multiple constraints were imposed and encouraged to interact. Most commonly task constraints were imposed alongside individual constraints (SO11; SO14; SO16; SO19). For example, utilising the physical pressure of contact alongside the completion of a given task or to get the ball successfully to goal. This was a key theme identified by coaches from their successes from the previous season, as coaches discussed the benefits witnessed as a result of encouraging interacting constraints. Participant 1.1 believed that the more you can

prepare players for the situations that they face during competition, the better, as just by coincidence last season they witnessed two scenarios where their work with interacting constraints was tested, and in both instances they were successful, winning the game. Consequently, the benefits and rewards which can be gathered by encouraging interacting constraints appear plentiful. Participant 1.1 continued to discuss at length the ways in which they used individual constraints, particularly the cognitive pressures of depleting time and scoreboard pressure alongside task constraints to get the ball to goal to achieve targets or to finish the game scoring more highly that the opposing team. Through scenario working, coaches were able to evaluate how players were responding and manipulate the interacting constraints accordingly to reach desired results. Whether interacting constraints were implemented within whole squad practices, unit specific work or one to one work with athletes, results were consistent. Shooters for example, were the most consistent group in which interacting constraints were explicitly evident within training design with scenarios created whereby shooters were subject to immense physical and psychological pressure from defenders whilst still successfully converting goals. Reflections from coaching staff concluded that they wished to implement interacting constraints further within practice including aspects such as:

> “Puttin[g] players under fatigue and then having to… convert their own ball or you know putting them under some kind of pressure where… they don't feel comfortable and then… they've gotta convert… we've not done enough of this” (Participant 2.1).

Other examples touched upon included exemplifying individual constraints through scoreboard pressure with reducing time whilst withstanding physical contact (Participant 2.1). By structuring constraints in this way encouraged their interaction and as a result the intensity that would be experienced within a competitive performance environment could be replicated, thus ensuring learning design is more representative. This concept allows for endless combinations and variability within practice, a concept which Chow et al., (2009) argues is crucial to gather effective results and successfully implement the approach. However, at times it could be argued that training design was over constrained and consequently limited the affordances available to athletes, this is something Chow et al., (2020) argue should be avoided at all costs. For example, during one skills practice attackers were challenged to play the ball through the court completing three passes in each of the boxes laid out on the court by coaching staff, in these boxes space was restricted and pressure added from a defender with a rugby pad to add contact and another defender without (SO14). As a direct result of over constraining this training design, attackers were prevented from making decisions on creating and penetrating space and defenders were able to clearly perceive where to position themselves to be successful. These risks associated with overloading athletes by over-constraining and under-constraining the environment should be carefully considered, and under no circumstances should practitioners introduce rules or restrictions to force desired outcomes (Renshaw et al., 2019). However, with the simple manipulation of aspect this practice, this practice could have ensured representativity and become much more effective.

Coaches avoided many of the pitfalls associated with the Constraints-Led Approach and overcame challenges as they arose during implementation to ensure practices

were fully immersed in constraints-led pedagogy. The biggest contributing factor to successful implementation was the time dedicated prior to the season in the planning and co-constructing phase. This phase was crucial, allowing coaches, athletes and wider support staff to co-construct their own culture, ethos and values. As Lyle (2002) discusses, planning is essential, it provides not only a guide of day to day activity, but a strategic overview of the processes involved, linking aspirations, intentions and activity. Consequently, planning should play a central role in the coaching process to ensure the effective delivery of any approach. Chow et al., (2009) raise concern that many practitioners face difficulties developing game awareness and tactical understanding within practice without missing out on the aspects of technical instruction and feedback. However, with careful planning, tools can be implemented to ease this difficulty, in this instance, tools such as athlete autonomy and questioning were utilised to ensure that technical instruction and feedback could still be embedded and was consistent throughout all aspects of training design. During this study, coaching staff fully acknowledged that they are still on a learning journey themselves and that this is an ongoing and continual process. However, with the support from the wider coaching team and time spent planning and constructing an understanding from literature, coaching staff felt comfortable and supported to embed the approach within their practice. Therefore, they we able to overcome the lack support and advice that is available to practitioners when trying to adopt and implement a Constraints-Led Approach, which has consequently led to the misinterpretation of the approach as highlighted by Chow (2013), Clark et al., (2018) and Renshaw et al., (2015). The role of the coach is crucial and should not be passive or hands off, instead the coach should direct learners attention, not prescribing in anyway but facilitating and encouraging the learning process (Renshaw et al., 2019). The practitioner is responsible for designing

practices that provide meaningful and real opportunities for individuals to self-organise and co-adapt to changing constraints resulting in the creation of meaningful and functional responses to problems (Renshaw et al., 2019; Renshaw et al., 2015*;* Chow et al., 2009). This was a topic discussed and co-constructed at the start of the season during the planning phase with coaches, athletes and the wider support staff, with considerations made as to how they could be most effective in their approach. Consequently, coaches carefully created and designed an environment in which tools such as questioning and peer feedback were utilised in a balanced manner, allowing coaches to facilitate but very much still be involved in the learning process without being overly prescriptive.

Conclusions drawn from this study validate claims present within the review of literature that the successful adoption and implementation of a Constraints-Led Approach can have positive ratifications within practice. Discussions with practitioners determined that in order to successfully adopt and consequently implement this approach, practitioners firstly need to have some understanding of its theoretical underpinnings, and secondly must understand the; relevance, usefulness, purpose and rationale of their design including the time and place for manipulating constraints. Results from this study support conclusions that there is still a significant sum of work required to establish the same clarity to support practitioners in the effective implementation of the approach as was concluded in the review of literature (Chow et al., 2016; Davids et al., 2008; Handford et al., 1997; Renshaw et al., 2009; Roberts et al., 2018). Results of this study demonstrate that the successful implementation of a Constraints-Led Approach can be achieved by ensuring that training design is representative of competition and more widely by ensuring that the environment is

designed meticulously to be supportive of and reflect the theoretical underpinnings of the approach.

4.2 Ensuring a Representative Learning Design

In this section, the clear themes identified from the data analysis process include decision making, problem solving, creativity, representative learning design and training design. Discussions within this section articulate the importance of decision making, problem solving and creativity to the context of elite netball practice and elite netball practitioners. Conclusions drawn from these themes advocate the need for training design to be representative of the performance environment, including key information sources that occur in competitive environments so that athletes can attune to the appropriate stimuli and suitably react to the environment (Renshaw et al., 2007). Training environments should include real game and context specific scenarios that are dynamic and variable to allow learners to regulate their actions, attuning to the most reliable and relevant sources of information (Chow et al., 2020*;* Chow et al., 2009*).* The importance of this concept was duly noted and informed the clubs values, ethos and culture. However, in the current landscape, representative learning design is commonly misinterpreted by practitioners, leading to the growing opinion that skills should only ever be performed within a real game context (Renshaw et al., 2019). By understanding the theoretical foundations of a Constraints-Led Approach, practitioners involved in this study were able to build training design to incorporate effective progressions relevant to the focus of the session, carefully considering how representative they wanted practices to be, and thus subsequently avoiding this pitfall. As participant 2.3 explains:

> “You're likely to have about fifteen centre passes in a quarter so we were tryna… make those tasks as relevant to the game… but still making the practice realistic at the same time” (Participant 2.3).

At times during the season training design varied dramatically, this was particularly evident witnessing the transition from pre-season to in-season as the atmosphere became increasingly intense, more competitive and overall more representative. To ensure training design remained representative throughout the entirety of the season, coaching staff implemented a variety of interventions. For example pre-season competitions were employed to raise the load, intensity and variety of competitive netball relevant team based activities throughout pre-season sessions (SO16).

From the results of the study it is evident that coaches were keen to keep training design as netball related as possible. In over 95% of the sessions observed, conditioned games were utilised following skills practices to increase the representativeness of training design (SO1, SO3; SO4; SO5; SO6; SO7; SO8; SO9; SO10; SO11; SO12; SO13; SO14; SO15; SO16; SO17; SO18; SO19; SO20; SO21). Coaches believed that the more they could prepare players for situations that they may experience in fully competitive match play, the better and the more successful the transfer to successful performances (Participant 1.1; Participant 1.3). This included ensuring that training design reflected match pressure and intensity and was relevant to their performance aims and objectives. A major benefit witnessed from ensuring representativity was the way that it invoked thought processes within athletes. As participant 2.1 explains:

> “So we'll run that scenario and we'll run it with you know [redacted] in the back and… [look] what our goal attacks are doing and the different entry points that they can do and then we'll switch the shooter so actually we can't just go into a[n] automatic mode of the ball goes there and then I run this now what do we do now we've gotta moving shooter and we've not got an easy option to go over the top… so I think just tryna get them to... almost play what they see and… solve it as… it unfolds and… the defenders do different things [be]cause they've got different players on them rather than just… this is the set pattern” (Participant 2.1).

Challenging athletes to think in this way increases the representativity of training design mimicking what they will likely experience in competitive gameplay as they are challenged to react to emerging patterns.

Utilising performance analysis on specific units and individual players as well as passages of play ensured that training design could be tailored to specific teams the club was due to play in upcoming fixtures, (Participant 1.2; SO18; SO20). Participant 2.2 considered this a major benefit to performance, specifically:

> “Being able to look at opposition and say look… we’re playing against [redacted] on Saturday we know the style of defence they do on a centre pass so… you know generally they use a three over so what are we gonna do against that to be able to get over first phase and then have a real clear second phase on that centre pass” (Participant 2.2).

Session observation 20 demonstrates this principle in practice, with targeted practices and conditioned games implemented following their specific design from assessments drawn from performance analysis sessions in relation to the upcoming VNSL fixtures. This approach challenged athletes as participant 2.1 explains:

> "What we'll do in training is… literally just set up a scenario that we've struggled with in a game… so we'll literally just start play from that scenario and, and play it live… and what we've found is… players find that quite uncomfortable and there is always a question of like what am I meant to do" (Participant 2.1).

From the offset, sessions were representative and included specific invasion game principles with warm ups regularly incorporating the use of a netball and netball rules within some kind of games-based format. Coaches acknowledged that they saw much better responses from athletes using this approach to other more traditional based practices, as athletes appeared more engaged and motivated (Participant 2.1). Training design on occasion involved some drill-based work as can be seen in session observation 1, however this was often necessary due to confining factors such as the time of season, time constraints or as a result of the type of skill being practiced. This normally led to application later on within a conditioned game thus becoming more representative as the session progressed. Only one session reflected low representativity (SO6), consequently over 95% of sessions observed were highly representative. Within both skills practices and conditioned gameplay athletes were grouped into units relevant to their on-court positionings and working groups, with different combinations tried and tested, with game intensity advocated and rewarded throughout to ensure representativity (SO1; SO3; SO7; SO11; SO16; SO18; SO19;

SO21). At times, breaks or rest periods also represented the four minutes given at quarter time and eight minutes given at half time as per the VNSL rules and regulations (SO12; SO14). Practice design was regularly targeted to ensure athletes stayed motivated and design was purposeful, with challenges such as:

> “Attack versus defence on a half court situation we'll give them a challenge of… they've gotta… get above sixty percent defence have gotta try and keep [th]em below fifty… and you'd do… ten centre passes and then they can go against each other so that there's real challenge” (Participant 1.2).

To replicate game urgency and a no rest ethos task constraints such as the ball is continually live were introduced (SO12). Team talks were actively encouraged and organised within units of; attack mid-court and defence, thus ensuring conversations were relevant and specific to their positions (SO2; SO3; SO4; SO17). During session observation 11 training design replicated in game scenarios with practices being designed to explicitly target on-court positions for example, shooters were encouraged to work the ball to goal. These scenario-based practices were completed at multiple locations on the court, allowing players to test their understanding on both the right and left-hand sides of the court, starting on pivotal points such as the transverse line, side-lines and at centre-pass, all whilst under defensive pressure (SO11; SO12). Practicing skills such as passing and shooting within invasion game team sports such as netball without defensive pressure massively reduces the levels of specifying information that is required to develop the functional behaviours needed for competition (Chow et al., 2020*).* From the example provided by Maloney et al., (2018), of simulating competition in elite combat sports, it is evident that if practice does not adequately represent competition, then lower levels of anxiety, arousal and mental

effort are detected and fewer attacking movements are made of which, the attacking movements that are made are considerably more predictable. Consequently, the concept of representative learning design is paramount to effective skill development.

Within the planning phase, to adequately ensure a representative learning design, athletes, coaching staff and wider support staff considered what they deemed the most envious skills within netball. From this process the importance of creativity, decision making, problem solving and the ability of athletes to be able to think for themselves under match pressure were deemed essential (Participant 1.2; Participant 1.3). From a dynamical systems viewpoint, this is an important element of learning, allowing learners to act not as machines but as thinking, complex systems (Renshaw et al., 2009). As the nature and structure of netball confines the decision-making process to three seconds, coaches wanted to ensure that training design evoked decision making within athletes, empowering them to think for themselves and to read the game (Participant 1.3; Participant 2.2). In particular, coaches concluded that they wanted the squad to be more creative:

> “That's probably one thing that we would want our squad to do to be a little bit more is [be] creative we're… very steady and… a little bit hesitant to kind of push those boundaries and will more likely play it back and keep possession than be a bit creative to try and move defenders to create a pass so it's something that we've actually kind of been looking at in training about athletes being a bit more creative” (Participant 1.2).

Consequently, challenges such as “creative pass of the week” or “creative player of the week” were developed and implemented within training design. Training also incorporated games to inspire creativity as can be seen in session observation 13 which saw an adapted volleyball game introduced, as well as session observation 14, 16 and 19 which also saw the implementation of adapted warm up games. This appeared extremely successful in attack and with some of the younger players who were a little less resistant and more willing to give things a try (Participant 2.2). During sessions, in no way did coaching staff prescribe the specificities of how to achieve a given task, instead athletes were encouraged to be creative and construct their own solutions, coming up with a variety of possible ways in which to achieve the given task, this was extremely explicit in session observation 10. Coaching staff recognised the importance of the Constraints-Led Approach in particular achieving high representativity concluding that:

> “If we just go through kind of skill-based work all the time in drills… the girls won't be thinking for themselves” (Participant 1.2).

All coaching staff acknowledged that for athletes to understand what they're doing and to recognise mistakes was a high priority for them on the court (Participant 1.1; Participant 1.2; Participant 1.3; Participant 2.1; Participant 2.2; Participant 2.3). Specifically, getting athletes to “play what they see”, and problem solve as scenarios unfold was key, as what they wanted to avoid was athletes waiting thirteen minutes into a fifteen-minute quarter to figure out what was going on and for athletes to rely on feedback from coaching staff (Participant 2.2). Instead coaches wanted the group to take responsibility on the court to adapt and change, finding their own way through

challenges rather than the coaching team doing it for them (Participant 2.2; Participant 2.3). Consequently, coaches sought to challenge athletes mentally getting them to look at what was going on, on the court and analysing their own decision making for themselves and communicating that to their teammates (Participant 2.2). As a result, training design was devised around this premise including cognitive decision-making skills practices and challenges. For example, session observation 12 saw the introduction of a cognitive challenge based warm up game which involved getting all players within the team from the baseline to half court using four spots without touching the floor. Similarly, session observation 20 saw players in two teams competing against each other with the aim of rolling the tennis ball across their opponent's goal line using the full length of the netball court. In both of these instances, athletes were required to problem solve and make decisions at times, being creative in this process to construct their own individualised movement solutions to achieve team success. Within training sessions lots of time was set aside for athletes to problem solve and co-create solutions to scenarios that may arise in a game with their teammates and coaching staff, with time also set aside for team talks and discussion which was facilitated but not led by the coach to support this process (SO8; SO9; SO10; SO16). Early within the season it was visibly noticeable that decision making was affected greatly under fatigue (SO2) consequently, future sessions sought to extenuate this concept further with praise highlighting "good choice" (SO3) from side-lines and by coaches thus shifting an onus to the decision-making process. At times, training specifically focused on decision making, in particular, athletes abilities to make good decisions at crucial times:

> “We try and… make all our practices have decision making elements… mainly because of our game we… have three seconds with the ball and we're making hundreds of… decisions you know every minute… so as much as possible we try and practice that in training therefore hopefully it transfers… into gameplay” (Participant 1.3).

