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Understanding How Elite Women Volleyball Players Learn

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MASTER'S THESIS

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Abstract

Learning to become an elite athlete is a long and complex journey. The process of developing a complete understanding of athlete learning may prove even longer and more intricate still. Researchers in motor learning have investigated how athletes learn through a variety of methods; however, there is an absence of qualitative studies on this topic, and studies that examine the actual learning processes of athletes. The purpose of the present study was therefore to better understand how elite women volleyball athletes have learned throughout their athletic life from the perspective of the athletes themselves. Ten high performance varsity and ex-varsity women volleyball athletes with national and international experience were interviewed. The research findings indicate that the athletes' ways of learning were influenced by their biographies, by a variety of learning situations that they experienced with both their coaches and their teammates, and by their use of personal reflection. The findings of this study suggest that an athlete's internal drive and desire to be the best, their ability to view all forms of disjuncture as opportunities to learn, and their willingness to seek out and accept feedback and coaching as important components in the complex process of learning. The findings also point to the need for the sport learning environment to continue to develop coaches with effective teaching and interpersonal skills as well as solid technical skills in their respective sports.

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CHAPTER I - INTRODUCTION

Early thinking, according to Webster's Revised Unabridged Dictionary (1913), defined learning as “the acquisition of knowledge or skill; as, the learning of languages; the learning of telegraphy”, or “the knowledge or skill received by instruction or study; acquired knowledge or ideas in any branch of science or literature; erudition; literature; science; as, he is a man of great learning.” (p. 839). This mechanical definition describes learning as the “acquisition” or “receiving” of knowledge or skill and then expands that idea by suggesting two ways of acquiring that knowledge; instruction and study. To read the first statement within the definition, one is left to decide the manner in which “acquisition of knowledge or skill” is accomplished. If you asked a coach what they coach, inevitably they will answer basketball or volleyball or hockey, etc., and yet, while a coach’s subject matter may be the sport in which they are involved, the true subject of their coaching is indeed the athlete herself. Rogers and Freiberg (1983) placed significant emphasis on the belief that it is the whole person who learns. It seems logical then, that research on sport learning should consider the perspective of the athlete. Deci and Ryan (1985) in their early development of Self Determination Theory (SDT) suggest that people are more motivated in an environment that is influenced by personal preferences and individual needs and desires. Athlete perspectives have been collected and analyzed relative to coaching behaviors, coaching styles, and the overall sport environment for a number of years (Becker, 2009; Durand-Bush & Salmela, 2002; Jowett & Cockerill, 2003; Matorian & Williams, 2000; Terry & Howe, 1984) but no research currently exists regarding elite athletes’ comments or input on their own process of learning.

It is important to note that the more recent definitions of learning address, most often, learning as a process, and not a singular defined moment in time (Gagné, 1977; Jarvis, 1987,

2006; Kolb, 1984; Rogers & Freiberg, 1983). In fact Moon (2004) suggests that we don't know that a person has learned unless she has retained an idea in such a manner that she can then use it to guide new learning, thereby inferring a continuum of learning as opposed to a finite process.

The purpose of this study was to understand how elite women volleyball athletes have learned throughout their athletic life. A more in-depth knowledge of athletes' ways of learning will help athletes, coaches, sport governing bodies, and coach education programs in the continued effort to provide a stronger, more productive learning environment. Increasing our knowledge and understanding of how athletes learn is critical in the advancement of coaching education and certification programs. Subsequently, the training environment for potential elite athletes could become more relevant, effective and efficient. The central research question that guided the present study was: "How have you learned to become an elite volleyball player?"

CHAPTER II - REVIEW OF LITERATURE

An examination of the literature shows a great deal of research in three areas related to our study: research on human learning theory (Bruner, 1996; Jarvis, 1987, 2006, 2007; Kolb, 1984; Moon, 2004; Merriam, 2002; Rogers & Freiberg, 1993; Weil & McGill, 1989), research on the learning process of coaches (Bloom, Durand-Bush, Schinke, & Salmela, 1998; Gilbert & Trudel, 2001, 2005; Lemyre, Trudel, & Durand-Bush, 2007; Nelson, Cushion, & Potrac, 2006; Werthner & Trudel, 2006, 2009), and research on the learning environment in sport (Durand-Bush & Salmela, 2002; Ericsson, Krampe, & Tesch-Römer, 1993; Galipeau & Trudel, 2006).

While there are a number of research studies published that have asked athletes for their input on desired coaching practices or preferred styles and environments of coaching (Becker, 2009; Jowett & Cockerill, 2003; Terry & Howe, 1984) there is a lack of research (only one related study, Durand-Bush & Salmela, 2002) examining the athlete's perspective, relative to their own learning processes. Durand-Bush and Salmela (2002) collected Olympic athletes' perceptions of the factors contributing to the development and maintenance of athletic performance but there is a clear distinction between reflecting on that process and an athlete's actual process of learning. As no studies have been found that directly address how athletes learn, our review of literature will present research on the closely related process of how coaches learn (Gilbert & Trudel, 2001, 2005; Lemyre, Trudel, & Durand-Bush, 2007; Werthner & Trudel, 2006, 2009).

Human learning

Although the proposed study looks at the athlete learning process, it is important in any analysis of learning to have a broad understanding of the origins of the four 'original' models or ideas of human learning (behaviourist, cognitivist, social, and experiential). After presenting an

overview of these four perspectives, this section of the review of literature takes a more in depth look at two particular authors: Moon's (2004) theory of reflective and experiential learning, and Jarvis' (2006) theory of human learning.

Behaviourists, such as Watson, Thorndike, Pavlov, Guthrie, Hull, Tolman, and Skinner, view learning as a change in behaviour. Expanding on that general idea, Borger and Seaborne (1966) detail the behaviorist approach to learning as "any more or less permanent change in behavior which is the result of experience" (p. 14). Watson (1925) is generally acknowledged as the person to introduce the term behaviourism to the vocabulary of learning research. Early behaviourists, born from Watson's label, generally agree "that the only human data that were scientifically useful were empirical and measureable behaviour" (Jarvis, Holford, & Griffin, 1998, p. 21). Perhaps the best known of the behaviourist thinkers are Pavlov (1927) and Skinner (1938, 1953). The two main theories that emerged from their work in the early analysis of learning are classical conditioning theory and operant conditioning theory. Pavlov (1927) developed his theory of learning, largely through his well known 'salivating dog study.' Armed with this visible change in behaviour, Pavlov and future behaviourist researchers, in testing this basic procedure multiple times with a variety of animals and human beings, conclude that learning takes place through a process they call classical conditioning (Pavlov, 1927). The theory of operant conditioning, developed from a series of research studies, postulates that a relationship exists between rewards and the production of a particular desired response (Skinner, 1938). Perhaps the most important understanding of the behaviourist approach to learning is that even the theorists themselves recognize that the learner alone is not the only one responsible for the entire process, thereby leaving the door open for valuable input from other schools of thought on the process of human learning.