An example within practice can be seen in session observation 1 which focused around knowing when to contest and being in a position to do so. Task constraints were consistently manipulated to effect decision making within sessions, commonly adding more defenders and lessoning space available within a practice, thus forcing athletes to make more decisions based on what they see in front of them whilst giving them a feeling of being overcrowded and overwhelmed. Coaches found that decision making practices then had a direct transfer to patterns and pictures seen on the court, however some did struggle with decision making at the start, but development was evident as the sessions progressed (Participant 1.3). Coaching staff concluded that athletes responded best to game-based scenarios that involved problem solving elements due to the realness and relatedness to fully competitive gameplay (Participant 1.2; Participant 2.3).

Coaches encouraged athletes to adjust play rather than to construct new movement solutions and acknowledged that this is something they needed to further encourage within training design (Participant 2.2). Skill adaptability rather than skill acquisition is actively encouraged by Araújo and Davids (2011) and Renshaw et al., (2020) who argue that individuals usually do not need to acquire a new skill but instead adapt the skills they have to a range of specific contexts. One example of where this was

particularly evident was in one instance where coaches designed a practice which they did not necessarily advocate to encourage players to understand that more effective movement solutions could be offered through minor adjustments to skills. Even following previous session interventions players continued to utilise ineffective movement solutions within competitive game play. Consequently, session observation 13 saw coaches encourage athletes to work through conditioned games in which they were allowed to curve their attacking drives on more of an arc shape to get away from defenders rather than to utilise change of direction to make precise and tight angles to create space. During this session, coaches set aside time to look at this concept and to work out if collectively they could get rid of the ineffective movement solution and if not, how they could adapt the acquired skill to be able to incorporate it into gameplay effectively to be of benefit.

One challenge faced during both the adoption and the implementation of a Constraints-Led Approach was a direct result of the invasion based nature of the game, as one group whether that be attack or defence always achieved more successful than the other:

> “Because of the nature of our game attack versus defence you always go away from a session with one group feeling more successful than the other… because if the attackers score lots of goals defenders haven't done a great job and vice versa so it's tryna balance all of that in your practice and how you set it up… knowing the group and then putting all that information together to then come out with a positive outcome” (Participant 1.3).

This was also exemplified within decision making practices as athletes that continued to make poor decisions similarly came away feeling unsuccessful, so a challenge around confidence was consequently experienced. At times coaches found manging this challenge difficult, particularly with a group that shared low confidence levels, but through interaction and understanding, a positive outcome was achieved for each individual within the group (Participant 1.3). Coaches acknowledged that this process took quite a long time and extensive amounts of practice in order to work out when the athletes felt comfortable taking risks and so advocate the earlier this can be done the better (Participant 1.3). This group feeling often influenced practice design as participant 2.1 explains:

> “I think around the feeling of the group generally… you know sometimes we'll have… a practice planned and… we'll start it and then the group just either isn't responding or is really flat or something and actually we might need to change what we're doing and… how we're going about getting… what we want from them” (Participant 2.1).

As is acknowledged by Chow (2013) in the review of literature, the intricacies and dynamism present, provide a real challenge for practitioners. However, through exploration and communication with coaches, in this instance, athletes were able to work co-operatively to discover different ways to work through and solve problems experienced. Coaches in this study deemed this to be the most positive way that they could influence the training environment, on the premise that if the coach and athlete have a high level of trust then they feel comfortable to fail and therefore keep trying

until they succeed (Participant 2.3). Another challenge experienced in relation to ensuring a representative design was discussed by participant 2.1 who detailed:

> “It's hard for players because you know we can kind of get on… someone's back about not being able to execute a skill…but then we're not making them execute it other than in, in a game scenario” (Participant 2.1).

This has been detailed extensively within academic literature, and as of yet, no real solution has been posed, and for many practitioners developing game awareness and tactical understanding without missing technical instruction and feedback remains difficult (Chow et al., 2009).

Overall, this study shows that designing an environment that is truly representative of competition can be a challenge for even expert practitioners who have extensive amounts of experiential knowledge to draw from. However, to advocate and actively encourage an unrepresentative learning design would be to disregard the theoretical underpinnings of ecological dynamics, thus missing out on developing athletes that are able to make intelligent informed decisions (Chow et al., 2009). Therefore, the importance of this concept to a Constraints-Led Approach is indisputable.

4.3 Designing an Environment suitable for the implementation of a Constraints-Led Approach

The themes discussed within this section, as identified from the data analysis process, include goals, motivations, background, values, athlete autonomy, leadership, feedback, questioning, experience, relationship building and reflection. The goals,

motivations, background and values themes also include the sub-themes of; coach, athlete and club, thus offering insight into an array of perceptions as part of the wider theme identified. It was predominantly the clubs ethos and culture which primarily dictated the rationale behind adopting a Constraints-Led Approach, this process was constructed between the athletes, coaches and wider team collectively. By carefully crafting an ethos and culture, practitioners could ensure that an environment that supported, and was compatible with a Constraints-Led Approach emerged. Within this study, the environment was considered essential and is affected by what occurs off the court just as much as what occurs on the court (Jones, Armour & Potrac, 2004). Consequently, practice design should have direction, planning and consider wider socio-cultural influences, Rothwell et al., (2018) highlight the importance of these influences, specifically considering how socio-cultural constraints influence athlete development, inclusive of their performance context relationships. Renshaw et al., (2019) consider wider socio-cultural influences to be the DNA of a sports team or organisation, and if not suitably accounted for then it could be detrimental to development. It was clear that establishing a culture that was inclusive of a well-established philosophy, that accounted for cultural and social influences and that was co-constructed between athletes and all staff members including coaching staff and wider support staff was a key priority for the club. Time spent during preseason sought to create and develop the clubs culture including the clubs ethos, philosophy, values, outcomes and outlining their goals. Wider support staff including but not exclusive to; the strength and conditioning team, psychologists, physiotherapists, performance analysists and nutritionists ensured this process gained a wide variety and well-rounded view. This process of collectively collating the views, thoughts and feelings of coaching staff, wider support staff and the performers was essential in acquiring buy

in from all and ensuring effective delivery from all which reflects the philosophy, values and goals (Renshaw et al., 2019). Coaching staff explained that:

> “What we wanted to do was… set those values but also live by them and what… maybe… happened the previous year is we set those values but we very rarely went back to them… we very rarely… revisited them and said alright this is what we said we would do but have we actually done that do we live by these values” (Participant 2.2).

The key values from this process highlighted enjoyment as the most prominent to athletes and staff alike as without fun and enjoyment all agreed they did not perform to the best of their abilities:

> “That element of enjoyment and fun is massive… it's one of our… real kind of key values… across the franchise because if they're not enjoying it they won't… perform” (Participant 2.2).

Athletes and coaches alike wanted to be involved in a professional, competitive, challenging and winning environment in which they feel empowered and can push each other to be their best and most effective whether that be on or off the court. The environment created was based around trust with good working relationships established which involved open dialogue and communication. All wanted to instil a team first mentality and to develop an environment that advocated problem solving. A holistic, autonomy supportive environment which held athlete learning and development at the forefront was created, exploration was advocated between the

performer and coach, encouraging them to work together to develop a shared understanding of the intention and desirable outcomes of the practice. Other values situated around developing trust, leadership and instilling a winning mentality with a mindset that they belong at the top alongside the other most successful teams. Coaches valued encouraging athletes to be the best that they could be both on the court and off the court and wanted to send players out better than when they came in. There was significant value placed on performance with praise given to players who got into national programmes and went to major competitions such as the World Cup. More broadly, a more integrated franchise was advocated, encouraging VNSL players to associate with the franchise academy players and vice versa, to make it feel more like a club and not isolated in anyway. These values were developed throughout the franchise, guiding all aspects of delivery to ensure that these values were lived and breathed throughout every aspect of the club whether that be in gym sessions, physiotherapy sessions or strength and conditioning for example. These values were very much integrated into the way that the franchise behaved, guiding all actions and responses. Mistakes were valued as part of the learning process; this is a concept Renshaw et al., (2019) advocate and consider to be essential when trying to successfully adopt a Constraints-Led Approach. Values were derived from and developed alongside the goals of the club to ensure consistency in the approach. The main performance goal was to achieve a top four finish within the VNSL, this goal remained relatively fixed, however, the processes and the ways in which the club intended to meet this outcome was not. Less performance orientated goals situated around; building one of the best holistic programmes in the country that is able to produce VNSL athletes from their own performance pathway. Developing and empowering athletes so that minimal input is needed from coaching staff, almost

making them redundant, was key to achieving this goal. Other goals were to have a winning home record and to establishing a really strong identity on and off the court. Setting goals had a considerable impact on training design, allowing the sessions to have clear and well-detailed intentions, allowing the athletes and staff alike to see an achievable route to achieving their goals. As a result of the careful crafting of this socially- and culturally- constructed ecological niche, a Constraints-Led Approach could be implemented with both clarity and proficiency (Rothwell, Stone & Davids, 2020).

The most prominent socio-cultural challenge that had a considerable impact in the ways in which the environment was designed included the number of injuries obtained particularly in the more experienced players and key leaders on the court (Participant 2.2). This meant that younger, more inexperienced players were expected to step up and take to the court at a time in their development when they probably were not expecting to. From the session observations conducted, it was evident that going from a long squad of fifteen players to at points having only eight fit or available to train clearly effected training design. At points, illness, players away at national training commitments or affiliation to other sports also further extenuated this challenge. However, athletes were able to step up and adapt to ensure a positive learning climate was upheld and effective training could continue. Coaching staff accredited this success to the strong culture and values that had been embedded, in particular, the ways in which leadership and athlete autonomy was endorsed. There is much theoretical and empirical support for creating an autonomy supportive environment in which leadership is a key component with current literature revealing the positive results that can be gained as a consequence (Crozier, Loughead & Munroe-Chandler,

2013; Occhino, Mallett, Rynne & Carlisle, 2014). An autonomy supportive environment was actively implemented with athletes actively taking on leadership roles in; warm ups, prehab, activation, cool downs, team talks and team appraisal in more than 80% of the sessions observed (SO1; SO2; SO3; SO4; SO5; SO6; SO8; SO10; SO12; SO14; SO15; SO16; SO17; SO18; SO19; SO20; SO21). Coaches also enforced constraints to encourage athletes to take up leadership roles and to explicitly create an autonomy supportive environment. For example, during conditioned gameplay coaches implemented the environmental constraint of no noise, this including any input from coaching staff. Coaching staff wanted athletes to find their own ways to get through problems concluding that in an ideal world:

> “Whatever the bump in the road is the group [would] find their way to get through it rather than necessarily the coaching team because I think that makes it stronger than if we're always giving them the solutions” (Participant 2.3).

Coaches believed that:

> “When they cross the white line to play as much as you think you can influence as a coach you can't influence that much so in an ideal world we'd have a… significant leader in each court area… [to pull] the team together at crucial moments generally keeping… encouragement and the motivation levels really high” (Participant 2.3).

Recognising this need to establish and generate the next group of leaders resulted in the creation of a leadership group. The leadership group consisted of a captain and

two vice-captains and was elected by the players. Members involved in the leadership group took a role in facilitating team talks and discussions, this providing all with the autonomy to have an input and to step up and share their views. From this process coaches wanted athletes to take ownership and accountability in particular when reading the game and having the confidence to change and adapt play (Participant 2.2). During training sessions athletes were also encouraged to offer feedback to coaches on what they wanted including within training as well as what they were enjoying and what they were not enjoying. Injured players were still included in whatever ways they were able to, ensuring that they did not miss out on any of the learning acquired. For example, the more experienced players and leaders within the group offered guidance and feedback to other players working in their court area acting in many ways as support coaches. At other points players remained physically involved within training practice becoming feeders or outlet players within skills practices and conditioned gameplay (SO21). During this time team discussions and individual conversations with coaching staff also took place to further consolidate learning and to ensure discussions were both relevant and of high quality. Where players were not able to partake in training in a physical capacity, they took up a key role within team talks and discussions offering insight from their observations. This was extremely positive and successful when supported with performance analysis with instant replay available to supplement these discussions. Overall, by ensuring that everyone had an input into designing the club ethos and contributing to club values ensured that when challenges such as substantial athlete injury occurred, athletes and coaches alike remained engaged and were able to amend training design to ensure performance outcomes could still be adequately met. Although at first this proved time consuming, the advantages of gaining buy in from all where all truly believed in and

understood their role, what they were involved in and what they were collectively trying to achieve was crucial. However, it was evident that this is still an ongoing learning process with some players still overly reliant on coaches during athlete-led team discussion, asking their opinion first before giving their own thoughts (SO3). Coaches also acknowledged that when players were first challenged to think in this way, they would design practices in a way that was very traditional and not inclusive of the values they had asked for (Participant 2.1). Consequently, it could be argued that at times training design has been player driven and not necessarily player led, however, with continued work and development an autonomy supportive environment in which all players are confident to lead can be created.

Another socio-cultural influence that had a significant influence on training design situated around the rising pressure to exceed last year's results with a squad that was 50% new. Due to the amount of movement now within elite level netball, in particular the VNSL, this challenge is not uncommon and is faced by many clubs. The time set aside in preseason to co-create a functional and positive learning environment again helped in many ways, playing a massive role in addressing these socio-cultural challenges. More specifically, it was the focus on, and time dedicated to relationship building that evoked the most positive response to this challenge. From the positive working relationships established, an environment was created in which players and coaches felt comfortable even at their most vulnerable and under the most testing and challenging times, when places in the squad or starting seven may have been uncertain. Through interviews with the coaching team and session observations, it was clearly evident the extent to which this concept transpired throughout the whole of the club, emanating as one of its key values to create:

> “A team within the team” (Participant 1.3).

During preseason it was evident from the observational data collected that a lot of practice design situated around forming and developing relationships, getting to know each other and getting to understand what the squad looked like. As the season progressed and relationships further developed, less time was needed in this area. During preseason coaches tried to encourage the team to do more together off court as they believed that understanding each other better could encourage positive modifications to performance on court. This involved the introduction of competitions in which athletes were split into teams and they would then compete in those teams in aspects whether that be warm up games, fun seasonal activities, social media challenges, work in the gym or specific team building games to win points towards the competition. In these competitions, each team was assigned a team leader who was a member of the wider staff, as a result of this design athletes had to communicate with that member of staff. There was also considerable time and energy specifically dedicated to developing coach-athlete relationships. Coaches described how much they valued relationship building and the importance it held within their own personal coaching philosophies:

> “It's really important to me that I walk into a session and I speak to all the athletes that I'm about to coach and get a feel for how they're doing where they're at mentally… physically… but most importantly who I'm gonna coach on the day” (Participant 1.3).

Coaches would chat to athletes whether that was at training or elsewhere or more formally check in on them if something was specifically flagged on their monitoring, thus ensuring that all athletes had opportunities to engage with coaching staff. To give athletes consistency and to get the best out of the athletes, coaches adapted feedback to consider which staff member athletes responded to the best and where they were working with in relation to their position on court. To ensure positive coach-athlete relationships could be developed, coaches explored and discussed in depth the athletes goals, motivations and values with them in an open and honest way and came back to these during reviews which took place at intervals throughout the season. Coaches believed that to get the best out of people they needed to know what kind of people the athletes are, understanding what they can and cannot cope with, what they respond to, knowing what else is going on in their life whether that is exam pressure or family issues and also making sure that people do not get neglected:

> “If you put some of our athletes almost on show to try something new they're too scared to do it wrong or… depending on the time in the season it's too close to the start of the season for them to even think about changing or doing something new so… you need to understand the reasons why and then go for it a little bit as a coach [be]cause you know they won't do it on the court if they've not practiced it with you” (Participant 2.3).

Knowing the motivations of the athletes whether that is individual skill elements they want to get better at, whether it is winning a game, whether they want to go on and play for England, it was important for coaching staff to know all of those things. One example of where understanding individuals proved powerful was evident when some

resistance from the more senior, experienced athletes occurred when trying to explore new less conventional concepts (Participant 2.2). As a result of the open dialogue that had been established and subsequent levels of trust that emerged, athletes felt that they could discuss these insecurities and uncertainties and coaches were consequently able to confidently explain the purpose and context of what they were doing. Coaches went to a multitude of lengths to unpack the contextual value of skills practices and conditioned games, providing footage, drawing athletes a picture to get clarity and spending some time one on one with them. Overall, athletes felt comfortable enough to try these less conventional concepts and to work hard to achieve the intended goal or outcome.

Coaches recognised the importance of ensuring that athletes can creatively adapt and think, making decisions for themselves, skills which Light (2014) acknowledges are crucial. This was outlined as a key value during the building phase at the start of the season. In order to create and develop an environment that was representative of this value, the tools of questioning, feedback, and reflection were utilised consistently within training design. The use of questioning was utilised by all coaches throughout training sessions and was, on occasion also athlete led (SO1; SO3; SO4; SO6; SO9; SO10; SO13; SO16; SO17). The importance of questioning to enhance learning is widely recognised within literature for developing the problem solving (Sullivan & Clarke, 1991) and critical thinking abilities of athletes (Yang, Newby, & Bill, 2005). Questioning was open ended and encouraged athletes to access higher order thinking skills to consider the bigger picture. Examples of questions asked involved but were not limited to: When were we successful? What did we find made us more successful? Can we see where we can flip out? When were you effective on 1st phase? What did

that look like? At times, performance analysis was used to guide the processes of questioning, which allowed coaches to pull information from players and spark discussion in a different way, allowing them to format questions differently. Questions asked included: What happened next? From what we can see what might have been a better option? What do we want to do here? What can we learn from this? What can we do in this situation? Close interdisciplinary working with the performance analysis team allowed athletes and coaches to compare statistics from previous years and correlate how those statistics effected and impacted the game. From this data, conclusions could be drawn from key performance indicators such as: centre pass to goal, live turnover to goal and restart turnover to goal to name a few. Athletes and coaches also reviewed footage away from training on a regular basis, either choosing clips or providing athletes with clips of specific teams, units or individual athletes to begin to ignite discussion around what strategies they might put in place in order to be successful. During training design there were substantial blocks of time dedicated to group working and extra time provided to allow individual athletes to find their own individualised solutions to problems being experienced. This process saw athletes interact with their peers, offering feedback and asking questions about what they were seeing, what they had learnt and any challenges they might be facing. A key observation in this area saw the more experienced or senior players take responsibility for supporting and helping the younger or more inexperienced players providing feedback as and when it was needed. Athletes consistently received individualised written feedback, individual, unit and team-based video feedback, peer feedback and individual, unit and team based verbal feedback. Feedback usually fixated around reaching a target or goal which was set either prior to, at the start of, or during the session. Goals set were specific, measurable, achievable, realistic and timely, for

example, percentage based targets such as out of so many centre passes, can they get over 70% (Participant 2.2). Feedback offered largely focused on the quality of the process rather than skill execution and provided praise, critique, positive feedback and negative feedback occurring both *in situ* and out of practice. Feedback was extremely individualised and dependent on the individual athlete and how they like to receive feedback and their confidence levels. The two-way open dialogue developed as a result of the open-door policy implemented and the time spent building relationships ensured athletes felt comfortable requesting feedback and asking their own questions, sometimes challenging the coaches, which was actively encouraged. Coaches and athletes reflected consistently on aspects which involved topics such as where they were successful, where could they have been better, and how can they work better together. This took place prior to sessions and games, during sessions and after sessions and games. The use of performance analysis supported the reflection process and was utilised to reflect on previous games for instance possibly where statistically the team performed poorly, utilising this evidence to problem solve and work out solutions to how they in the future, could take a win in that given scenario.

Overall, co-creating the club ethos inclusive of culture and values early, helped the club to succeed in gaining whole club buy in (Participant 2.2; Participant 2.3). Athlete buy in, was largely coordinated by coaching staff through the experiences they created in the careful planning and design of training practice. Practice design reflected the whole club ethos, culture and values, the most prominent practices were those that involved the building of trust. In addition, the previous experiences of coaching staff supported whole club buy in, specifically their experiences as elite athletes within the VNSL (Participant 1.1; Participant 1.2; Participant 1.3) It has been show in from this

study, that any retrospective socio-cultural challenges experienced throughout the season, such as; significant athlete injury particularly of key leaders within the squad, the rising pressure to exceed last year's results with a new squad and a general lack of creativity and decision making could be easily overcome with a strong and established shared and co-constructed ethos. Cassidy et al., (2009) argue that this careful and thoughtful consideration of socio-cultural influences is necessary in any sporting environment as it can massively influence the coaching approaches adopted, thus resulting in subsequent effects on athlete development. Therefore, if practitioners had not intentionally accounted for environment design and had not considered the resulting socio-cultural ecological niche created, it is unlikely that a Constraints-Led Approach would have been successfully implemented.

4.4 Chapter Summary

From the findings of this study it is evident that if a balance of these three areas can be maintained then the successful application of a Constraints-Led Approach can be attained. Through extensive planning and by carefully crafting and co-constructing an ethos and culture, having clear and open channels of communication, and by ensuring a representative learning design, practitioners were able to ensure an environment that supported a Constraints-Led Approach emerged, thus evading many potential socio-cultural challenges that could have been experienced and consequently, a Constraints-Led Approach was able to be successfully implemented. Overall, these results conclude that a Constraints-Led Approach can be fully immersed by practitioners working within an elite netball context. In relation to research questions two and three, from the empirical investigations conducted, the extent to which coaches recognise and utilise a Constraints-Led Approach in elite netball practice has

been determined and a thorough understanding of the barriers and facilitators to the implementation of a Constraints-Led Approach within elite netball practice have been gathered.

5.0 CONCLUSION

The overall aim of this study was to develop a greater depth of understanding on a Constraints-Led Approach and its application within elite netball practice, inclusive of any challenges faced by practitioners and the methods employed to overcome those challenges posed. From the focus that the research questions and corroborating objectives provided, this study was able to succeed this aim, being a consistent point of reference throughout the entirety of this study. As a result of the unpredictable and uncertain nature of qualitative research, unexpected and unforeseen findings emerged throughout this study. With the most prominent unforeseen finding being the relevance and importance of designing an environment that supported the implementation of a Constraints-Led approach. This unexpectedly materialised as a key and prominent factor to the effective implementation of the approach and consequently, formed a key role in the discussion of this study. In answer to research question one, a critical review of literature was conducted to determine the importance of a Constraints-Led Approach within elite netball coaching practice. This review provided substantial guidance and support to the research findings, adding greater depth and contextual clarity to the study. Results from the review of literature, showed that resistance to the Constraints-Led Approach originates largely as a result of the difficulties faced during its implementation, consequently the approach has passed practitioners by with little influence on practice design in comparison to approaches such as Teaching Games for Understanding and Game Sense which have been successfully implemented and developed within practice (Renshaw et al., 2015; Thorpe, 2005). In answer to research question two, to what extent do coaches recognise and utilise a Constraints-Led Approach in elite netball practice, an empirical investigation consisting of multiple session observations was conducted. The investigation determined that a Constraints-

Led Approach was adopted and implemented successfully and collated a variety of examples from practice for future practitioner reference. In answer to research question three, a thorough understanding of the barriers and facilitators to the implementation of a Constraints-Led Approach within elite netball practice were gathered through semi-structured interviews with elite netball coaches. To conclude, the findings of this study have been successful in answering the research questions clearly and in full.

5.1 Summary of Findings

Data collected provided considerable insight into the ways in which a Constraints-Led Approach can be implemented within practice, including responses to challenges faced by practitioners. The results of this study demonstrate that a Constraints-Led Approach can be successfully adopted and implemented within practice when practitioners consider the theoretical foundations of the approach and account for other key properties. During the entirety of this study, a Constraints-Led Approach was utilised consistently, with task constraints being the most commonly and successfully applied and environmental constraints being the most underutilised and deemed the most difficult to implement by practitioners (Participant 1.1; Participant 1.2; Participant 2.1; Participant 2.2; Participant 3.1; Participant 3.3; SO1; SO3; SO4; SO5; SO6; SO7; SO8; SO9; SO10; SO11; SO12; SO13; SO14; SO15; SO16; SO17; SO18; SO19; SO20; SO21). Results from the study advocated the need for training to be representative of the performance environment, including key information sources that occur in competitive environments so that athletes can attune to the appropriate stimuli and appropriately react to the environment (Renshaw et al., 2007). It was also established that to suitably adopt and subsequently implement a Constraints-Led

Approach, wider considerations of the environment needed to be made, including considerations of the wider club ethos and culture. Practitioners should also understand the relevance, usefulness, purpose and rationale of their design including the appropriate time and place for manipulating constraints. Results from this study suggest that if practitioners can understand, apply and appropriately balance these three areas then the successful application of a Constraints-Led Approach can be achieved. Findings demonstrate that the Constraints-Led Approach can be adopted and implemented successfully within an elite netball setting, with practitioners able to fully embed the approach into their practice. Coaches involved in the study experienced the benefits that can result from the successful implementation of a constraints-led framework and therefore considered it to be a viable approach that supports athlete development. Coaches were able to overcome challenges arising from the implementation of the approach through time spent understanding the theoretical underpinnings of this approach, ensuring representative learning design and by constructing a supportive environment. Overall, the results deduced from this study offer rich context specific data that not only answers the research questions and research aim, but also adds academic rigor to the current body of literature within this field.

5.2 Relevance and Significance of Findings

The findings from this study have provided evidence of the successful adoption and implementation of the Constraints-Led Approach within elite netball practice. These findings contribute to and support the works of Renshaw et al., (2019), predominantly in their investigation into the sport specific application of the Constraints-Led Approach. To establish significance and as is encouraged by Newcombe et al., (2019),

planned to gather research out in the field, with the intention to take place over a full competitive cycle and season, however, due to the Covid-19 global pandemic, the proposed methodology had to be adapted. Consequently, data collected represents half of the typical season and just under a quarter of the usual VNSL competitive cycle. However, the quality of insight that this study provides and the contribution that it offers to current research is vast, as of yet there has been no extensive study conducted in netball or in any solely female sporting context, with minimal studies conducted in elite sporting environments (Clark et al., 2018). Consequently, the relevance, significance, importance and originality of this research is conclusive. Therefore, the results and findings from this study should not only be utilised to contribute depth and richness to academic work, but they should also encourage practitioners to effect change in their own coaching practice and to begin to deliver in a way that serves to promote the learning journey.

5.3 Recommendations for Future Research

There remains significant volume of work required to establish the same clarity on the effective implementation of the Constraints-Led Approach (Chow et al., 2016; Davids et al., 2008; Handford et al., 1997; Renshaw et al., 2009; Roberts et al., 2018). Whilst this study makes a significant contribution to this body of research, the generalisability and transferability of the results are limited outside the context of elite netball practice. Consequently, the translation of this approach should be viewed with a degree of caution. Therefore, for many practitioners, the most pertinent questions still to be answered situate around context specific understandings of the implementation of the approach and connecting theory to their own practice. Consequently, future studies should be of similar nature, and seek to observe the application of the Constraints-Led

Approach within real coaching contexts, thus continuing to grow the body of context specific research available to practitioners. Studies that involve larger sample sizes will respectfully gain more traction, thus challenging more widely adopted approaches. To encourage a wider audience to engage with constraints-led literature, studies which seek to investigate currently unexplored sporting contexts should be encouraged. Studies established in this way could provide an avenue for the Constraints-Led Approach to be recognised in, and effect practice within the wider coaching community. As is advocated in this study and by Newcombe et al., (2019), the role of the practitioner should be at the forefront of any future research, with data collection methods seeking to obtain real discussions with practitioners and gather original data from the field. Consequently, data collection methods such as interviews and observations should be encouraged to gather the depth and breadth of valid and reliable data that is necessary. Studies which assume and accept these recommendations can provide further traction in asserting the validity of the Constraints-Led Approach, beginning to confront and eliminate many of its associated misconceptions and challenges. Overall, this will not only allow for further advancements to be made in academic literature alone, but it will also support practitioner recognition of the approach and develop the successful implementation of the approach within practice.

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APPENDICES

Appendix 1 – Participant Information Sheet

December 2019

PARTICIPANT INFORMATION SHEET

Project title: The use of a Constraints-Led Approach in Elite Sports Coaching: Understanding Practical Application.

Thank you for showing an interest in being involved in this research project. Please read all of this information carefully and take your time to consider whether you would like to be involved in this project. Please note participation in this study is completely voluntary.

What are the aims of the project?
The aim of the project is to further understand the concept of a Constraints-Led Approach and how it can be utilised in practice. We are looking to gather as much insight as possible from elite coaches to truly understand their thoughts, feelings and experiences on this approach.

What will you be asked to do?
If you agree to take part in this study, you will be asked to participate in three individual interviews. Interviews will take place with principal researcher Amy Ruffell-Hazell at a time and venue that is convenient for you, in many instances this may situate around training sessions at your club training venue. Individual interviews will last between 40-60 minutes and will take place at staggered instances throughout the season to gather evolving thoughts and feelings as the season progresses. Please note the interview will be audio recorded so that data can then be analysed, interpreted and be written up as part of the research paper.

What information will be collected and how will it be used?
Data collected from the interviews will be qualitative, considering your thoughts and feelings on the given topic. The findings of this project may be published, but the information will not be linked to any specific individual or club. Your anonymity is carefully guarded, and I promise full confidentiality. A copy of your interview transcript can be given to you upon request.

Benefits
By taking part in this study you will help us to increase knowledge on this subject area and grow the current body of academic literature within this field.

Can I withdraw from this study?
Yes, you can withdraw from this study at any point during this process and if you decide to withdraw you do not have to give any reason for your decision and you will not be disadvantaged in anyway as a result.

Potential harm
It is unlikely that you will suffer any risk or discomfort during the research process, however if you do experience this at any stage you can withdraw from the study without any future consequence. If you have concerns please contact the principal researcher Amy Ruffell-Hazell, via e-mail or

via telephone . If you have further concerns and wish to complain formally about how you have been treated during the study, contact Will Roberts

Should you require any further information about any aspect of this study please contact the principal researcher Amy Ruffell-Hazell, via e-mail .

Appendix 2 – Voluntary Informed Consent Forms

UNIVERSITY OF GLOUCESTERSHIRE
at Cheltenham and Gloucester

INFORMED CONSENT FORM:

Project title: The use of a constraints led approach in elite sports coaching: Understanding practical application.

Principal Researcher: Amy Ruffell-Hazell

Statement by participant (please initial each box)

1. I have read and understood the participant information document dated December 2019. [redacted]
2. I know I can withdraw at any time without being disadvantaged. [redacted]
3. I am satisfied that the results will be stored securely. [redacted]
4. I know that the results may be published but they will not be linked to me. [redacted]
5. I agree to inform the researcher immediately if I feel uncomfortable. [redacted]
6. I have had the chance to ask questions regarding the study. [redacted]
7. I know that my participation in this project is voluntary. [redacted]
8. I understand that I have the right to see the thesis at the draft stage of publication upon request [redacted]

I have read and understood the above and agree to take part in this project entitled 'The use of a constraints led approach in elite sports coaching: Understanding practical application.'

Participant:

Name (Please Print): [redacted]

Signed: [redacted] Date: 2/12/19

Witness:

Name (Please Print): Amy RUFFELL-HAZELL

Signed: Date: 02/12/19.