Historically, after behaviourist theories, the cognitivist approach began to develop. Early theorists such as Fowler, Kohler, and Piaget, relate learning to the “stage of children’s cognitive development” (Jarvis, Holford, and Griffin, 1998, p. 29). Vygotsky (1978) is known as a key modern psychologist who wrote that “things do shape the mind” (Vygotsky, p.39), thereby suggesting a definite relationship between the learner (the person) and the world around them. The cognitive approach deals predominantly with thought processes in the brain and how individuals think (Winch, 1998) which may or may not be necessarily the same as how people learn. Winch, in his book *The Philosophy of Human Learning* (1998), offers a detailed description of the cognitive approach:

Modern cognitivism holds that individual brains, acting as solitary units from birth, possessed of representational structures and transformation rules, and receiving ‘input’ from the exterior, can account for the way in which we learn (p. 46).

There are typically a number of stages or thought processes that cognitivists identify as stages of learning in their models. Early theorists relate these stages directly to different brain operations, mechanisms, or physiological development stages more than actual processes of learning. Piaget (1929) is considered one of the earliest writers on the cognitive theory of learning and considers learning as being related to the stage of children’s cognitive development. In other words, Piaget believes that as children develop and grow their learning process may change. Another cognitivist theorist, Robert Gagne (1977), presents seven stages in a hierarchy of thought or cognitive processes (stimulus-response, motor chaining, verbal chaining, multiple discrimination, concept learning, rule learning and problem solving) and an eighth item he terms signal learning which can occur at any point along the development continuum. Regardless of the theorist, cognitive theories of learning all relate, in one way or another, with stages of human

development (Jarvis, Holford, & Griffin, 1977) and learning theory evolved from a behaviourist way of thinking to a discussion of the complexity of learning and the importance of the learner in the learning process.

Next in the development of human learning theory came social learning theorists like Bandura, Lave, Wenger, and Salomon. These theorists believe that “all learning takes place in a social or cultural context” (Jarvis, Holford, & Griffin, 1998, p. 38). While few would argue with this as the central idea of social learning theory, various theorists have presented differing models on how human beings interact and ultimately are affected by the social context in which they learn. The concept of social learning does represent a “crossing of boundaries” (Jarvis, 2006, p.145) and the idea that learning is not necessarily a ‘stand-alone’ mechanical process but rather one that involves a variety of processes, approaches and influences. In fact Jarvis (1987), in his early writing, adopts the idea that:

Learning is not just a psychological process that happens in splendid isolation from the world in which the learner lives, but that it is intimately related to that world and affected by it; hence, it is as important to examine the social dimension of adult learning as it is to understand the psychological mechanisms of the learning process itself (p.11-12).

Another widely accepted social learning theory was developed by Albert Bandura (1977). In some regard, Bandura’s ideas represent a mix between behaviourist thinking and social learning theory. He stresses the “symbolic and communicative aspects of human behaviour, together with individuals’ capacity for self-regulatory control” (Jarvis, Holford, & Griffin, 1998, p.43). Bandura (1977) illustrates this mixing of ideas as he says, “people’s expectations influence how they behave, and then the outcomes of their behaviour change their expectations” (p.195).

Regardless of which comes first, it is clear that the social learning approach subscribes to the idea that the individual and the group (collective or society) are not to be viewed independently.

The fourth approach to human learning is commonly referred to as experiential learning theory. Carl Rogers (1969) did important early work in the area of adult experiential learning, identifying two types of learning: cognitive, which he felt was meaningless because it did not consider the environment, and experiential, which he felt was significant. According to Rogers (1969), learning is best facilitated when, among other things, the student has control over the outcome. Jarvis, Holford, and Griffin (1998) have summarized experiential learning as “the process of creating and transforming experience into knowledge, skills, attitudes, values, emotions, beliefs and senses” (p. 46). These authors further categorize the different types of experiential learning that may occur into three main categories of response to experience: non-learning, non-reflective learning, and reflective learning. At any given moment all “these forms of learning can occur simultaneously, and all the senses can be involved” (Jarvis, Holford, & Griffin, 1998, p.50). It is critical to understand that the experiential approach to human learning is important as it is the one that seems to be willing to consider a number of factors in the equation of learning. In a sense, experiential theorists view learning as omnipresent, whether it be conscious or unconscious, throughout the waking hours of the day (Jarvis, Holford, and Griffin, 1998).

In any discussion of experiential learning it is important to consider Jennifer Moon’s (2004) generic view of learning. In her writing, Moon presents a number of key concepts: cognitive structure, learning situations, and deep and surface learning. For Moon (2004), the constructivist view of learning focuses on how the learner is trying to make sense of the world around her. She describes one’s cognitive structure as what is known by the learner at any one

point in time, and that “it guides what we choose to pay attention to, what we choose to learn, and how we make meanings of the material of learning... (p. 17). She also articulates three different types of learning situations: mediated, unmediated, and internal. Mediated learning situations are where the learning environment and process is directed by another person, such as a teacher, instructor, or course conductor. Unmediated learning situations are where there is no instructor and the learner takes responsibility for the direction and content of what to learn. Internal learning situations are situations where there is no new material of learning but an individual may reflect on what they already know. It is important to note that Moon does not suggest that these three learning situations occur independently of each other. On the contrary, an individual is most likely to learn in a variety of learning situations at the same time, and further, these situations will most likely have a ongoing effect on each other throughout the learning process (Moon, 2004). Moon’s work also discusses the learner’s approach to learning. For example, in mediated learning situations, a learner may choose to take either a surface or deep approach to learning. A surface approach to learning occurs when the learner’s intention is to simply memorize the material of learning with little reflection. A deep approach to learning occurs when the learner chooses to really understand the material, “seeking the meaning and understanding the ideas in it” (Moon, 2004, p. 59).

A final and particularly relevant theory to examine in this review of literature on learning theory is the work of Peter Jarvis and his theory of human learning. It is this author, and his work on learning, that forms the basis of the conceptual framework for the present study. After more than twenty years of studying human learning, Jarvis (2006) concludes that “learning is a very complex human and lifelong process” (p. 4) and he defines lifelong learning as,

the combination of processes throughout a lifetime whereby the whole person – body (genetic, physical and biological) and mind (knowledge, skills, attitudes, values, emotions, beliefs and senses) – experiences social situations, the perceived content of which is then transformed cognitively, emotionally or practically (or through any combination) and integrated into the individual person's biography resulting in a continually changing (or more experienced) person (p.134).

This is currently one of the most complete definitions of learning, and presents the idea that learning is a combination of processes, depending on the person and the situation. Central to Jarvis' model is the concept that learning is “the process of transforming episodic experience and internalizing it” (Jarvis, 2006, p. 22).