UNIVERSITY OF GLOUCESTERSHI
at Cheltenham and Gloucester

INFORMED CONSENT FORM:

Project title: The use of a constraints led approach in elite sports coaching: Understanding practical application.

Principal Researcher: Amy Ruffell-Hazell

Statement by participant (please initial each box)

1. I have read and understood the participant information document dated December 2019.	✓
2. I know I can withdraw at any time without being disadvantaged.	✓
3. I am satisfied that the results will be stored securely.	✓
4. I know that the results may be published but they will not be linked to me.	✓
5. I agree to inform the researcher immediately if I feel uncomfortable.	✓
6. I have had the chance to ask questions regarding the study.	✓
7. I know that my participation in this project is voluntary.	✓
8. I understand that I have the right to see the thesis at the draft stage of publication upon request	✓

I have read and understood the above and agree to take part in this project entitled 'The use of a constraints led approach in elite sports coaching: Understanding practical application.'

Participant:

Name (Please Print): [redacted]

Signed: [redacted] Date: 16/1/2020

Witness:

Name (Please Print): AMY RUFFELL-HAZELL

Signed: Date: 16/01/2020

UNIVERSITY O
GLOUCESTERS
at Cheltenham and Gloucest

INFORMED CONSENT FORM:

Project title: The use of a constraints led approach in elite sports coaching: Understanding practical application.

Principal Researcher: Amy Ruffell-Hazell

Statement by participant (please initial each box)

1. I have read and understood the participant information document dated December 2019.	✓
2. I know I can withdraw at any time without being disadvantaged.	✓
3. I am satisfied that the results will be stored securely.	✓
4. I know that the results may be published but they will not be linked to me.	✓
5. I agree to inform the researcher immediately if I feel uncomfortable.	✓
6. I have had the chance to ask questions regarding the study.	✓
7. I know that my participation in this project is voluntary.	✓
8. I understand that I have the right to see the thesis at the draft stage of publication upon request	✓

I have read and understood the above and agree to take part in this project entitled 'The use of a constraints led approach in elite sports coaching: Understanding practical application.'

Participant:

Name (Please Print): [redacted]

Signed: [redacted] Date: 23/1/20.

Witness:

Name (Please Print): Amy Ruffell-Hazell

Signed: Date: 23/01/20.

Appendix 3 – Final Interview Schedule 1

UNIVERSITY OF GLOUCESTERSHIRE
at Cheltenham and Gloucester

November 2019

Interview Guide 1: Pre-Season

Pre-amble:

- The purpose of this interview is to explore your thoughts and feelings on the topic of the Constraints-Led Approach and its application in practice
- There are no right or wrong answers; this interview is simply gathering your own opinions, thoughts and experiences on the topic area. As a result, I want to speak as little as possible and I want you to talk as much as possible.
- You can have a break or stop the interview at any time; we will likely be talking for between 40 and 60 minutes. We would like to re-visit this interview twice more before the end of the season to discuss evolving thoughts and feelings on this subject area.
- So, you are aware I will be making an audio recording of the interview. Is this okay?
- Do you have any questions about the process before we begin?

Introduction:

1. To start off with, could you tell me a little bit about your journey in netball and how you have arrived in this coaching position? How long have you been coaching? How did you get into coaching?
2. How would you describe your own personal coaching philosophy?
    a. What are the core coaching values or beliefs that emanate from this?

Main Body 1.1: Understanding the club (Reflection on 2019 VNSL Season; Ambitions for 2020 VNSL Season; Club Ethos & Values).

3. What do you recall as the most positive aspects of [redacted] last season (2019)?
    a. Was any of this a result of the individual athlete's recruited and their behaviours?
    b. Was any of this a result of the environment created?
    c. Was any of this a result of the goals, tasks, aims or objectives you set yourselves at the start of the season?
    b. To what extent have you planned to build on these aspects for this coming season?
4. What are your hopes/ambitions for your role this upcoming season?
    a. What does success in your role look like?
    b. Is this different?
5. What would a typical training session look like for athletes at this point in time?
    a. Structure? How often? What are they doing in addition to on court training?
    b. Games/Gameplay? – What does this look like? Formal, Informal?
    c. Would you say that training sessions coincide with a constraints-based approach and if so how? – Do coaches look to constrain the; individual, environment and task? (Explain further).
6. What are the [redacted] vision and values?
    a. Is this specific to the VNSL squad?

b. Does this differ drastically from your own as discussed earlier? Why?

Main Body 1.2: Athlete engagement & performance

7. What do you think inspires the athletes to be the best they can be?
    a. How much influence do you think you as coaches have on this?
8. How are you planning to enhance or maintain athletes' engagement within the team?
    a. Do you think any of this is linked to individual athlete behaviour or nature, the environmental created or tasks set within training?
    b. If so, how?
9. How are you planning to enhance or maintain athletes' (intrinsic) motivation?
    a. Again, do you think this will be influenced by individual athlete behaviour or nature, the environmental created or tasks set within training?
    b. If so, how?
10. How do you monitor athlete performance? – E.g. What would influence selection?
    a. What do you tap into as key performance indicators? – Statistical (CPtoGetc)/Creative/ Decision Making
    b. Is this measured? If so how?
    c. Are these means utilised in both training and gameplay?

Conclusion & Summary:

- Is there anything else you'd like to mention that you have not yet had a chance to discuss?
- I think we've discussed these things today [enter topics of discussion]; do you feel that is a fair reflection of what you've said?

Thank you:

- Thank you for time and for your contribution to this project.
- This interview will now be transcribed word-for-word. Upon request I can send you a copy of the transcript. I will check through the transcript to ensure there is nothing that could reveal your identity – if there is, I will either delete it or contact you to suggest a re-wording of the section in question. Is that okay?

Appendix 4 – Final Interview Schedule 2

UNIVERSITY OF GLOUCESTERSHIRE
at Cheltenham and Gloucester

April 2020

Interview Guide 2: Mid-Season

Pre-amble:

- So, moving on from our last chat, the purpose of this interview is to further explore your thoughts and feelings on the topic of the Constraints-Led Approach and its application in practice.
- There are no right or wrong answers; this interview is simply gathering your own opinions, thoughts and experiences on the topic area. As a result, I want to speak as little as possible and I want you to talk as much as possible.
- You can have a break or stop the interview at any time; we will likely be talking for between 40 and 60 minutes.
- So, you are aware I will be making an audio recording of the interview. Is this okay?
- The process is exactly the same before with different questions set but just to check, do you have any questions about the process before we begin?
- Are you happy with the informed consent form that I sent across and you're happy to take part?

Introduction:

1. How are things going at the minute at this point in the season, obviously circumstances are slightly different than what we expected but if you can just discuss how the season was progressing, training that sort of thing up until this point.
    a. What are your immediate reflections on the short start to the season that we had?
    b. Any highlights?
2. What would a typical training session look like for athletes moving from pre-season to starting the season?
    a. And how that fit into a training week? Structure? How often?
    b. Games/Gameplay? – What does this look like? Formal, Informal?
3. What were your main focuses (wider) in training when moving into the season, did these change from pre-season?

Main Body 1: A Constraints-Led Approach;

So last time we spoke we discussed a bit around how you integrate games into practice, and we mentioned the Constraints-Led Approach. A Constraints-Led Approach involves performer constraints (physiological e.g. fatigue, psychological e.g. pressure, emotional including behavioural, attention, motivation), task constraints (specific task or skill e.g. goal of task, rules, equipment) and environmental constraints (the world around us e.g. playing conditions, sound/music, temperature = quite difficult to change). The next set of questions relate to this framework (I'll reiterate these throughout so do not worry).

4. Which do you think you constrain the most in your coaching the; task, environment or performer?

    a. What do you find the most important aspect to constrain in your training, maybe it is specific to your group, the sport and why is this the most important?
5. What might constraining these aspects look like in practice? Can you give any examples from your practice? E.g. Task; Space & Time etc. Performer; Under fatigue. Environment; Playing conditions.
6. Essentially a lot of the CLA is about situational learning advocating training that is authentic and representative of competition. From session observations it is clear you do lots of bits like that with the aim of being representative of competition, can you just talk me through what some of that might look like and why it is important?
    a. What might your focuses tend to situate around? – Time, 7v7, overloading players. How would you make that representative?
7. Do you find any aspects easier to constrain than others again maybe sport or group specific?
    a. If so which ones and why is this do you think?
8. Have you had any negative responses to implementing constraints within your approach? (that might be from players, differing views from coaches, anyone really)
    a. What did you do/How have you begun to change mind-sets about this?
9. One aspect of the CLA that I have noticed is particularly evident within [redacted] from session observations in training involves developing leadership and athlete autonomy/ ability for athletes to think for themselves and have ownership over what they do. Why did you implement this and what is its importance to you as a club?
    a. How has this developed over the season? i.e. in training it is evident who the main leaders are via things like video analysis feedback etc. Initially I know there were a few apprehensions around experiences from last season maybe and with bringing in new players who m How is this working for the whole squad now?
10. Do you encourage players to problem solve and find their own solutions to problems they come up against and if so how?
    a. How/What does this look like in training?
    b. How would this impact your wider goal to achieve top 4?
    c. What do you find are the benefits of allowing players to self-organise and find their own solutions to problems? Netball Specific?
    d. Do you come across any difficulties trying to do this? If so what?
    e. How have you overcome some of these challenges?

Main Body 2: Motivations, Culture & Positive Learning Environment

11. We talked about motivations in the last interview, how might these influence the changes you make to the training environment?
    b. Would this effect how you adapt/constrain things? i.e. attack/defence particulars.
    c. One thing that came out was the fun aspect of the sessions whether that is warm up or whatever, looking at an elite sporting setting this is not always something you think of. What benefits do you find from incorporating fun/do the athletes respond well?
    d. Is this player led/dependent on how they come into training?

12. We discussed culture and values in the last interview, how might you constrain this/include this in sessions to inform gameplay? E.g. So how does that top 4 finish filter down and influence aspects of training? I.e. Do you do build more on aspects such as scoreboard constraints; 10 seconds left on the clock with 1 in it?
13. From the first set of interviews a couple of key bits that stood out for me were the 1;1 work that goes on with players, getting to know players on an individual basis.
    a. What benefits does this have/ why is this important to training?
    b. Do you think this can be of benefit to their learning/progression in training, if so how?
14. How would you say that you create a positive learning environment at [redacted]?
    a. What are the key factors?
    b. What does it take into account?
    c. Is it player directed (players have influence)?
15. So just to round up this section we've just covered; motivation, 1:1 work, culture and values as well as creating a positive learning design. How does this collectively support and fit in with the approaches you implement within training?
    a. Do these work as building blocks to help support the delivery of constraints in training?

Current Situation:

16. What is everyone doing at the minute?
    a. Are they keeping up with training etc?
    b. Keeping Motivated?
17. Is there anything from your training preseason and the very brief start of the season that we had that has prepared your athletes for this difficult situation? i.e. leadership, motivations etc?
18. It must be difficult for everyone moving from a team training environment to one of isolation how do you think isolation will affect development?
    a. Are there any positives that you will take from this situation moving forwards? I.e. aspects of work in isolation, team workouts via video call etc

Conclusion & Summary:

- Is there anything else you'd like to mention that you have not yet had a chance to discuss?
- I think we've discussed these things today [enter topics of discussion]; do you feel that is a fair reflection of what you've said?

Thank you:

- Thank you for time and for your contribution to this project.
- This interview will now be transcribed word-for-word. Upon request I can send you a copy of the transcript. I will check through the transcript to ensure there is nothing that could reveal your identity – if there is, I will either delete it or contact you to suggest a re-wording of the section in question. Is that okay?

Appendix 5 – Project Approval Confirmation

Dear Amy Ruffell-Hazell,

I am pleased to inform you that the Postgraduate Research Degree Lead for your School has now approved your Project Approval Form with the following details.

Degree: MSCR

Title of programme of research:

Supervisory arrangements:

First supervisor: Will Roberts

Second supervisor(s): Anita Navin

Expected Date of Submission: 30/Sep/2022

You must arrange to submit your thesis for examination on or before your Expected Date of Submission. You must work with your first supervisor to ensure that your Intention to Submit form is presented to the School Postgraduate Research Lead at least three months prior to your submission date to provide sufficient time for planning your examination.

You must note the expected course duration for your award according to the Research Student Handbook and the maximum periods of registration permitted according to the University's Academic Regulations for Research Degrees Provision.

You must ensure that you note any future deadlines for action by you.

Please also ensure that you are familiar with the mandatory tasks required of you, as outlined in the Research Student Handbook.

Guidance documents on all Postgraduate Research regulations and processes are provided on the UniGlos PGR Moodle site. Further information is also available using the MyGlos Help function. If you are unable to find the answer to any query you may have, please email

Yours sincerely,

Research Administration Office

Appendix 6 – Ethical Approval Confirmation

Dear Amy,

Thank you for your application for ethical approval.

I am pleased to confirm ethical clearance for your research following ethical review by the School of Sport and Exercise - Research Ethics Panel (SSE-REP).

Please keep a record of this letter as a confirmation of your ethical approval.

Project Title:	The use of a constraints-led approach in elite sports coaching: Understanding practical application
Start Date:	September 2019
Completion Date:	Masters by Research end date (not provided)
SSE-REP Clearance code:	AR-H19-20

If you have any questions about ethical clearance please feel free to contact me. Please use your SSE-REP clearance code in any future correspondence regarding this study.

Best wishes

Stephen C. How PhD
Chair of School of Sport and Exercise - Research Ethics Panel

School of Sport and Exercise - Research Ethics Panel (SSE-REP)
University of Gloucestershire, Oxstalls Campus, Oxstalls Lane, Gloucester, GL2 9HW
Tel:
Email

Appendix 7 – Example Interview Coded Transcript

Interview 2.2 Transcript:

Project title: The use of a Constraints Led Approach in Elite Netball Coaching: Understanding Practical Application.

Interviewer: Amy Ruffell-Hazell
Interviewee: [redacted]
Date: Thursday 14th May 2020
Length of Interview: 01:25:00
Venue: Home-Based

Interviewee: I apologise if I mean my dog seems quite quiet at the moment but if they bark I might mute for a few seconds while...

Interviewer: Yeah that's not a problem at all so just to confirm you're happy to be recorded [redacted]?

Interviewee: Yep.

Interviewer: Fab just to confirm whilst it's recording fabulous erm let me have a little look oh you're recording your conv yeah fabulous erm so again just a few bits if you get interrupted absolutely fine just let me know we can pause it erm likewise if we lose signal or anything like that erm we'll just kind of end the chat and we'll just try and reconnect erm it's possible and if it's not looking likely I'll just be in touch to kind of finish the interview kind of from where we left off but fingers crossed we're alright with technology...

Interviewee: Yeah.

Interviewer: Erm as I said it should take little over an hour erm it's just moving on really from what we had a chat about last time obviously circumstances are a little bit different as where we kind of predicted being just halfway through the season as it would have been erm but it's really just looking at your thoughts and feelings on different bits so there's no right or wrong answers erm you can have a break if you want me to repeat a question anything like that please...

Interviewee: Yeah.

Interviewer: Give me a shout.

1

Interviewee: No problem.

Interviewer: Erm it's pretty much same process as before...

Interviewee: Yeah.

Interviewer: I did send across the informed consent form are you happy with kind of all the information it was the same form as we did the first time?

Interviewee: Yeah that's fine.

Interviewer: That all right fabulous okay so we'll get going then erm so just first one really bit of an introduction how were things going up until this point in the season obviously before kind of the circumstances changed things erm but we'd just started the season what were things looking like?