In the development of his model of the human learning process, Jarvis (2006) ran research workshops with over two hundred adults, and states that much of his data on human learning comes from the learner since there must be a “recognition that the learners know the way they learn better than someone (a researcher) who is external to them” (p. 11). It logically follows that to facilitate the most appropriate learning environment and process for an athlete one should include input from the athlete part of the coach-athlete-environment equation. Jarvis (2006) also believes that “the word ‘transformation’ contains the mystery of learning, since the bodily sensation of experience has to be transformed into mental meanings, by which we explain our personal experience” (p. 22). The first model constructed by Jarvis outlined nine different types of learning: presumption, non-consideration, rejection, pre-conscious, practice, memorization, contemplation, reflective practice, and experimental learning. These were further grouped as *non-learning* (the first three), *non-reflective* (the second three), and *reflective learning* (the final three) (Jarvis, 1998). At that time, Jarvis defined learning as “the

transformation of experience into knowledge, skills and attitudes” (Jarvis, 1998, p. 9). However, he suggested at that time that his topology was simple and subsequently developed a much more comprehensive definition of this ongoing human process.

As with Moon (2004), there are a number of key concepts that are central to Jarvis’ theory of life-long learning: experience, biography, and disjuncture. An experience occurs at “the intersection of the inner self and the outer world” (Jarvis, 2006, p. 7). The inner self is referred to by Jarvis as one’s biography, and the outer world, according to Jarvis, is everything external to our mind and body, and is made up of the social situations we encounter.

An individual’s biography, similar to Moon’s (2004) concept of cognitive structure, is made up of an individual’s experiences to date, and influences what she chooses to pay attention to and what she chooses to learn in different learning situations. Disjuncture occurs when the ‘inner self’ and ‘outer self’ are in some tension or dissonance. Jarvis feels a variety of different learning theories shed light on one or more aspects of learning, arguing that no single theory explains the whole of the learning process. However, at this stage in his research, Jarvis (2006) states that “there are elements of learning that must always be present: the person, as learner; the social situation within which the learning occurs; the experience that the learner has of that situation; and the process of transforming it and storing it within the learner’s mind/biography” (p.157). Jarvis’ comprehensive theory of human learning seems fitting as a conceptual framework in guiding the exploration of how women athletes in the sport of volleyball are learning to play at the elite level.

Research on the learning process of coaches

While there is a gap in the research on how athletes learn, there have been an increasing number of studies conducted on the learning processes of coaches (Bloom, Durand-Bush, Schinke, & Salmela, 1998; Gilbert & Trudel, 2001, 2005; Lemyre, Trudel, & Durand-Bush, 2007; Werthner & Trudel, 2006, 2009; Wright, Trudel, & Culver, 2007). This body of research suggests that a variety of formal, nonformal, informal, and reflective learning situations and experiences play a significant role in a coach's overall learning process. For example, Wright, Trudel, & Culver (2007) interviewed 35 youth ice hockey coaches to determine what learning opportunities contributed to the development of their coaching knowledge. The coaches identified playing experience and experience as an assistant coach, which can be seen as informal learning situations, as two key ways that helped them develop their expertise.

Gilbert and Trudel (2001) conducted interviews with six model youth sport coaches and found that all six coaches developed and refined coaching strategies through a process of reflection, and concluded that three specific types of reflection were distinguishable: 'reflection-in-action' (reflection that occurred in the midst of the actions taking place), 'reflection-on-action' (reflection that occurred between games or practices), and 'retrospective reflection-on-action' (reflection that occurs after there is no longer an opportunity to address the issue in a present state). The significance of this study, by its own evaluation, is that it makes a contribution "to theories of experiential learning and reflection by providing in-depth descriptions of the stages in the reflective process" (Gilbert & Trudel, 2001, p. 30). As well, the authors conclude that peer coaches played an important role in the reflective process. The study "goes beyond merely supporting the point that peers are critical in the experiential learning process, to demonstrate *how* peers play different roles at different stages in the reflective conversation" (Gilbert & Trudel

2001, p. 30). The involvement of peers was categorized into advice seeking (for resolution of challenging issues), joint construction (of strategies or plans), and reflective transformation (observing another coach's approach or strategy and then modifying it to fit ones' own environment).

To add to our understanding of the coach learning process, Werthner and Trudel (2006) used Moon's (2004) generic view of learning as the framework in a study on the learning processes of elite Canadian coaches. Using a multiple case study approach, the authors demonstrated the usefulness of examining coach learning from the perspective of mediated, unmediated and internal learning situations. The authors suggested that,

the coach's cognitive structure is at the centre of this figure and will change and adapt under the influences of three types of learning situations. In mediated learning situations, such as formalized coaching courses, another person directs the learning. In unmediated learning situations, there is no instructor and the learner takes the initiative and is responsible for choosing what to learn. Finally, there are the internal learning situations where there is a reconsideration of existing ideas (reflection) in the coach's cognitive structure (p.199).

Lemyre, Trudel, and Durand-Bush (2007) contributed to the research on coach learning by examining the learning situations reported by 36 youth-sport coaches in the sports of hockey, soccer and baseball. The results were similar to the findings of Wright et al., (2007), whereby the coaches felt there was value in interacting with others, such as peer coaches and friends. More specifically, the results show that "(a) formal programs are only one of many opportunities to learn how to coach; (b) coaches' prior experience as players, assistant coaches, or instructors provide them with some sport-specific knowledge and allow them to initiate socialization within

the subculture of their respective sports; (c) coaches rarely interact with rival coaches; and (d) there are differences in coaches' learning situations between sports" (p.191).

This relatively recent interest in coach learning and the subsequent research clearly suggests that learning is an ongoing, complex mix of relationships between the learner, their environment, past experiences, and reflections.

Research on the learning environment in sport

This final section of the review of literature presents a number of significant concepts related to the learning environment and skill development within sport. Relevant literature on athlete skill acquisition and motor learning with a particular focus given to different types of feedback and its potential impact in learning is presented. We also look briefly at research on the development of expertise (Durand-Bush & Salmela, 2002) and the process of learning through deliberate practice (Ericsson et al., 1993). The literature on the current Long Term Athlete Development (LTAD) model that Sport Canada and Volleyball Canada are adopting relative to the development of athletes is then presented.

Skill acquisition is an important component of the overall learning process for athletes in sport, and is one that has garnered significant interest for researchers over the years (Adams' closed-loop theory, 1971; Keele's motor program model, 1968; Schmidt's schema theory, 1975; Snoddy's general learning formula, 1926). Several research studies have also looked at the impact of different kinds of feedback on the learning of the skills in basketball (Al-Abood, Bennett, Hernandez, Ashford, & Davids, 2002), golf (Wulf, Lauterbach, & Toole, 1999; Wulf & Jiang, 2007), soccer and volleyball (Wulf, McConnel, Gartner, & Schwarz, 2002). In their study on acquisition of golf skills, Wulf, et al. (1999), had two groups of participants learning club

swinging tasks. One group was told to focus on the swing of their arm (an internal attention focus) and the other group was asked to focus on the swinging of the club (an external attention focus). By assessing learning through performance of the task a day later, the findings indicated that external attention focus is more effective in learning motor skills than internal attention focus. Wulf, McNevin, and Shea (2001) supported these findings in a more recent golf study, concluding that when an athlete paid attention to external feedback or input, there was a significant improvement in execution of the skill. These researchers seem to be saying that a focus on external attention for an athlete allows the movement pattern to become more automatic and is seen more as a rhythmical, coordinated response (Wulf et al., 2001). In another study, on skill acquisition in volleyball, Wulf and colleagues (2002) studied the acquisition and retention of the overhand serve skill. This study demonstrated that athletes responded much more positively to external focus opposed to internal focus. They further stated that “the external-focus feedback resulted in more effective performance than internal focus feedback did in terms of the accuracy of the serves for both novice and advanced players” (p. 176). These studies on feedback certainly offer some insight into the process of learning relative to the mechanical skills in sport.

In examining the literature on the acquisition and retention of expert perceptual-motor performance, Starkes, Cullen, and MacMahon (2004) present a descriptive model that lays out a continuum for the development of skills. Their model details observable behaviours and attainable levels of motor skills for each of four phases of their performance continuum. The authors suggest that an athlete moves through a development pathway that they best describe as developing expertise. Their performance continuum includes acquisition (Phase 1), condensation/elaboration (Phase 2), routine expertise (Phase 3), and finishes with transcendent

expertise (Phase 4). While these authors suggest that this continuum is one that occurs over time, they do not suggest a prescribed length of time that an athlete must spend at a particular phase or stage. In fact, these authors suggest that other learning theories have difficulty explaining the speed at which adaptations often occur in athletic performance. Specifically, athletes are able to respond to changes in the sporting environment in times that would negate the use of feedback/forward loops and infer a more direct relationship between perception and action. Overall, this model of acquisition and retention of perceptual-motor expertise has been developed “with the hope that it will guide further research efforts in this area and assist in the development of generalized theory of expertise” (Starkes et al., 2004, p. 275).

In addition to the biomechanical and physical skill learning required of athletes there is the question of general learning or internalization of tactics, strategies, a particular mental state or demeanor that may affect the ultimate performance of an athlete. An area to briefly explore is the development of expertise by athletes (Durand-Bush & Salmela, 2002; Ericsson, 1993; Salmela, 1996). Durand-Bush & Salmela (2002) explored elite athletes’ perceptions of factors affecting expert performance. After interviewing 15 successful Olympic and World Championship athletes, they proposed a model of learning stages that an athlete goes through: 1) Sampling years – various sports for pleasure; 2) Specializing years – time & effort in preferred sports; 3) Investment years – personal sacrifice to develop; 4) Maintenance years – reach pinnacle, maintain level. While this study considers the development of expertise relative to factors that influence athlete development, such as the role of coaches, teachers, parents and support structures in the development of ‘expertise’, it does not look specifically at the concept of learning.

Ericsson, Krampe, and Tesch-Römer's (1993) work looks at the notion of developing expertise, and in presenting a comprehensive theory of deliberate practice, argue that the development of expertise is directly linked to the amount of deliberate practice one engages in for an extended period of time. An excerpt from an article in *Psychological Review* summarizes their perspective:

The theoretical framework presented explains expert performance as the end result of individuals' prolonged efforts to improve performance while negotiating motivational and external constraints. In most domains of expertise, individuals begin in their childhood a regimen of effortful activities (deliberate practice) designed to optimize improvement. Individual differences, even among elite performers, are closely related to assessed amounts of deliberate practice. Many characteristics once believed to reflect innate talent are actually the result of intense practice extended for a minimum of 10 years. Analysis of expert performance provides unique evidence on the potential and limits of extreme environmental adaptation and learning (Ericsson et al., 1993, p.363).

These authors use expert performance as an indication of the quality of learning as well as acquisition of knowledge and skill. While few debate the value of sustained deliberate practice to the evolving performance level of an athlete, these authors sparked controversy in their findings, suggesting that expert performance is ultimately linked to the amount of deliberate practice. In simple terms, Ericsson et al., (1993) seem to suggest that one can practice their way through, or out of any physical or mental limitation they may have. Furthermore, the authors state that "by viewing expert performers not simply as domain-specific experts but as experts in maintaining high levels of practice and improving performance, we are likely to uncover valuable information about the optimal conditions for learning and education" (p. 400).

Finally, it is important, in this section of the review of the literature, to consider the relatively new approach to the delivery of sport in Canada. Recently, Canadian national sport organizations have undergone a massive review in an effort to update the framework of the ideal coach-athlete environment for long term learning and development. For example, relevant literature has been developed by Volleyball Canada in association with this overall strategy. Volleyball for Life: Long-Term Athlete Development for Volleyball in Canada (Anton, 2006) is the manual that has been produced to help guide and direct athletes, parents, and coaches in the sport of volleyball. The beginning of this technical manual cites a comprehensive definition of long term athlete development (LTAD) that has been widely accepted as the guiding principle for the delivery of sport in Canada for the next generation of athletes. Robertson and Way define LTAD,

as a training, competition, and recovery program. It establishes guidelines for coaches, athletes, administrators, and parents in all areas, including planning, training, competition and recovery. It takes into account the ever-changing competitive program and the overall demands on the athletes. Long-term athlete development is also about identifying potential and providing appropriate pathways for that potential to be fully realized. It is about ensuring that everyone who wants to learn sport has the opportunity. ...The best sport development programs have long-term vision, adapt and account for rates at which an athlete matures rather than planning programs based solely on chronological age, are athlete centered, coach driven, but strongly supported by administration, sport science, and sponsors (Robertson & Way, as cited in Anton, 2006, p. 8).

Further to this definition, the LTAD model for Volleyball Canada identifies eight linear stages of development of an athlete, each carrying with it a principal focus (Anton, 2006).

- 1) active start – learn fundamental movements and link them together into play
- 2) fundamentals – develop physical literacy – learn fundamental movements & motor skills
- 3) learning to train – learn overall sport skills and introduce basic volleyball skills
- 4) training to train – build aerobic base, develop speed, and consolidate volleyball skills
- 5) learning to compete – consolidation of fitness preparation & volleyball skills
- 6) training to compete – refine volleyball skills & further develop fitness
- 7) learning to win –prepare athletes physically, technically, tactically and cognitively for international play
- 8) training to win – have athletes achieve podium performances and major international competitions

While the LTAD model provides helpful common vocabulary, it presents a model of proposed stages of development or ‘times’ for learning rather than discussing the actual processes of learning which would be helpful when considering the individual development of an athlete.

This third section of the review of literature has briefly examined research on skill acquisition and motor learning, research on the development of expertise and development through deliberate practice, and summarized the approach presented in the recent Long Term Athlete Development (LTAD) model for Volleyball Canada. In each area of the general sport learning research, there is mention of the value of considering the athlete in the process of learning but no research has been found that specifically garners input and data from the athlete herself. It is our contention that the perspective of the experienced athlete will add valuable and rich insight into the process of learning.