Interviewee: Erm we probably didn't have the best start to the season that we would have liked to have had erm I think a, a, a, a few facts well one of the main factors was a lot well a few of our athletes had got injured erm and picked up injuries er whether that been in preseason or in the first few games of the season which had which clearly had an impact on, on our performances erm which meant we were a little bit more reliant on the, the new kind of rookie ah rookie athletes that came into there erm don't get me wrong they performed really well erm probably under pressure and probably at a time where they weren't quite expecting to take the court erm you know they were probably expecting at this point to be training within that environment and maybe getting a little bit of exposure every now and then when needed whereas we ended up having to play them quite a lot and some of them p, well one in particular out of position at times because we'd had taken such a hit with injuries in the mid court area erm...

Commented [RA1]: Experience

Interviewer: Yeah.

Interviewee: So I would say you know not the best start due to injuries but performance wise we you know we, we, we put out some good games I think we just weren't able to like take the win from those games so like perform for a half or perform for three quarters and then kind of not have that, not have that kind of er experience to erm kind of take on and, and, and win from those games which was which has been probably one of the most difficult things in the, in the first kind of half of that season.

Commented [RA2]: Experience

Interviewer: Yeah and you just kind of mentioned that performing for a half and three quarters would you say that is down to experience then was that the main catalyst in that one?

Interviewee: I think so I think you know we use, usually we would aim to have some you know kind of three or four experienced heads on the court erm and

for us like you know we, we lost kind of three of our most experienced players in the mid court erm and you know you, you've got we're then reliant on new rookie athletes who came into that erm and you know I'm not putting kind of any blame on those centre court erm athletes it's, it's just, just more so you know th, them not having that erm experience over a period of time of, of how to kind of maybe if we have the lead how to keep that lead and keep that foot on the pedal or if we're behind how to like pick yourself up and pick the team up and take responsibility and then to kind of channel that into a win I think across you know if we'd had the opportunity we, we probably would have got better at that because they've, they've started to experience what that feels like you know as a loss and you don't wanna feel that again erm so you know that experience does build them as athletes but unfortunately you know we're at a point where we're in the, the, the major comp, competition time and they're having to do that learning in competition as opposed to kind of throughout you know throughout the year or erm in preseason cause we had a really well a relatively a really good preseason erm for and for us that was probably a little bit shocking cause usually we have a little bit of a, a nightmare in preseason and then it usually comes together in, in the season so I think erm yeah I think just yeah definitely a bit of experience being able to like I say extend a lead if we have a lead or ha knowing how to kind of pull together regroup while games goin instead of just waiting for quarter times for coaches to try and inject something it's them actually taking responsibility on the court to adapt and change and, and er implement something that's gonna work as opposed to sometimes kind of taking a few going a few goals down six or seven goals down erm can at this point when, when they're learning have a real kind of effect on their mental toughness.

Commented [RA3]: Experience

Commented [RA4]: Experience

Commented [RA5]: Problem Solving
Experience
Leadership

Interviewer: Yeah, yeah fab and is there anything so moving on from preseason to kind of starting the season was there anything that changed in their training schedule at all so in that kind of training week?

Interviewee: Er not necessarily more probably a little bit more about loading and making sure that they were kind of as ready as they could be for the actual competition day erm but I suppose kind of building up in preseason that you know where there's been an aspect of conditioning making sure that they are fully kind of robust enough to take the court and last a certain no you know they last sixty minutes on the court and then as we built through preseason more of that was game related cause we were getting some times for them to be against opposition in the preseason and then just training wise it you know there, there's probably they still do an aspect of conditioning erm but obviously that's got to be erm kind of loaded in the, the fact that they'll be playing a, a high intensity competitive game on the we whatever day it would be whether it the Saturday Sunday or the Monday erm so the train the training schedule does a, adapt and change but based on what competition they've got throughout that week...

Interviewer: Yeah.

Interviewee: Especially, especially if we had like say a game on the, a game on the Monday then a game on the Saturday we would definitely have to change where their sessions fit so I think we adapted usually we would have our technical session in, in that [indecipherable break in audio] erm Sunday and a Thursday whereas when we had like a game on the Monday in the, in the saff Friday or Saturday we would have to put erm technicals in different places so that their loading didn't get kind of over, overwhelmed.

Interviewer: Yeah in terms of gameplay and [indecipherable poor audio] kind of structured a sessions so Thursday was more based around kind of games stuff is how would that change or was that pretty similar?

Interviewee: Er yeah pr, pretty similar I mean we, we tried to this year obviously I my, my kind of er part pl, like part I played within that erm we, we'd definitely on a, on a Monday would go through a lot of kind of technical aspect of er maybe something that we felt we needed to work on from the previous game erm and, and kind of re, revisit that in video erm and then take that to the court erm and then on the, the Thursday sessions I know was a bit more about what have we got to do against this opportu er opposition and kind of how do we kind of what do we do about that this is what that looks like and kind of come up with those ideas together as kind of our already kind of knowin as a coach what we needed to do against that team but also gettin that view off the athletes as to how are we gonna go about this and what are what is our individual job but also what is our jobs as a unit to go against those opposition, oppositions.

Commented [RA6]: Training Design

Commented [RA7]: Athlete Autonomy

Interviewer: Yeah lovely so erm what were your main focuses going into kind of the season did that change from preseason or was it pretty consistent?

Interviewee: As a squad?

Interviewer: Yeah.

Interviewee: Erm I think main focuses wise was I mean we've always got our kind of performance outcomes so kind of tryna get top four erm towards the end of the season to then get into obviously like erm finals and playoffs and I think erm that, that never re never changed really I think erm we've always got that insight but erm at throughout preseason a lot of the kind of focus was on the processes of that so you know working with the erm the, the Multi-Disciplinary Team erm in how we can achieve erm those outcomes but what the processes of are, are of getting there w, with absolutely every aspect so like with the strength and conditioning how can we have them physically robust enough to withstand a sixty minute game and then recover and then be able to do that kind of four five later erm with all the other training they might have in between so some of these girls play different competitions. erm same with like nutrition how erm we can get them recovering how we can get them kind of eating the

Commented [RA8]: Goals: Club

Commented [RA9]: Training Design

right things to be able to energise themselves to complete the sessions erm same with them managing their kind of whether it's rehab for injury or whether it's just general kind of preparin their body er with recovery erm I think preseason er and before preseason us er us as coaches are kind of sitting down and, and saying like what, what's important to this programme and what's gonna kind of make us the best erm that then came out within preseason making sure that we educate the athletes enough to be able to take some of that ownership themselves erm for recovery for their nutrition erm with their S and C and I suppose for us it was technically just erm ha kind of targetin areas that we felt previou in the previous season that we probably could have been stronger at so working with PA working with ____ to see what our stats were for the previous year were and looking at how those stats effect the impact of the game so you know what are the important areas of the game that we feel would enable us to win a game erm so like the centre pass to goal the, the live turnover to goal restart turnover to goal erm and, and basically kind of reflecting on games last year where the stats were low on those areas and how if they'd have been higher we probably would have taken a win so er there was an element of preseason that was focused on turning ball over er and then (clears throat) once we'd kind of gone through that for a good number of weeks it was then gettin into looking at like our attacking strategies.

Commented [RA10]: Athlete Autonomy

Commented [RA11]: Feedback

Interviewer: Yeah.

Interviewee: And I feel, I feel like that continued from preseason into erm into actual competition cause they were you know we, we said in our preseason we had a really good defensive game we turned over a lot of ball and ultimately I think that's why we lo erm we won a few er a lot of the ga well pretty much all of the games except for one I think it was against [redacted] maybe erm so yeah going into, into the actual season in the, in the training er blocks that we had in season erm we still spent time kind of reflecting on the things that we'd done but also trying to make that better and obviously target the, the opposition that we were playing against and things that we felt probably weren't as good as they could have been.

Commented [RA12]: Training Design Reflection

Interviewer: Yeah nice fab so the next bit [redacted] is kind of erm talking about a constraints-led approach which is that kind of games based erm stuff that we talked a little bit about previously so I'll just explain a little bit about the concept so last time we talked around kind of how you integrate games into practice and we talked about some different kind of variables of that so the three v three all that kind of stuff and different practices etcetera erm in terms of the constraints-led approach so this kind of involves three aspects so it talks about changing aspects of kind of the task so that might be you've gotta score so many goals in this erm kind of constraint or erm that three v three so changing kind of the task almost so yeah the task erm the other one is in terms of the performer so that might be anything physiological so maybe putting them under fatigue

under pressure like psychological pressure and the final one is in terms of the environment so this is more around like the playing conditions so would you change this one's quite like the most difficult one to change in terms of like maybe putting in crowd music noise all that kind of stuff to get that kind of game feeling...

Interviewee: Hmm.

Interviewer: So this next set of questions will all kind of relate to that framework erm I'll reiterate it throughout continually so don't worry erm if you kind of just wanna clarify on one aspect or so...

Interviewee: Yeah.

Interviewer: Erm but which do you think which aspects out of the task the performer or the environment do you think that you constrain the most or kind of change?

Interviewee: Erm definitely do you think sorry so I think the hardest one is the environment...

Commented [RA13]: CLA: Environment

Interviewer: Yeah.

Interviewee: And I think we could definitely kind of constrain the, the task and the performer erm because we, we generally do that quite a lot because within our training group you would have, you would never really have fourteen athletes so kind of to go seven v seven erm we would have to do that erm if we decided to bring some extra training partners in if we felt that there was a need to go against each other erm on a full game we would kind of specifically at key times ask some of the er whether it's the under twenty ones or BUCs players to come in on that erm but generally there would be kind of a training group of about twelve thirteen athletes erm so a lot of the time we would be planning erm whether it's technical or tactical erm kind of tasks for them to complete erm in a kind of reduced amount of space or erm just with different kind of challenges on that so er with, with the likes of fatigue you know that that's something er that we probably started off doing more preseason where they had like an e, an element of conditioning er at the start or the end sometimes at the start erm where the it then had they had then had to do some kind of erm technical or tactical aspect normally tactical to try and challenge their kind of mental toughness in under fatigue erm within sessions but I think your you know where you highlighted environment I think just within technical sessions that is probably the toughest thing to have put a constraint against erm because your or like you, like you kind of highlighted before this you don't have the crowds...

Commented [RA14]: CLA: Application

Commented [RA15]: Training Design

Commented [RA16]: CLA: Task Training Design

Commented [RA17]: CLA: Individual

Commented [RA18]: CLA: Individual

Commented [RA19]: CLA: Environment

Interviewer: Yeah.

Interviewee: Erm and you, you know you can put an element of like you know blowing a whistle er and kind of making the session a little bit noisy for them to,

to get through some things like that but it is, it is tough to sometimes create that environment of pressure erm yeah...

Commented [RA20]: CLA: Environment

Interviewer: Fab.

Interviewee: So, so I think for, for us I think task and performer is the, the ones that we could have that we generally easily erm applied within those sessions.

Commented [RA21]: CLA: Application
CLA: Task
CLA: Individual

Interviewer: Yeah okay and is there kind of, is there any kind of examples that you've got of you talked a little bit about kind of using whistles and things like that for the environment have you got any examples from your practice maybe kind of how you constrained space I know we talked last time of a few kind of games and things that you come up with erm is there any that you can kind of notably state around task performer environment?

Interviewee: Erm so I'd say for, for task erm er definitely with just erm say we were doing a if we were looking at erm kind of turnover ball so if we turned over ball and how we then convert that to goal erm we call that a transition from attack to defence or, or the other way de sorry from defence to attack or the other way attack to defence so we do like say we would want to look at that specifically we would pull up a practice where they erm attack through to let's say like there's three of them they attack through to halfway and then they then lay off the ball to another three players and then they become defenders so they defend back erm and then that goes continuous and I suppose environment wise linked with that practice erm you know we, we then said erm every time the er the top group that were attacking towards the goal they had to have a shooter in that group so when they attacked through with some defenders against them they then had to the first time the ball goes in the circle they have to put the shot up where they land it so that puts the shooters under pressure and a little bit of a kind of environmental pressure to erm get that ball in and then once er that shots gone up they then become defenders so it's just continuous...

Commented [RA22]: CLA: Application
CLA: Task

Commented [RA23]: Representative Learning Design

Interviewer: Yeah.

Interviewee: Erm so I think not only kind of using a practice like that but then adjusting it so to the potentially like the numbers that you've got I mean we've done it before where we kept those defenders in and we had some attackers that had to literally the attackers go through the defenders always stayed the same erm and then but, but when they got the ball or if they got a turnover they had to transition out and then a new group of attacher er attackers would come through so I think task wise we did a lot of things like that so with, with us obviously wanting to make it game related er it was still kind of invasion attack versus defence but very much focused on like what we wanted to get out of it...

Commented [RA24]: CLA: Application
CLA: Task

Interviewer: Yeah.

Interviewee: If that makes sense I think just with a little bit erm with the performer side of things er we would also do things like erm so let's say it was keeping kind of focused on that practice we put somebody like myself er a one of the coaches erm sitting in the circle and as that shooter comes in to take a ball to put a shot up we would have like a rugby pad and er kind of get physical with that get er get a bit physical with that rugby pad on that shooter so it kind of replicates them getting a takin a hit in the circle so, so we were definitely and, and you know that's just one example of one practice where we've kind of adjusted it along the way and added in key performing aspects of it putting people under pressure putting the shooters under pressure with the environment of having to get those goals in to complete the practices at the end erm and then just adjustin the tasks so that it's game related so with it being three v three on a transition erm and moving towards the goal and away from the goal as opposed to just putting them in three v three in a, in a box or something like that.

Interviewer: Yeah nice erm just talking about the constraints-led approach then it's kind of a little bit around situational learning so it kind of looks at training that's authentic and representative of like a real game based scenario so actually going into competition tryna make training kind of as reflective of that as possible erm and from kind of your ob doing the observations and sitting in on training sessions and stuff it's really clear that kind of the sessions are really games based and that it is tryna be as representative of competition as possible erm we've talked a little bit around you tend to do with only twelve thirteen athletes seven v seven isn't necessarily always possible...

Interviewee: Yeah.

Interviewer: But how what other ways do you try and make it kind of representative?

Interviewee: Erm so let's say if we want it like really game specific erm we would potentially say if it's a week where we're looking at erm restart turnover or live turnover erm we would set up a practice so that we potentially had like er goal shooter to kind of er goal shooter goal attack wing attack centre wing defence goal defence and then defenders against those and then we would start the ball up at the goal defence or the wing defence who's potentially had a, a restart from a side-line or a backline or and then just take the ball through with defenders against them and erm and then obviously if it's turned over then that opposition team have to bring the ball back out so that's still your kind of live turnover or you restart turnover depending on how the ball was kind of lost erm I think just puttin markers on that erm and you know cause it of you know workin in a in that coaching environment across a, a number of age groups sometimes that without kind of setting a target that can be get quite, get quite tedious so erm w, with the kind of focus being on maybe restart turnover erm

Commented [RA25]: CLA: Application
CLA: Individual

Commented [RA26]: CLA: Application
CLA: Individual

Commented [RA27]: CLA: Application
CLA: Task

Commented [RA28]: CLA: Interacting Constraints

Commented [RA29]: Representative Learning Design

Commented [RA30]: CLA: Application

we've done a lot where they have to get a certain percentage to goal so let's say they have like ten opportunities er in that combination if they get over a certain percentage then we can move on to the next combination if they get so just tryna go against each other a little bit and put a bit of pressure on them in that way erm other thing other ways we've done that so erm let's say we the focus was on centre passes so if the focus on centre passes we pretty much set them up into a half court situation with some backup players so like your wing defence goal defence against opposition wing attack goal attack and kind of then it gives us the opportunity to work on erm centre passes and kind of lookin forward what phases we want what we want doin in first and second phase how we can open up the court by using us L attack swing by looking at the back defenders but it's very much them exploring that so they would again be given the opportunity of erm (clears throat) reaching a target so whether that's percentage based erm out of so many centre passes can they get over seventy per cent erm and then give them the opportunity to come together erm as an attack and a defensive unit against each other erm to explore what's worked well what needs to be done better erm you know us as coaches having a look at how many varieties of centre passes are they actually working on and is the ones that they work on are they effective and you know are the ones they are actually doing do they does it feel effective to them you know to us it might not look effective but they might think oh this is working.