Personal Interest

Over the last twenty five years, my coaching and teaching career has exposed me to sport environments with public school age children, high school and club teams, as well as university level competitive situations and provincial, national and international venues as a coach, assistant coach and as an administrator. While these environments have, in some ways, been quite different, there has been a common thread of interest in the growth and development of the athlete. On a daily basis, while coaching, I am frustrated and proud, discouraged and motivated, confused and enlightened, all because of the athletes with whom I work. What has motivated my interest in this research is the fact that much of the advice, direction, and accepted methodology for coaching and teaching athletes are not often based on input or feedback from the athletes themselves. I feel that some of the best information I have received as a coach has come from casual, unstructured discussions with past athletes of mine. In many cases I feel that the athletes I have worked with have become better performers and players after they have stopped with the formal instructional phase of being an athlete. I believe it is valuable to gather more input, reflections, and ideas from expert athletes on how *they feel* they have learned, over their career, to become an elite athlete. It is important to note that, while I may have previous knowledge of the some of the athletes interviewed in this study, I did not have a direct coach / athlete relationship with any of them at the time of the interviews.

CHAPTER III - METHODOLOGY

Research Paradigm

This research was undertaken within a constructivist epistemology which views the nature of knowledge as consisting of multiple realities:

Knowledge consists of those constructions about which there is relative consensus among those competent to interpret the substance of construction. Multiple “knowledges” can coexist when equally competent interpreters disagree... These constructions are subject to continuous revision, with changes most likely to occur when relatively different constructions are brought into juxtapositions in a dialectical context (Guba & Lincoln, 1994, p. 113).

It is clear that there cannot be one simple explanation to the complex process of an athlete’s learning process. It is an ongoing process of transformation and knowledge acquisition that may differ among athletes with varying experiences. Each athlete’s individual biography and experience will influence how they learn and “no aspects of knowledge are purely of the outside world, devoid of human construction” (Stake, 1995, p.100). This belief and understanding is best reflected by a constructivist epistemology and aligns well with the theoretical frameworks of Jarvis (2006) and Moon (2004). The general methodology used in this research is interpretive, qualitative research. Merriam (2002) states that the implementation of basic interpretive qualitative methodology is appropriate when “the researcher is interested in understanding how participants make meaning of a situation or phenomenon” (p. 6). Indeed, Creswell (2007) adds that such a methodology is helpful when “we need a *complex*, detailed understanding of the issue. This detail can only be established by talking directly with people, going to their homes or

places of work, and allowing them to tell the stories unencumbered by what we expect to find or what we have read in the literature” (p.40).

Collective case study

This study employs a collective case study approach. In a collective case study, “the one issue or concern is selected, but the inquirer selects multiple case studies to illustrate the issue” (Creswell, 2007, p.74). Creswell (2007) further points out that “often the inquirer purposefully selects multiple cases to show different perspectives on the issue” (p. 74). This study garnered input, through in depth interviews, from 10 elite women volleyball athletes, to begin to gain an understanding of the complexities of an athlete’s process of learning.

Purpose of the Study

The purpose of this proposed study was to explore how elite women volleyball athletes have learned throughout their athletic life.

Method

Participants

The ten participants in the study were women volleyball players who had competed for at least four years at the university level (CIS), been exposed to some form of national level competition (active or recently retired, within 5 years), and possibly experienced professional level play outside of Canada (active or recently retired within 5 years).

For the purpose of this study, the term ‘elite athlete’ refers to any athlete who has competed full time at a post secondary institution in Canada (in at least their 4th or 5th year of

playing eligibility at the time of being interviewed) or competed full time with the Canadian National Team program. Participants were selected from a total of 39 registered CIS institutions and three National Team programs (Senior A National Team, Senior B National Team, University FISU National Team). Each athlete who participated in this study received a brief written description of the research and signed an informed consent form according to the University of Ottawa standard research ethics procedures.

Recruitment of Participants

Recruitment of participants began by contacting coaches and program managers with access to athletes who met the descriptors. Once a list of possible athletes was established, an electronic (e-mail) invitation was sent to athletes via a coach or other contact of a specific team or organization. After athletes responded positively to the invitation, contact was made via telephone to determine an interview date, time, and location.

Data collection

Semi-structured interviews, using an interview guide, were utilized (See Appendix A for the complete interview guide). At the beginning of each interview, the participants were reminded of the scope and nature of the research. The interview guide included questions about their background (e.g., Tell me about how you got involved in playing volleyball); information on how they felt they learned (e.g., What do you feel helped you develop as a player?), and who might have helped them (e.g., tell me about your coaches and how they helped you learn to play well). The interviews ranged between one hour and one and half hours in duration. All questions and follow up probes were intentionally open-ended to facilitate each athlete

answering in their own words, with their own insight and thoughts in an unencumbered manner (Creswell, 2007).

Data analysis

All interview data was transcribed verbatim and then analyzed to develop emerging themes and sub themes. We employed Braun and Clarke's thematic analysis method, driven by Jarvis' (2006) theory of human learning. Thematic analysis is "a method of identifying, analyzing, and reporting patterns (themes) within data" (Braun & Clarke, 2006, p.79). The data was coded and sorted into potential themes (thematic categories); then relationships between codes, between themes, and between different levels of themes were identified. The next phase consisted of reviewing the themes and evaluating whether they appear to create a coherent pattern without ignoring divergent themes. During this phase the data was re-read in order to code any additional data within the themes that may have been overlooked. The identified themes were then defined and refined until they were ready to use in the interpretation of the data.

Establishing trustworthiness

To ensure consistency and trustworthiness of the interview data, the principal researcher conducted all interviews and the semi-structured interview guide was "pilot-tested" with two athletes to ensure the questions were clear and that any important questions in terms of learning situations were included (Creswell, 2007). Due to the uniqueness of the research question on learning, significant probing on the part of the interviewer was required.

Once each interview was completed and transcribed verbatim, each participant was sent a copy of her interview and asked to review it to see if it accurately reflected her comments and thoughts. Only a few minor revisions were requested. In some cases, a single follow up interview (by telephone) was required for clarification of some of the learning situations. For example, one of the early participants was asked to clarify, in the follow up interview, what she found useful about having a coach do individual work with her. This athlete elaborated by saying she liked when her coach was able to provide feedback from a different viewpoint. “I like having the coach there to look from the outside and then I can process whether something is working or not.”

CHAPTER IV - RESULTS

The results of this study are divided into six sections, corresponding to the main themes that developed through the thematic analysis of the interviews utilizing concepts from Jarvis' (2006) theory of human learning (e.g. biography, learning situations, disjuncture). There are also a number of sub-themes present under each of the main themes. Quotes from the participant athletes are used to add detail and understanding to each of the themes and sub-themes. Following each quote, the athlete who provided the quote is referred to as 'A1', 'A2', etc. This allows the reader to refer back to the corresponding demographic information in Table 1 while tracking the dialogue of a given participant, and to develop a complete understanding of the learning process relative to the variety of athletes in the study.

The athletes as individuals: Who are they?

This section of the results focuses on who the athletes are as individuals and as athletes. Table 1 displays the demographic information of the ten elite, Canadian women volleyball players who participated in this study. The information includes: age, family playing experience (family members playing volleyball), province, when they started playing, range and amount of playing experience, recognition of other sports played competitively, and playing status at the time of being interviewed. Nine of the ten athletes interviewed had completed or were currently completing their fifth year of university eligibility; eight of the ten represented their province as a Provincial Team member and/or Canada Games Team member, and nine of ten were members of the Canadian National Team at some point in their career. Four of the ten athletes interviewed played professional volleyball overseas (Europe or Scandinavia); and at the time of being interviewed, four considered themselves retired from competitive play, two were in the process

TABLE 1: Overview of athlete demographic information

INTERVIEW	AGE	FAMILY PLAYING EXPERIENCE	PROVINCE OF LEARNING	BEGAN PLAYING	PLAYING EXPERIENCE							PLAYED OTHER SPORTS COMPETITIVELY	CURRENT PLAYING STATUS
					SCHOOL TEAM	CLUB TEAM	PROVINCIAL TEAM	CANADA GAMES	UNIVERSITY TEAM	NATIONAL TEAM	PROFESSIONAL		
A1	20	N/A	BC & AB	GRADE 5	GRADE 5-12	GRADE 7-12	BEACH GRADE 10-12	BEACH	3 YEARS	YOUTH, JUNIOR, SENIOR B	NONE	YES	NATIONAL TEAM
A2	22	SISTERS	SK	GRADE 7	GRADE 9-12	GRADE 10-12	GRADE 10-12	YES	5 YEARS	SENIOR B	NONE	YES	NATIONAL TEAM
A3	22	PARENTS	MB	GRADE 8	GRADE 8-12	GRADE 8-12	GRADE 9-11	YES	5 YEARS	JUNIOR, SENIOR B, SENIOR A	NONE	YES	5TH YR UNIVERSITY
A4	27	MOTHER	ON	GRADE 5	GRADE 5-13	GRADE 12-13	GRADE 11-12	YES	5 YEARS	SENIOR B, SENIOR A	3 YRS	YES	COMPETITIVE RETIRED
A5	23	N/A	ON	GRADE 9	GRADE 10-13	NONE	NONE	NO	5 YEARS	U 23	NONE	YES	COMPETITIVE RETIRED
A6	27	N/A	ON	GRADE 5	GRADE 5-13	GRADE 11-13	GRADE 10-12	YES	5 YEARS	SENIOR B, SENIOR A	3 YEARS	YES	UK NATIONAL TEAM POOL
A7	23	N/A	ON	GRADE 5	GRADE 5-8	GRADE 8-13	GRADE 9-12	NO	5 YEARS	SENIOR B	NONE	YES	5TH YEAR UNIVERSITY
A8	24	N/A	PQ	GRADE 9	GRADE 9-11	GRADE 9-11	GRADE 10-11	YES	5 YEARS	YOUTH, SENIOR B	1 YEAR	YES	COMPETITIVE RETIRED
A9	26	N/A	ON	GRADE 5	GRADE 5-13	GRADE 9-13	GRADE 10-13	YES	5 YEARS	YOUTH, SENIOR B	2 YEARS	YES	ACTIVE PROFESSIONAL
A10	24	N/A	ON	GRADE 6	GRADE 6-13	GRADE 7-13	NO	NO	5 YEARS	NO	NONE	YES	COMPETITIVE RETIRED

of completing their 5th year of university, three were still training and competing at the international level and one was actively competing in professional volleyball in Europe. All of the women athletes started playing in grade five or later, and interestingly, only three of the ten athletes mentioned a playing influence or involvement of family members in volleyball when discussing their reasons for starting to play.

Drive to be the best

All ten women athletes interviewed spoke of their competitive desire to win, and their need to be constantly working on improving their game. They also spoke of being open to feedback and constructive criticism, and saw their inclination to ask questions and seek out additional expertise, as major catalysts to their learning process.

When asked about her early learning experiences, one ex-National Team athlete quickly pointed to her desire to be better than others or just be her best, as an important part of her learning process:

I just had so much passion to get better and I wanted to always be the best at everything. If we were in practice and I saw another player get a good hit, I was going to do that better than them, no matter what it took. That was always my mentality all through high school. I hated when people were better than me, as bad as that sounds. I think that was how I improved so much, because I wanted to be better. I wanted to be the best I could be so I would just go do it. I would see someone else go do it and I would go find a way to do it too. (A3)

A second athlete referred to her pursuit of perfection, “I think the first thing that drives me wanting to learn is that I don’t like not doing things well – I think that transfers over into my skill learning” (A6). Another athlete suggested that she wanted to do things well but learning and getting better, in and of itself, was the determining factor in whether a session in the gym was successful or not. When asked how she learned, this athlete responded, “for me it was not about hanging around with my friends and having a good time – a good time for me was learning new skills and getting good at things – I always liked doing things well” (A7). The same athlete, later in the interview, described an experience that explained this further, “I remember my closest female cousin – she would be dancing and I would say to myself, ‘I hate that I can’t do what she is doing right now’. It was just like this compulsion” (A7).

Another athlete said, “I really have no problem with motivation to learn. I basically make everything a competition – even if I am doing a 60% serve and I put one into the net, then I want to make the next one that much better. I just think ‘I am not making that mistake again’” (A2).

This drive to be better than others, better than oneself, and better than before was a common sentiment for all the participants at various stages of the interviews. When asked to summarize the main ideas or concepts involved in their learning process the athletes often referred back to this idea of who they were. This shared perspective is aptly summarized by this athlete’s statement:

I think learning is just a mindset – some athletes have it and some don’t.

I don’t have the magic recipe of anything but for me it was just a mindset of

‘Oh, I screwed that up but the next one is going to be that much better and I’m going to get the kill or get the block of whatever it is’ (A2).

This particular athlete played through university as well as on three different professional teams in three different European countries. Her perspective on what drives learning may provide some insight into how she was able to learn in many different situations: “It was more that I was going to learn and learning is fun, I want to do this well, I have fun when I do things well, we are going to win and that is fun” (A6).

A number of athletes talked about how competitive they were. One athlete said, “I think I have always been an extreme competitor – no matter what I am doing, I just absolutely hate losing. Every ounce of me hates losing. So I would really push to learn because I didn’t want to lose” (A2). Another athlete remembers her competitive nature driving her learning very early on in her volleyball career, “U16 we were competitive and there was another girl on my team who I wanted to beat. We were both the starting middles and I wanted to play. I would see her do something and I would think “Hmmmm, I want to do that”, so I would go do it. That is how I remember it starting, my learning” (A3).