Commented [RA31]: CLA: Application
CLA: Task

Commented [RA32]: Representative Learning Design
CLA: Application

Commented [RA33]: Feedback
Training Design

Commented [RA34]: Athlete Autonomy
Problem Solving

Interviewer: Yeah.

Interviewee: You know for them to actually reflect on it for us to kind of have a little bit of an insight to say like oh can you try something different what would work against this style of defence and I suppose that's the, that's the kind of links into the other kind of erm constraints of being, of being able to look at opposition and say look er we're playing against _____ on Saturday we know the style of defence they do on a centre pass so that you know generally they use a three over so what are we gonna do against that to be able to get over first phase and then have a real clear second phase on that centre pass erm and I suppose just related to like game con, constraints so being able to erm sorry (clears throat) being able to erm just change the task a little bit so let's say I, I play a lot of erm netball tennis so if they you get so basically like you've got your a, attack it we, we'll stick with the centre pass theme you can then have [disruption in audio] oh sorry...

Commented [RA35]: CLA: Application
Training Design

Interviewer: That's alright.

Interviewee: Sorry I'll just [audio muted 28 seconds] sorry about that erm...

Interviewer: That's alright.

Interviewee: (Clears throat) yeah so netball tennis basically the you'll have a centre pass erm the er the, the side that's kind of team A will take the ball to a goal if they get it in it's fifteen love they then get a centre pass again if

they get it in it's thirty love but if it's turned over the opposition team get the opportunity to take it out and if they score from it it's always thirty fifteen all thirty fifteen so basically you go to a game and then you can change the combinations you can and it just gives them some kind of some fight against each other and some competition so just tryna kind of look at things a little bit more creatively as opposed to just saying let's have a look at our centre passes type thing so it just challenged them in a little bit different, different way a lot of the girls at, at that level are really competitive so the more competitive you make a session they're more engaged they are.

Interviewer: Yeah that was kind of leading on to my next question really [redacted] is how do the group kind of influence what you do is there anything that's like a total no go cause you know they just won't respond to it or kind of how does that effect?

Interviewee: I think when, I think when they we speak to the girls a lot erm and obviously when we're preparing for a game and, and reflecting on a game there's lots of discussion within our erm PA sessions as to what could have been done better and, and, and taking a bit of responsibility for those erm and, and, and also just calling each other out a little bit more, more on those aspects erm I think within session when the girls know that they've had an input on that they're more likely to kind of work hard on that...

Interviewer: Yeah.

Interviewee: Erm so er you know there was some real there's some real good communication between especially kind of the leadership group on erm whether they feel a certain aspect needs a little looking at a little bit more erm and then we and that's good for us cause then that er you know even if we feel that they should know that by now it gives us a you know we can go back and, and say right okay then they've highlighted this let's cover it and then a just add on to that erm but yeah I think the like I said when, when they are, when they are, are involved in that, that decision making process of what needs to be worked on and they can see it that as they can see it as clearly as we can see it there's never really any fight against that you know there's never any kind of push and pull against it they, they kind of we, we're doing it together I suppose when, when they are challenging ha is when er like we feel that they need to work on something new and they may have a bit of resistance around that so I mean I'll go through something that happened to me erm not necessarily this year but it was last year and this is just an example of it so I was working with erm shooters and feeders around (clears throat) getting the ball into ____ and where we can feed that ball from it doesn't necessarily have to be the circle edge and the centre court that I was working with at the time erm you know I asked them to er receive a ball quite you know probably not that far away from the transverse line on a, on a you know on the centre pass and look directly into ____ as soon as they received that ball and I had some resistance in that you know they

Commented [RA36]: CLA: Application
CLA: Task

Commented [RA37]: CLA: Application
Creativity

Commented [RA38]: Motivations: Athletes

Commented [RA39]: Athlete Autonomy
Motivations: Athletes

Commented [RA40]: Leadership
Athlete Autonomy

Commented [RA41]: Athlete Autonomy

was I think the comment was no offence ___ but I wouldn't give it from here and my response is I know ha....

Commented [RA42]: CLA: Application

Interviewer: Yeah.

Interviewee: So this is why you know this is why we need to explore this here as opposed to on the courts to show you that you're actually capable of it so you do get resistance and probably a little bit more because er it's, it's out when they're out of their comfort zone erm so it's probably just for us you know this year tryna get them out of that comfort zone in at, at a time where erm it doesn't, it doesn't have a massive impact on the result so in preseason er where I have found personally like my own observations is some of the youngsters who came in who are a little bit erm less resistant to just give things a try erm so you'll see from the likes of like er _____ _____ who when and is a is technically a goal attack goal shooter but can feed a ball because you know she ended up playing wing attack for us er in NSL because literally after the centre pass she'll turn and look at the shooter and if she can see the space she'll just deliver it.

Commented [RA43]: CLA: Application

Commented [RA44]: CLA: Application

Commented [RA45]: Decision Making Creativity

Interviewer: Yeah.

Interviewee: But is that because she's a bit younger and she's not you know she ha, she doesn't feel that pressure I'm, I'm not sure, I'm not sure what the answer is there but she you know she would just do it so you know and, and for us that's good for us cause we're we can basically say like look it is doable you know somebody else can actually connect that ball in [redacted] is available erm so yeah a little bit of resistance here and there probably just through the er individual habits of erm not particularly wanna get out of the comfort zone.

Commented [RA46]: Experience

Commented [RA47]: CLA: Application

Commented [RA48]: CLA: Application

Interviewer: Yeah and is there any aspects that you find easier to constrain than others because of the setup of the sport so we know kind of it's a court based erm sport seven v seven centre passes alternate all that kind of stuff is there anything that makes that setup easier to go we'll do this or do that?

Interviewee: Erm I think maybe just with our maybe with our training environment and the people that we've got in there erm you know in the fact that we, we, we very rarely do a seven v seven erm the only time we would probably do that is when we wanna test out erm you know what, what we've been working on erm and ag, against another seven so we'd potentially bring in some under twenty ones erm so I would say kind of constraints wise I know er if I think about another sport like basketball I know that they probably within each session probably do a, a five v five at some point and you know and within our, within our actual environment we rarely do that erm and I'm not sure majorly why probably just because obviously we've got less numbers but I think because we've got a lot of learning to do as well I think it to sharpen up what the, the style of kind of what their competition looks like within a training session so like to, to do some half

Commented [RA49]: CLA: Environment

Commented [RA50]: CLA: General Training Design

Commented [RA51]: CLA: General Training Design

court gives us more focus on certain areas or to do like a backline gives us more focus on, on specific areas so erm I suppose that for us is probably one of the main things [disruption in audio 5 seconds].

Interviewer: Just erm go through that one again for me if that's all right so erm you we're talking about you very rarely have seven v seven erm so yeah?

Interviewee: Yeah so we, we very rarely have seven v seven probably majority of the time because of numbers but it we do find it a positive thing that we can look at erm more kind of like setting up what a backline would be bringing it out to like a transverse li, like the second transverse line what the attack and defence are doing against that so it, it gives us the opportunity to look at the game but sharpen it up and look at real specific stuff erm beyond the only time we'd ever use seven v seven really is when we kind of decide after a few weeks or whether we need that competition to see them do erm kind of reactive stuff so in a ga like literally play fifteen minutes how do they perform are they actually implementing anything that we've, we've asked them to do.

Interviewer: Yeah and kind of in terms of your coaching team and all that kind of stuff is there has there been any you obviously all coach differently all that kind of stuff erm has there been any challenges in you guys working out erm in terms of like constraining the environment on go this way or like different points of view and stuff like that how does that work with the three of you guys with NSL?

Interviewee: Erm (clears throat) we tend to have like different areas of the court that we cover so er myself and, myself and [redacted] er both kind of I predominantly do shooters and she does centre court and [redacted] will do defence erm I think but I think what we've been tryna do as coaches is just explore that crossover a little bit more so at times [redacted]'ll take shooters and I'll take the centre court er [redacted]'ll come into the centre court so we where last year we very much kind of stayed separate but communicated this year we've tried to integrate who we speak to a lot, a lot more erm with myself kind of giving some feedback in game time to the centre court and, and ___ doing it to the shooters erm and I think it, it's important that I think every time we planned a session we sit down and kind of see what and outcomes we want for that session and, and look at the process of getting to the end of that erm (clears throat) so and obviously just figurin out how we're gonna test out the you know what, what their learnings are at the end of each session and how we're gonna challenge that in some kind of game context and it doesn't always look like a game it could be how many turnovers they're getting in you know they're playing end-ball or something like that but I think it's just having that process of saying like okay this is what the units need to work on technically this is what we need to work on as a game but this ultimately out of this session this is what we need to get out of it and sometimes it's something really simple but then sometimes it's something really tech er really tactical around erm you know how we're gonna turnover more ball or whether

Commented [RA52]: CLA: General Training Design

Commented [RA53]: CLA: Application

Commented [RA54]: CLA: Application

Commented [RA55]: Feedback Reflection

Commented [RA56]: CLA: Application

you know the, the specific centre passes or centre pass defences that we need to work on but everybody's got a role in that so you know we're, we're all constantly like talking about the process and the outcome but what does that look like for each unit does that make sense?

Interviewer: Yeah and erm you mentioned before around kind of you don't have kind of those fourteen players you can't do the seven v seven erm is that because of like the NSL set up regarding constraints on the amount of players you can have signed or is it just in terms of like your club setup or ethos?

Interviewee: I think sometimes for us I mean we do have like a, a, a kind of squad of fifteen but we, we throughout that we've had injuries so you know that's had an impact on, on being able to have those seven v seven out and I know there's been times where we've only actually been able to physically get like nine or ten or eleven people training because of those injuries so erm I wouldn't say it's majorly I think, I think for us even if we'd had that struc like squad of fifteen in training together it wouldn't always end up being seven v seven it would very much be kind of constrained to what the task is what we're tryna get out of that and erm so that it's not just kind of looking at them seven v seven all of the time looking at how they can do still apply kind of technical and tactical aspects in a kind of shorter game scenario so that it's more focused and we can definitely see like what we're tryna get out of it erm I'm just thinking about when we actually brought people in to play against er I'm just thinking about the twenty ones erm we would pull them pull so pull the twenty ones across but I think it was specifically when we wanted to see like a, a through court transition or a you know a centre pass to a turnover into a live er live turnover to a shooting opportunity so yeah I'd say like at times we needed it and you know we had that option to do it but it didn't need to happen all of the time because a lot of the focus was on like the, the kind of small processes of being able to get to the point where we wanted to get to in those practices erm so yeah.

Commented [RA57]: CLA: General Training Design

Commented [RA58]: CLA: Application Training Design

Interviewer: Yeah nice.

Interviewee: Yeah.

Interviewer: Fab so erm from kind of session observations and bits it's really clear that one of the things and from the first set of interviews that came up is around kind of developing leadership and athlete autonomy their abilities for the athletes to think for themselves and to kind of take ownership over what they do so why do you think this has like come up as really important what is kind of the reasoning behind that for you guys as a club?

Interviewee: I think for us it, it's all about erm like buy, like buy in like we all have the same goal we all wanna you know we all wanted to finish top four if not you know we wanna take, take the win erm and I think to have these lead to have the leadership group and for people to start stepping up and

Commented [RA59]: Goals: Club

erm giving those athletes the autonomy to actually share with us their the, the views of the athletes and where they feel that they're at erm maybe kind of reviewin every few sessions or every few weeks but it also kind of helped us to see you know how they we're enjoying the sessions how they are engaging within the sessions and if you know is, is there any other way that they felt that we needed to cover you know is there any other thing that they, they felt we needed to cover erm and maybe challenge them a little bit more within sessions and I think you know with, without that kind of athlete input you know you could probably crack on through a, through a, a total full annual erm programme thinking everything's like fine and you, and you're deliverin your sessions er of what you believe you know what you believe need is needed from your observations as a coachin unit or whatever that is but actually the athletes might not be enjoying it and if they're not enjoying it erm if they're not enjoying it and they're not learning erm they struggle to engage and, and they don't believe in what you're you know they don't believe in what you're tryna erm create so I think the fact that they, they are involved and the fact that they are given ow like ownership over part of that and (clears throat) you know they're very much within video sessions and technical sessions you know given the opportunity to explore what they wanna learn a, and things so like they'll be so a certain and I know you've been in some of the sessions there'll be per certain parts of the session where they're given like fifteen minutes to go away and work on whatever they wanna work on erm with some guidance for from us if they need that does that make sense?

Interviewer: **Yeah, yeah that makes sense yeah.**

Interviewee: Yeah I think yeah...

Interviewer: **Fab.**

Interviewee: I think having the athletes opinion and giving the athletes some ownership over it has a lot more buy in from them [inaudible].

Interviewer: **Yeah... yeah fab and how has that kind of developed over the season so erm it's quite evident you have your main leaders erm that really into like the video analysis will be the first to kind of jump on and erm kind of say what they think type thing erm I know initially there was a few apprehensions around kind of erm experiences from last season about giving like a load of ownership over to athletes erm how kind of is that working for the squad now have you got new leaders emerging or how have they dealt with it this season?**

Interviewee: Yeah I think (clears throat) I think erm what's been good is I think or, originally I goin from season to season like from last season to this season they c, there obviously was you, your leaders that we had last season who you know have general, generally kind of stood up again this year but it's also I think with them kind of encouraging discussion

Commented [RA60]: Leadership
Athlete Autonomy
Values: Club

Commented [RA61]: Athlete Autonomy

Commented [RA62]: Athlete Autonomy

from the rest of their teammates erm it's also kind of allowed some of the rook like rookie girls some of the youngsters who might not have really stood up in this environment if that what if that kind of process wasn't in place (clears throat) for them to kind of put forward their views and feel comfortable doing that erm so I think that's probably been you know a, a positive thing that er we've gave given them some more ownership over, over kind of at times what they're doing and you know what they need more of but I think kind of ____ was right in that what we don't want is just give them total ownership over everything cause they still need guidance and they still need help and support and what somebody might feel they need it might not be good for somebody else so it's got to be kind of well-balanced as well erm so I think it's definitely kind of developing erm and, and getting better I think the biggest thing for us was you know we, we erm we had a session about outlining values I can't remember whether you were in that session...

Interviewer: No I don't think I was.

Interviewee: It was before a technical and it was with [redacted] and erm you know it was, it was about...

Interviewer: Yeah.

Interviewee: Kind of outlining our values and people had taking ownership of it and kind of expressing it in my day to day life like you know being an elite athlete erm and all the responsibilities of that making sure they look after themselves and, and communicate when things aren't going right but I think what we wanted to do was like set those values but also live by them and what erm what maybe kind of happened the previous year is we set those values but we very rarely went back to them you know we very rarely kind of revisited them and said alright this is what we said we would do but have we actually done that do we live by these values...

Interviewer: Yeah.

Interviewee: And I think we've done that a little bit more this year with [redacted] in there you know we, we've had a good kind of it wasn't just one meeting of like this is what we look like and this is where we wanna be it was a good three or four meetings where (clears throat) you know we were involved in part of it but at, at stages we weren't involved in any of it so they would work with ___ to build this and I think this year having [redacted] in there as well there's been opportunity to revisit that erm probably you know at this point we would have revisited a little bit more than you know the than we have I think we went back to it like maybe kind of since the beginning of preseason maybe two hmm three or four times I think kind of two initially to set it up and then to revisit where we're at and I'd, I'd say probably across the season if we were able to continue it, it would have been revisited a lot more erm in like where they're at with their values and if they think they're kind of sticking to them you know what are the repercussions if they don't and I think erm it's been a lot better this year

Commented [RA63]: Leadership
Athlete Autonomy

Commented [RA64]: Values: Club

Commented [RA65]: Values: Club
Athlete Autonomy

and er people have been a lot more on board with it I th, think it was a process of not just sitting there and saying this is what you're going to be it was a process of who are we and what do we wanna be.

Commented [RA66]: Values: Club

Interviewer: Yeah nice.

Interviewee: So that was pretty much that was very helpful and I just with the athletes like taking ownership of that that's helped massively because then they're accountable to each other as opposed to being accountable to just us in general.

Commented [RA67]: Athlete Autonomy

Interviewer: Yeah fab and do you encourage players to problem solve and find their own solutions to problems erm in training and things like that how does that kind of slot in?

Interviewee: Yeah I think erm er that's er something that we've explored quite a lot with putting some conditions in so for example erm let's say we get into a game context not necessarily seven v seven but like a smaller game context we would sometimes er challenge erm either the attack or defence or one of the teams so like say if I have one, one attacking team and ____ had defensive team we would potentially throw in like a, a task of right this is the condition for this game and the condition might be that the wing attack is the only one who can get the ball first phase so but what they've gotta do is do that without the opposition knowing so the goal attack's still gotta be very much involved but try and deliver that without the opposition knowing and vice versa defenders might be set given the task of tryna figure out what the attack are doing and do something to stop that so just challenging them in that way of like allowing them to explore you know what's going on or, or observing what's happening and adjustin that play because that's probably something that we needed them to do more of erm kind of adjust play throughout court time so without like throughout the, the game so there, there'll be times where they you know they, they come in at quarter time and we can say to them this is what's happening on a centre pass you need to do this but what we needed that from them was to recognise on the court and say this is what's happening [redacted] are doin a you know a goal attack sweep what do we do about you know this is what we need to do about er around that to counteract it so to try and implement some of that within training it's just about putting some of the play under condition and them having to figure out what's happening and apply a strategy against that so I think we found that really useful we probably sh probably my, my personal opinion would probably be that we probably should do that more because it challenged them more.

Commented [RA68]: Problem Solving

Commented [RA69]: Problem Solving
CLA: Application

Commented [RA70]: Problem Solving

Commented [RA71]: CLA: General

Commented [RA72]: Values: Coaching Staff

Interviewer: Yeah and how does that kind of impact like what benefits do you get from that kind of allowing the players to self-organise and find out their own solutions to the problems of the game so like how would that influence almost your goals of being in top four?

Interviewee: It gets them thinking for themselves it just gets them thinking for themselves and reacting to what's going on the court like I said you know we can we could literally say to these girls like what I want you to do on a centre pass is this what I want you to do on a centre pass defence is this but actually that might not actually work against what the opposition are doing and what we don't want them to do is wait thirteen minutes you know, you know they've had two minutes to figure out that we don't want them to wait thirteen minutes for us to for them to come off with to us and us to say well that didn't work you know that you, you potentially there have gone about eight or nine ten goals down so for us when, when we're challenging them mentally around you know er them, er them kind of erm looking at what's going on the court and analysing and they're making a decision for themselves and communicating that to their teammates as to this is what we're gonna do now that's not working move on erm it's just about taking ownership reading the game and having that confidence to be able to erm to you know see what's going on read it and, and change it and adapt it and if they can do that in practice the more they do that in practice erm and put them under pressure that way (clears throat) the more that they'll do that in a game and I suppose it's important to say like in practice erm it doesn't always have to be perfect you know it in practice you can get things wrong and that's the way you'll learn erm at, at and then obviously you'll, you'll have that kind of knowledge of what went wrong in practice to actually fix that in a game you know I tried this that time it didn't work against er [redacted] so erm you know [redacted]'s a similar player to this player so this is what I need to do against her so it's just about problem solving in a cot in a kind of closed environment to for them to then channel that into a game into a something positive so that they can actually read the game themselves and implement that.

Commented [RA73]: CLA: General

Commented [RA74]: Problem Solving Decision Making

Commented [RA75]: Leadership

Commented [RA76]: Values: Coaching Staff

Commented [RA77]: CLA: General Problem Solving

Interviewer: Yeah and have you had have you come up with any kind of challenges or difficulties in tryna get that across to the players at all?

Interviewee: Erm not, not particularly not, not that I'm not that I can directly think of I think for us it's just making sure that we have the right kind of conditions for those athletes to go against so no like kind of understanding the opposition that we're going against and kind of making sure that we practice that so if, if we know that we're playin if we know that we're playing against I'll use [redacted] cause I know they always use a three over but making sure that erm like the defensive condition might be that they've gotta use a three over for at least five out of ten centre passes and then the attackers er they've gotta use that sporadically so the attackers then have to react to what's going on so they might go in from a one at one v one situation to then have to kind of come through and get through a three over erm that's probably a just for us is a challenge just making sure that the conditions and the sessions that we do are relative to whether it's the opposition that we're playin or relative to the area of development that we feel that we need generally the only time t, time we ever really get challenged by the athletes is when say when we

Commented [RA78]: CLA: Application

Commented [RA79]: Representative Learning Design

practice I don't even know if I can word this properly but when we practice something that isn't necessarily the ideal so erm for example we had I don't know if I can it draw this and maybe show you it (laughter).

Commented [RA80]: CLA: Application

Interviewer: Go for it have a go.

Interviewee: Erm so we had an attacker and a defender and a feeder... erm [long pause 6 seconds] so we had like an attacker can you see that?

Interviewer: Yeah.

Interviewee: Right so can you see that feeder?

Interviewer: Yeah feeder up there yeah.

Interviewee: And we had an attacker and a defender and basically what was happening was this attacker here would end up driving towards let's say this is the centre and this is your wing attack...

Interviewer: Yeah.

Interviewee: They would end up driving towards this centre and then round off and come away here...

Interviewer: Yeah okay.

Interviewee: And what, what we were asking them to do and, and you know ideally this isn't the right practice because it's probably too close to this feeder erm but what we wanted to do is them to get used to getting out of this so...

Interviewer: Yeah okay.

Interviewee: Drive towards make sure they cut off this defender so for either a ball off this player here...

Interviewer: Yeah.

Interviewee: Or if this defender had got in front change direction to receive the ball gainin depth so...

Interviewer: Yeah.

Interviewee: Down here and what they didn't like about it was well why you know why are we doing this because you, you wouldn't necessarily want somebody to drive that close to the you know the, the feeder and our reasoning was this actually happens like this actually happens to us in a game and you know we get on top of each other and what we need to practice is when things aren't great...

Commented [RA81]: CLA: Application

Interviewer: Yeah.

Interviewee: Like aren't going well and or, or you know in that, in that kind of just one specific technical part of it you know you either make sure you cut across your defender and try and open up into some clear space and not get fully on to that, that, that attacker or you take the defender beyond a certain level change direction and hit some depth but we were challenged at that point with why are we doing this like why are we practicing something that isn't ideal.

Commented [RA82]: CLA: Application

Interviewer: Yeah.

Interviewee: And it's and our answer was because it happens...

Interviewer: Yeah.

Interviewee: You know we've gotta practice what happens when it doesn't feel comfortable so probably getting them into those positions has probably been one of the most difficult like one of the difficult most diff them just asking challenges ask sorry asking questions like why, why are we doing and they rarely ask those questions when we do a lot of the game scenario when we do a lot of the, when we do a lot of the attack versus defence and things we don't really get a lot of questions from that it's more so like the small technical aspects of you know why would we do this when it's not relevant and it's like it is relevant (laughter).

Commented [RA83]: CLA: Application

Commented [RA84]: CLA: Application

Interviewer: Fab so this next bit [redacted] is kind of a bit of a talk about the motivations culture and creating that positive learning environment erm within kind of sessions so we talked about motivations in the last interview erm how do you kind of the group in front of you that you've got and you know kind of knowing them on that one to one basis how does that influence how you kind of set up training set up practices erm if you know they're not gonna like something you know that they're gonna be really driven to a certain type of thing how does that influence what you do?

Interviewee: I think, think definitely erm always kind of have an aspect of erm game, game scenario erm so like attack versus defence giving them opportunity to explore erm being really clear around why we're doing that specific session erm and what you know what the end point of the session is so what the outcome of the session is and how what processes we're gonna take to get there so that might be like there's a technical process there's speed agility process there's the actual kind of challenging game erm scenario erm or, or set ups whatever that may look like I'm probably being a bit vague there but never mind erm and then erm like you said erm just tryna plan sessions with them as well knowing what they're highlighting on video is similar to what we're seeing or they might see something different so we can, we can kind of adjust the session a little bit around that if there's certain people who have asked for specifics like feeding into [redacted] can we you know can we put a

Commented [RA85]: Training Design

Commented [RA86]: Athlete Autonomy

conditioned practice on that where that person has to feed [redacted] into certain spaces and then we get the pad on [redacted] to put a bit of pressure on her (clears throat) so erm you know we had a lot of feedback around especially kind of when [redacted] kind of returned or come first comes back in erm just around [redacted]'s angles and the feeders being able to see her so erm you know doing, doing work with other coaches at from different sports around how she can protect her space and erm I think with [redacted] it's, it's understanding around language as well like you know what, what language can we use or key things can we use to get across to [redacted] to be in the right position but it's also those girls listening to [redacted] on how you know how she where she likes to be fed as well not just a one way thing so I think (clears throat) kind of like, like I said before erm working together with the athletes has probably been the, the, the best thing around not facing so much question and challenges you know and, and always probably being ready for you know for, for us personally knowing that some of these athletes might challenge why we're doing specific things having like a little bit of an answer ready for that you know a as we're planning right why are we doing this okay cause we're gonna get this out of it so just not kind of doing things for doing things sake making sure there's definitely a clear motive for that skill and practice erm and yeah like I said the biggest kind of response we have we always get is that kind of game scenario (clears throat) erm on whether it's like a certain aspect of court specific whether it's restart turnover live turnover feedin the circle centre pass attack defence er we get a lot they tend to react really well to that it's...

Commented [RA87]: Training Design
CLA: Environment

Commented [RA88]: Athlete Autonomy

Commented [RA89]: CLA: Application

Commented [RA90]: CLA: Application

Interviewer: Yeah, yeah.

Interviewee: It's more so, it's more so the kind of defined technical work erm that some might feel that they've done it before when actually they probably need to just keep practicing.

Commented [RA91]: CLA: Application

Interviewer: Yeah and in terms of so one thing that kind of came out through session observations again is that kind of fun aspect and element that's kind of incorporated whether it's warm up whatever...

Interviewee: Yeah.

Interviewer: Erm it's not normally something you, you think of would come out of like an elite sport setting as like fun being kind of at the forefront as well so erm what benefits do you get from incorporating fun and how do the athletes react to kind of those practices and, and bits?

Interviewee: I think erm it's a huge part of it in that it gets them engaged you know some, some of the girls could probably have came from having a really stressful day like if some of them have jobs like [redacted]'s got a full time job at, at a [redacted] [redacted] and erm like er and [redacted]'s come from like [redacted] and, and you know some of them you know they're, they're in their training environment all the time but I think and sometimes that can probably get quite tedious so the fact that they come in and

knowing that their warm ups gonna be have some court kind of competitive element or like netball football or you know just the silly competitive games it just gets that wakes them up again and just gets them connected erm so I, I do think that's im, that's important erm although a warm up can sometimes take an absolute age to get through before we er can actually get to the session (clears throat) but no I think the fun el, fun element for them just makes it a lot easier and the session go quicker and then be a little bit more focused I mean I were you at the session where [redacted] got wiped out by [redacted]?

Commented [RA92]: Values: Club

Commented [RA93]: Values: Club

Interviewer: Yeah, yeah I was.

Interviewee: See I wasn't at that session but I've seen the video now I would that would have just done me in for the rest of the session like I wouldn't have...

Interviewer: Yeah.

Interviewee: Stopped laughing at that but it's just things like that like you know [redacted] trying things out like a, a few of us getting involved in different ways like I've been a defender in there against the girls and things and...

Interviewer: Yeah, yeah.

Interviewee: I think it just keeps them that element of enjoyment and fun is massive like and it's one of our, our real kind of key values not just at NSL but across the, across the franchise because if they're not enjoying it they won't, they won't perform.

Commented [RA94]: Values: Club
Motivations: Athletes

Interviewer: Yeah.

Interviewee: And they spend so much time together that we've gotta try and create an environment where it is competitive but it's also a little bit light hearted at times erm which gives them that understanding that they can make some mistakes within that session and they can you know it's not kind of regimented we want the best out of everybody, everybody to every time well we're gonna get the best out of people if, if they enjoy it so the element of fun is, is probably huge to be honest.

Commented [RA95]: Values: Coaching Staff

Interviewer: Yeah fab and we discussed kind of culture and values you touched upon it then a little bit erm but we talked about it in the last interview erm how might you kind of how do they influence what you do in training essentially so that top tour top four finish that we talked about how does that filter down does that influence training in any way do you build on aspects so maybe we've been in this situation ten seconds left on the clock one in it erm this is gonna be the real nitty gritty in those kind of semi-final final scenarios erm what does that look like?

Interviewee: I think erm yeah I think just with culture and values like there's certain aspects of, there's certain aspect of our values that are very much kind of the way we behave erm er and, and culture you know with it being pr, professional erm the way we behave on and off the court just in you know er the them being individuals but I think as erm as a franchise like we wanna build those, those values erm not just from NSL but all the way through our pathway [disruption in audio 1 minute 14 seconds].

Interviewer: Okay so sorry [redacted] we were talking about erm the culture and bits can you just carry on from where you left off?

Interviewee: Yeah if I can remember (clears throat) so just in general like from, from like from [redacted] we're tryna create kind of a really strong identity on and off the court and I think I start I think I went I'm not sure how much you heard but went through like being values driven it been fun and a key aspect of it was erm like team first so every, every team you kind of team your teammates first erm and I think the that the, the kind of outcome goals of that were erm to, to obviously for that top four finish with having those values kind of behind us erm and ah I know that an aspect of one of our outcomes was to have a winning home record erm I think previous in, in last season we, we didn't win that many at home so for us it was to build that culture of like you know fans engaging with us and, and you know to be performing at home is one of our key outcomes that we wanted to (clears throat) to get to erm but just with our kind of values as well erm there was a few points on kind of athletes being available so kind of them personally looking after them self and making sure that injury is kind of limited erm and I think er in attack we had kind of been a creative players erm with erm er which er and adaptable which is why some of our sessions were based on kind of conditions and them having to think for themselves erm...

Interviewer: Yeah.

Interviewee: There was a couple of other technical aspects like I think it was high speed like ball movement like quick ball movement or in attack for us to be nice and quick erm and then defensively it was to erm ah be, be relentless on first, on first contest so you know that's why we spent a lot more time erm doing some defensive er work within preseason because that was an aspect that we really need to work on...

Interviewer: Yeah.

Interviewee: And you know for people to kind of think oh we're up against [redacted] god you know we, we're gonna have to be really slick in attack because defensively they challenge everything erm and, and, and they win ball and, and that's something that's another thing an aspect of like what we wanted to do erm and I think for us like erm tryna just create a fun kind of competitive environment was one of the key things that we felt we would get all of that out of erm and not be too kind of regimented in what we were asking for and also asking for that feedback off the

Commented [RA96]: Values: Club

Commented [RA97]: Goals: Club

Commented [RA98]: Vales: Club
Goals: Club

Commented [RA99]: Goals: Club

Commented [RA100]: Goals: Club

Commented [RA101]: Goals: Athletes

Commented [RA102]: Creativity
CLA: Application

Commented [RA103]: Goals: Club
Training Design

athlete and having their input as to what they felt they felt personally we need to work on erm I think that had a huge impact on you know some of the success that we'd had in the build-up to erm the season and you know some of the, the performances that we put out and I think for us it just got a bit difficult with having some of our key leaders erm and maybe experienced players get injured and not actually be able to take the court I mean they could do the work off the court which was great and they were still massively engaged in training and but actually on the court it you know they weren't there to share that experience and support the others around them so I feel like personally that's probably where we didn't get to where we wanted to be in the first kind of five games of the season granted we had fifteen games left ha...