Yet another athlete noted that her enjoyment or intrinsic motivation for focusing on personal improvement was better suited for volleyball than her previous sport of competitive gymnastics, “I really liked volleyball because as opposed to gymnastics I could just work on improving without fear of being given a score or judging ... I liked just trying to improve and getting better” (A8). The same athlete also described the environment she encountered at National Team try outs:

The National Team try out is an environment where I was very motivated to learn and do well.... Just because you are surrounded by people who are older and better than you and you have to step up to beat the block or get the kill. I think it is almost like good pressure to help me learn (A8).

While most of the women athletes said that this drive to be the best was part of who they were, one commented that the competitive nature driving her learning in volleyball was not particularly present in the other parts of her life. She noted that, “It was just volleyball. That is the thing, in real life, that kind of thing doesn’t affect me. I don’t have the same drive” (A3).

Loving the game / enjoyment of the sport

A number of the women athletes talked about loving the game of volleyball and how that influenced their drive to improve. As one athlete said, “Learning to love volleyball comes from within but I had a lot of positive experiences when I was young, and made a lot of good friends. That is why I wanted to go and learn every day” (A3).

Another athlete attributed much of her early ability to learn, in spite of a less than positive playing situation, to her enjoyment of the game, “I got through it because I really liked volleyball and I really liked the people and I thought I was pretty good” (A10). This athlete had to travel a long distance to get to club practices and faced some obstacles to playing and getting better. When asked why she persevered she said, “I just loved playing volleyball so much – I don’t think there is anything a coach could have said to me that would have made me quit or stop trying to get better” (A9).

Openness to feedback & constructive criticism

Along with the drive to be the best, and loving the game of volleyball, all of the women athletes provided numerous examples of how they were open to feedback and constructive criticism. One player said that it was important for her to be “open and receptive to feedback and

making adaptations - never thinking that you know everything about what you are doing I guess”

(A2). Another athlete said:

I have always been very receptive to coaches’ advice and everything they tell me.

I want to absorb as much as I can to get better. If someone I respect tells me something

I will try it and test it out and if something isn’t right I will always ask ‘what am I doing wrong.’ I always want to know (A3).

Yet another athlete demonstrated her openness to feedback by stating “I like having the coach there to look from the outside to tell me what it looks like and then I can process whether it worked or didn’t” (A1). This same athlete easily remembered a detailed description of her willingness to receive feedback when she was asked to recall a favorite moment of learning, “I remember one day he (the coach) spent an entire morning with me and he would toss balls and I would hit and he would give me feedback, then I would do it again.... I really liked getting that feedback and chance to improve” (A1).

Asking questions, seeking out experts

Several of the athletes in this study spoke of frequently asking questions and seeking out experts in their process of learning to play better volleyball. For example, when asked how she would approach mastering a new skill or element of her game one athlete quickly referred to how she took the initiative and went to her coach when she needed help, “for extra reps I would usually go to my coaches and ask for help, and it was almost always, yes” (A1). Another athlete found herself searching out expertise almost out of necessity:

Maybe it was because I lived in Sudbury but the fact was there wasn’t

anyone around that seemed to have very much coaching experience in volleyball.

So I remember I asked my Dad if he could research how I could play on a club team outside of our area so I could get better and get a chance to be on the Regional team (A9).

This same athlete seemed to draw on her willingness to search out whatever expert she had to in order to find a way to improve:

I do remember one time, with my university team.... We were trying to learn slides for right side and I just couldn't get the foot work and I wouldn't let the assistant coach leave until I got it I think we stayed about an hour after practice and he kept saying that we could try again tomorrow but I wouldn't leave and then I finally got it. (A9)

Self-awareness and reflection

Several of the women athletes spoke about how they became more self aware and more reflective as they matured as athletes. One athlete, who experienced many ups and downs throughout her career and a series of different high performance training environments, felt she reflected a great deal:

Now it is more of internal self reflection. Especially my time with the National Team there was a lot of thinking by me, because all I basically did was play, eat and sleep. When no one is around and when I am going to bed, that is when I reflect the most. It is best without other people ... I can be with other people but I have to have music on. That really helps me because I have a lot of music that doesn't have lyrics and that helps me think. Actually I love road trips. I end up fairly quiet but that is when I usually figure something out (A7).

A second national team member also saw herself as someone who had developed the skill of reflection. She said that early on in her career, her coaches had tried to get her to reflect but it did not fit for her at that time. However, when she found herself exposed to the concept in university studies, she saw she had been doing it for a long time:

I remember doing it pretty young but just coming to realize it through my university courses, because I am in HK, so you end up realizing these things and saying “Oh, yeah, I do that”. When I was young we had a couple of teams where the coaches made us write down things, and I used to hate that, but I always kind of naturally did reflect. I always had goals but I hated writing them down. (A3)

Another athlete talked about beginning to learn how to become more self aware when she started taking yoga:

I am really a lot more self aware since I started practicing yoga. The instructor was talking to us about breathing and relaxing and ever since then it is like ‘No, I need to breath and relax in everything.’ I was very surprised that you actually can control all these things that you don’t think you can control. I am realizing that I can control more things than I thought I could and so that is opening a lot more possibilities of what I can do now (A6).

In the case of another national team level athlete, the process of reflection was about learning how to trust herself as a player:

One thing that happens at National Team level is thinking! You have so much time to think, and of course to worry, to analyze and to second guess yourself. I think I learned after the first summer with the team that I needed to trust myself and stop analyzing too much. It is ok to think about what happened at the last practice

and picture how it is going to be better but I had to stop thinking ‘well what if’.

I had to start trusting myself and that took some thinking (A9).

Learning within the sport context

Learning situations with other players

The theme of learning situations with other players developed as a result of the many comments by the women athletes about how and what they learned from teammates and other players. All ten of the women athletes discussed how and what they learned from being immersed in the game and surrounded by older, more experienced players. They talked about this from the perspective of their early development years, from observing more experienced players, from playing alongside their own teammates, and sometimes from learning situations with a sibling. For example, one athlete spoke of how she learned specific skills from some of the more experienced players on her team, “We were just in a hitting line and she would go before me and would get a great hit, and I am just right behind her and want to do the same thing” (A3). Another athlete recounted how playing with older, more experienced players directly influenced how she approached her game as a young athlete:

It has a lot to do to with those first environments where you are pushing yourself, but you are also watching those players who are a few years older than you who are pushing themselves harder than you – if they are smiling while they do it and laughing and enjoying it – then you see how great it can be – and you can learn from it – the atmosphere that encourages that hard work (A5).

A third athlete described how she learned about the importance of being fit from the example set by an older experienced player, “We had an older, fourth year setter, and I was

constantly doing setter drills with her. We were very different, but I learned from her about the importance of being fit because seeing her running around and yet how relaxed and fit she was – I realized that it was important” (A6). Another athlete, who played at the national level, attributed some of her learning to the older players who “pushed” her to improve, “playing with girls two years older than me kind of made it really hard for me not to get a lot better, because they were always pushing me to get better” (A1).