Commented [RA104]: Athlete Autonomy

Commented [RA105]: Experience Leadership

Commented [RA106]: Experience Leadership

Interviewer: Yeah.

Interviewee: But erm I think which, which I feel that would have developed and if you know once we'd started to get a few of those key players back they can then support those youngsters around them erm although you know a positive thing from that is that the players that got some exposure this year will have more experience next year you know they'll have more under their belt of what they've gone through and what that felt like erm probably at an earlier stage than they probably perhaps would have so you know the, there's the positive of that (laughter) that thing...

Interviewer: Yeah.

Interviewee: If that makes I, I hope I've answered your question there I'm not sure if I've gone off a tangent a little bit.

Interviewer: No that's perfect thanks [redacted] and erm next question really situates around how erm would you say that you create a positive learning environment at [redacted] so what are the main things that you really try and ingrain in each session?

Interviewee: Erm probably the element of fun...

Commented [RA107]: Values: Club Training Design

Interviewer: Yeah.

Interviewee: Erm definitely the el, element of competitiveness whether that's in the warm up whether that's in the erm kind of speed agility part of the session erm er I've you know they, they've done a lot we work with like [redacted] and [redacted] around getting them to compete it er sprinting against each other change of di, direction erm working against each other in groups and I think just tryna make you know that we get the most out of them when it's the environments challenging and competitive so I think just constantly it durin plannin trying to think about how we can do that and apply that but get to where we need to be for that outcome erm that generally works but I think a bigger part of it is they've got to enjoy it I think (clears throat) with the challengin environment as well it, it also kind of helps support that team first erm kind of value of you know yes they're

Commented [RA108]: Values: Club Training Design

Commented [RA109]: Motivations: Athletes

competitive against each other but they're also pushing each other and when they're pushing each other they're, they're kind of competing against each other for positions so it doesn't only kind of develop them as individuals it develops us as a team if they go hard against each other and if they're fighting against each other to get a place in the squad it develops the squad but it also kind of creates that competitiveness within the team oppositions and places erm I suppose a certain aspect of that can be if somebody doesn't quite reach where they wanna reach and erm them having to support their teammates through that and sometimes that can be difficult because if you've taken somebody else's place you know it, it can probably at times see a bit patronising as a player to be like oh it's okay like you know that's probably more so good for them to come to us as to request feedback as to where they need what they need to do to get back into that squad and what's really good is that there's that open dialogue for them to actually do that erm so yeah I think fun kind of competitive challenging environment erm thinking about their values on and off the court er whether you know they're professional in what they do the brand they represent erm and you know a lot of them are really good with that some could probably be better and probably a little bit more kind of visual on whether that's social media or whether that's that game day at and engaging with people a little bit more but for some of them it's really new and maybe probably a little bit overwhelming especially if they're youngsters the older girls probably tend to do that a lot easier cause they've been there before they know how to engage and what's you know what's expected of them but yeah I think good decisions from the girls erm and kind of performing well under pressure's probably what, what we need them to do.

Commented [RA110]: Relationship Building Values: Coaching Staff

Commented [RA111]: Relationship Building Feedback

Commented [RA112]: Values: Club

Commented [RA113]: Goals: Coaching Staff Decision Making

Interviewer: Yeah and just to kind of round up this section erm [redacted] we've covered a little bit around motivation culture and values (background noise) and getting to know players kind of on a one to one basis erm as well as that creating a positive learning environment so how does kind of all of this stuff behind the scenes almost support kind of what you implement in training?

Interviewee: Yeah so erm kind of every athlete'll have has an IPP so er I think ____ might call them an IPD or IDP I think theirs is a d, Individual Development Plan whereas I we call the, the pathway call it a Performance Plan and erm on that plan individually they all have every aspect of like what you know what an athlete should look like with they have their nutrition support they have er S and C they have erm kind of physical whether that's physio erm assessment erm you know how physically okay are they erm (clears throat) and if they need any support with them any de any er particular developments physically erm they also have sports psych erm so if erm they need any support with like selection de-selection goal setting for the future erm performance lifestyle as well erm so er they've got a performance lifestyle person who literally erm I think it's [redacted] who erm has one to ones with them around how they are kind of managing their home life and their training and whether that is some of them are students so how, how are they managing their

Commented [RA114]: CLA: Environment

Commented [RA115]: CLA: Environment

student life and how are they managing their training and I think every kind of aspect of all these support systems build that one athlete and effectively you know the team erm (clears throat) without this support from the, the MDT it'd be really difficult as a coach to manage everything and I think with, with the support of the MDT erm and you know like [redacted] myself we can take certain aspects away from, from like [redacted] so that she can focus on what the team needs as opposed to what each individual needs erm and you know obviously she's gonna have an idea of which athlete needs where what and where and you know because the we have weekly MDT meetings (clears throat) but for her to have the support of those erm the people in the background makes her life far easier to get what she needs out, out of those athletes so to get those performances out those athletes erm and you know specifically if you highlight a certain athlete she might say I've got a defender she needs to be able to jump higher she could go to erm [redacted] and then say (clears throat) she needs more work on her power how we gonna get there we can integrate some netball specific sessions in with some weight sessions that are specifically focused on power and then reassess every few weeks where she's at so I think the those it's really integral that those erm communication kind of connections are goin throughout all of the MDT cause they have such an impact on each athlete individually erm and also kind of not just impact but support if the athlete needs that support and or if they highlight that they're struggling with certain aspects erm so yeah massively important for the stuff that goes on behind closed doors of those, those actual training sessions I think sometimes the athletes don't even know the amount of work that goes into them erm...

Commented [RA116]: CLA: Environment

Commented [RA117]: CLA: Environment

Commented [RA118]: CLA: Environment

Interviewer: Yeah.

Interviewee: I think like when, when [redacted] was a an athlete and when she started coaching she was like my god like the difference between kind of just being a sessional coach or and then going into having to like manage athletes erm is hugely different.

Interviewer: Yeah sorry [redacted] can you just erm clarify what's the MDT what's the abbreviation stands for?

Interviewee: Multi disc, disciplinary team.

Interviewer: Fab thank you very much for that one erm so this kind of just kind of really summarises erm the whole conversation really erm I've just kind of added this section in just to kind of check in with how everyone's doing at the minute obviously we're not kind of where we expected to be at this current moment in time erm how is everyone doing are they keeping up with training all that kind of stuff are they keeping motivated?

Interviewee: Yeah erm yeah I think so we've had we're in week eight now...

Interviewer: Yeah.

Interviewee: And erm the athletes are generally er completing a home based programme erm we were we started off in a phase for the first I think it was the first six weeks where we had a bit of a focus on erm just basically like engaging and connecting with them and making sure that they were okay erm and basically for them to because we knew we probably weren't going anywhere soon for them to just have something to stick to a structure to connect with each other just for mental health reasons probably and just check everybody was okay and then moving forward we've kind of gone into from week seven into a kind of prepare so that it's not (laughter) it's quite vague really in the prepare phase is more about prepare for anything so maybe prepare be prepared to stay in this situation for a bit longer...

Interviewer: Yeah.

Interviewee: Be prepared to take the court if we're expected to take the court erm so the kind of mentalities changed a little bit and erm we also put change the kind of challenge er so we had like weekly challenges in the first six weeks and then er last week we started them on erm basically they're doing a race to the south of England and they have to get so many kilometres from so many sessions per week erm to try and keep them engaged with each other erm I would say just after I've had an MDT er call before this meeting with you and just some of the feedback from some of the athletes some of them are really engaged in it more so probably the younger ones...

Interviewer: Yeah.

Interviewee: And some of them are just struggling a little bit erm probably just thinking you know why are we doing this when we're not you know we're not sure what's actually gonna happen so we're just being really conscious that they might need a break at some point you know just a break from listening to us or a break from just a mental break just to see where we're at and I suppose we probably need to just check you know what time what, what at what point that should be erm we know that there's exams and things coming up so for the ones for the students and things that might be quite a you know a good time for them to take a little bit of a step back but we've also got opp, opport options for even if we, we do give them a break erm that we have our pathway that is continuing so if there's a if certain people like maybe potentially [redacted] erm or [redacted] or some of the youngsters that are still wanting to engage and, and are finding that engagement you know keeping them going they can still engage as with some pla you know somewhere across our [redacted] programme...

Interviewer: Yeah.

Interviewee: (Clears throat) and whether that's with like you know [redacted]'s suggested we potentially put some like netball focused zoom sessions on and just

Commented [RA119]: Values: Club

Commented [RA120]: Values: Club

Commented [RA121]: Relationship Building

have a chat through some specific technical stuff or video so there is things that we'll do but we've just gotta be conscious that some of them are doing fine and some of them are struggling a little bit.

Interviewer: Yeah.

Interviewee: Yeah.

Interviewer: It's obviously really weird times like no one could have predicted but is there anything kind of that you think you've maybe done in preseason that might have prepared the athletes to kind of deal with this whether that be kind of in terms of like leadership motivation stuff is there anything that you feel they've developed that is really helped those push through?

Interviewee: Yeah I think p, potentially like leadership group you know we're we still have really erm regular discussions with the leadership group who then feed back to the athletes and the athletes feedback into the leadership group so the things we've worked on, on the values and erm the kind of things we set up in preseason with that leadership group are still goin are still happenin erm and it's probably been helpful to us that we're not just having to as coaches open up questions so that you know all fifteen athletes and get you know things back whereas (clears throat) with the leadership group it gives we put something to them they take it to the team and then they'll bring the consensus type erm answers back to us so that we can then act, act on that which then gives them kind of that ownership of that leadership and the also the erm the ownership of the athletes being able to feed back with what they want and what they're enjoying and what they're not (clears throat) so it's definitely helped us having that setup erm and I think I think just for us like havin goin through something like this has probably opened our eyes to how much we could probably utilise er like online resource erm if we don't necessarily have everybody you know if we don't have everybody in one place you know where in, in preseason if we don't have our import at a certain time can we bring them in on a zoom can we bring them to the session you know watching the session so it's probably just opened our eyes a little bit to you know the opp the opportunity to utilise this when things get a little bit difficult bringin people in or if, if some of the England girls are on England camp can they still attend the session while you know through zoom while, while we're all kind of discussing what's goin on so there's, there's some real key things that have come out that have are definitely positive out of such a negative situation but and like I said having set some of those things up early with like leadership group and, and erm being able to have a clear kind of route to how we do things and settin that up early's massively helped I think erm I think as well when we were er in preseason you know e, each member of staff has builts up the relationship with the athlete so like [redacted] S and C like myself [redacted] with coachin wise erm er our nutritionist [redacted] erm and erm [redacted] and er [redacted] you know er [redacted] as well we a [redacted]'s our psychology guy I think you've met [redacted] a few times.

Commented [RA122]: Leadership

Commented [RA123]: Athlete Autonomy
Leadership
Feedback

Commented [RA124]: Relationship Building
Leadership

Interviewer: **Yeah.**

Interviewee: Yeah erm he, he's like built a relationship with the girls as well so like throughout any of the competitions that we've been doing like the recent kind of travel to the south of England each group they're competing against each other so each group has got a team leader so we've made it one of the staff so they're havin to communicate with that staff and erm and have some open dialogue with them with where they're at and, and they can feed back things...

Commented [RA125]: Relationship Building

Interviewer: **Yeah.**

Interviewee: Back to the MDT as well erm and you know having a good re, relationship with each member of the staff is good and, and, and in each staff been really visible as well er sometimes a lot of the time like your nutrition and all that can generally come through the coach or you know or generally has to come through the to coach just because of time or whatever that looks like whereas I feel like we've done really well with like integrating our staff members into the squad and, and everybody feeling quite you know whole.

Commented [RA126]: Relationship Building

Interviewer: **Fab thanks [redacted] I think you've answered all of my questions erm that pretty much rounds it up erm is there anything else that you'd like to mention that you feel like you haven't yet had a chance to discuss at all?**

Interviewee: No I'm good I think I've waffled on a lot.

Interviewer: **No it's really useful really, really helpful...**

Interviewee: (Laughter).

Interviewer: **So thank you very, very much erm so we discussed quite a bit erm in terms of we looked at the constraints-led approach erm we had a little bit of a recap in terms of how we progress from preseason to kind of that short start of the season that we had...**

Interviewee: Yeah.

Interviewer: **Erm and then also talked around and recapped the motivations culture and the creating a positive learning environment...**

Interviewee: Yeah.

Interviewer: **Erm do you feel that kind of what you've said is a fair reflection of kind of your thoughts and feelings on those topics?**

Interviewee: Yep.

Interviewer: Perfect okay so thank you for your time and your contribution to the project as the previous interview it'll be transcribed word for word erm so if you want a copy you can request one if you wanna ping me an email erm but I'll check through it and if there's anything that can reveal your identity the club anything like that it will be deleted erm and replaced am I alright to erm contact you for rewordin if at any point we've discussed...

Interviewee: Yeah.

Interviewer: Like a player or anything like that?

Interviewee: You'll probably have to remove like out quite a lot [indecipherable] (laughter).

Interviewer: Perfect right I'm just gonna end the recording see if that does that.

Appendix 8 – Example Session Observation Coded Transcript

Thursday 6th February 2020

Session Observation 12:

Context: Consolidating learning and ensuring court readiness for the upcoming start to the season.

Session Focus & Coaching Points: Fight for top position on circle edge, work through side-line and backline options on court.

Activation & Prehab (Player Led)

Commented [RA1]: Athlete Autonomy Leadership

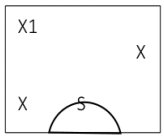
Warm Up (Coaching Team Led):

- Cross the river, cognitive challenge to get all players to ½ way from the baseline without touching the floor using 4 spots.
- Ball tag in their preseason teams

Commented [RA2]: Problem Solving

Session Content (Coaching Team Led):

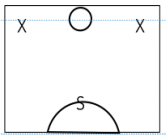
- Conditioned Game 1) 3 posts and a shooter. Players prelim move, play ball to each player who aim to hit specific area on court in relation to their position i.e. transverse line (WD/GD), pocket/top (C/WA), Top circle/post (shooter). Shooter to shoot and feed the ball back to X1 after shot/rebound. Ball is continually live. Progression; Defenders drip fed in after success starting from GK through. Players to play the ball around the circle if not shooter/player not free. (20 good reps target set). Defender or shooter to feed the ball back after shot or rebound to X1. Ball is again continually live.



Commented [RA3]: CLA: Task

Commented [RA4]: Values: Coaching Staff

- Conditioned Game 2) Similar to Skills Practice 1 but players work through court from mid court to goal. 3 defence active in play in goal third.



Commented [RA5]: CLA: Task Representative Learning Design

- Conditioned Game 3) Side-line option walk through with ideas posed but no set play impinged.

Commented [RA6]: CLA: Task

Commented [RA7]: Representative Learning Design

- Conditioned Game 4) ½ court game play.

Commented [RA8]: Representative Learning Design

Cool Down (Player Led)

Commented [RA9]: Athlete Autonomy Leadership

Comments:

- Preseason teams utilised within training with mini challenges/competitions in those teams to incorporate competitive team element from the start.
- Defenders added or progressions made after success has happened.
- Target to get "good reps" set during skills practices.
- "Ball is continually live" theme advocated to replicate game urgency and no rest ethos.
- Links to previous games what players did do, didn't do, needed to do etc.
- Game play scenarios walked through and done at match intensity with ideas provided by the coach but in no way set or set plays impinged.
- Side-lines done from a variety of areas on court and the differences discussed but same outcome wanted.
- Time for feedback and team talks during breaks in play. Players watching from the side-line encouraged to facilitate some of those conversations.

Commented [RA10]: Relationship Building

Commented [RA11]: Representative Learning Design

Commented [RA12]: Representative Learning Design

Commented [RA13]: Representative Learning Design

Commented [RA14]: Feedback

Appendix 9 – Thematic Map