Several athletes spoke of learning specific plays from athletes playing the same position. For example, one athlete provided a rich description of a very positive, ongoing process that the players at her position had on her team:

I think my learning came more so from athletes. I think as middles, with timing, we are always communicating with each other – like I will come back and ask, ‘Was that set high or am I late?’ and the other middles would say, ‘I think you were maybe late.’ It’s like a two way street and you just kind of meet there. It was definitely with older players. I remember this one setter I had, she never said anything in a rude way but she would say, ‘Ok, where are we going to meet in the middle? How are we going to make it work?’ And so I learned a ton from her. Now I look back and we have a rookie middle and she is always asking, ‘How did you do that?’ and it is kind of nice to see it flipped (A2).

In relationship to learning new skills, one athlete commented on the value of peer evaluation and teaching as a positive learning process:

It is helpful when learning new skills to have someone monitoring. I remember when I was learning how to pass I would always have a teammate beside me and I would ask, ‘Can you tell me if my hips are low enough, if my

arms are out in front, if I am standing up or if I am jumping?’ And I think that peer evaluation is a good way for me to learn. It is intimidating to get feedback from a coach all the time, especially when you are learning. With peer evaluation you can be communicating with each other because you can both throw ideas back and forth and if you are unsure you can talk about it and figure it out (A2).

One athlete remembered her early learning of ‘what it was all about’ coming from her older sister who also played volleyball. This experience was not just about playing volleyball, but also about the relationships that were developed:

I think through my sister I learned a lot, watching her play a lot of sports, but volleyball, in particular. I went on a lot of trips with her team and watched her play. I remember being in hotel rooms and seeing the players sharing moments, like when someone was graduating - everybody’s together, everybody’s crying, everybody’s sad, or happy because they had fun – yeah, that was cool for me to be able to see the kind of relationships you do build through sport teams and how that is such an important part of it. It made me really excited to be able to get in there and share that with my team mates as well (A1).

It is interesting to note that in the resumes of all ten of the women athletes, there is some form of playing experience where they ‘played up in age’ or competed with and against more experienced, older athletes.

Learning situations with coaches

Throughout the interview process, all of the women athletes referred to the important role that a positive, supportive environment had on the learning process, and in particular, the role their coaches played in creating that environment. For example, one of the athletes spoke of the value she placed on the atmosphere and coaching that needed to exist for her to learn and improve:

The only way that I can learn and be open to criticism is when it is a positive setting. If I have a good relationship with a coach and I know he isn't going to yell at me, then I feel free to play. That was a little bit of a team motto we had once - just being able to make mistakes and learn from those mistakes and having coaches that I am not afraid of. I need coaches that give feedback but that are not trying to cut me down all the time, tough love maybe, but never negative. It is such a huge part of my learning because then I can be open to listening to what they have to say without feeling like, 'gosh I suck' (A1).

Another athlete also described the positive effect a coach had on her learning because of the environment that he created:

He would never really take it easy on us. It would never be like 'ok, just hit at position 1 on the court.' But he also wouldn't really ever get angry at us - he would hit the ball to a place and if we didn't get it... he would just kind of laugh and we would get frustrated and say "Ok, now I am going to get this next ball!" It was a really positive atmosphere as a result (A6).

Another athlete spoke of the positive impact a particular coach's approach had on her learning process.

What I remember is that she was very energetic and open and we all felt comfortable with her. When I saw her doing things I just started asking her questions and once I started doing that she started coaching me more. She was so very positive and I trusted her. That was probably the first coach where I just said 'Ok, whatever you tell me I am just going to do it' (A7).

The same athlete reflected further on the importance of a coach having confidence in her ability, "It was just always 'you can do this.' I think I still would have done it but I am not sure it would have progressed as quickly" (A7). She added that:

When we would train as a team – they would just always have a lot of confidence that we were going to do it, so then we would go in a tournament and even when we were losing they would say 'No, you guys can do this' and we would say 'Ok, we are going to do it' and then we just went and did it (A7).

Another example of a coach creating an environment where athletes could build their confidence, which, in turn, allowed them to learn effectively, was illustrated by an athlete when she said:

My coaches gave me the confidence to play the game. They taught me and the team to just never freak out about anything. We would be down 5-15 and they would bring us in and say 'Ok, girls, let's go now'. They would let us make our mistakes and then let us fix our mistakes and cover our own asses. As a result we learned and had much less doubt in ourselves. So what that really taught me was the whole 'never giving up thing' (A6).

A final example of the relevance of a coach's impact on learning is illustrated by the following comment:

In OAC the learning came a lot from coaching too, because my coach was super motivating. She had played in university and so she drew from her own experiences and I found that really motivating... she was really intense and she really knew what to say at the right time. You wanted to play well for her and you wanted that feeling of wanting to do well for the person that you are playing for - that helps me learn (A10).

The women athletes also spoke of the importance of individual time with their coach, and how it was critical to their learning process. One athlete vividly remembered a couple of her early coaches who helped her learn a great deal about the foundational skills:

They just basically took me aside and said 'Ok, you toss, this is your arm movement, keep it really simple, and then you have to be strong.' And I just remember how they simplified it - and they showed me – they demonstrated - they took me aside and really broke the skill down. I needed that focused attention (A6).

One of the athletes who was on the national team spoke about the kind of feedback she needed from her coach to help her learn, "I like it to be straight. I like positive feedback, but not fluffy. If I am doing it wrong, tell me how to fix it" (A3).

Even after 10 years of playing and a variety of coaches, one athlete felt it was her first coach that created the best learning environment for her:

We did drills, but he was the first person who started to understand how my mind worked. He equated volleyball with art - so he would say, if we were working on my hands, 'Ok, right now your brushes are really messy – or he would say 'There is too much paint – and that may sound funny but it made so much sense to me. He was the first person who kind of got inside my head. He was the first person who could talk to me and I would understand without

needing a demonstration (A6).

Several athletes also mentioned their experiences with poor coaches which emphasizes the necessity of a demanding yet positive and supportive environment for learning to occur. For example, one athlete described her situation with a negative coach and how it impacted her learning, “I am not very receptive to the coach just yelling, it’s just disrespectful. If a coach were to come in and just start screaming, then I would probably not get much out of it” (A2). This athlete went on to emphasize the importance of distinguishing between a coach that created a tough environment for learning versus a coach who simply yelled at players:

For me, a coach being tough, that would be a motivating environment.

Just not so much yelling at me. And when communication isn’t really there with the coach, when that trust isn’t there, I am less open to listen to what they have to say or to trust in what they are trying to teach me (A1).

Learning situations related to team structure and training environments

A number of the women athletes spoke about how different training environments and their role on a particular team influenced how they learned. For example, one athlete spoke about the time period when she was training at the National Team’s training center with a select group of athletes. She spoke of how the focused environment affected her learning:

When there are only six of you, there is nowhere to hide. If you pass a bad ball everyone sees it. It really makes you want to be better because there is nowhere to hide. I also felt that the time that was being invested in us as athletes, in this focused setting, was really huge - we knew that they were trying to build this program, so I wanted to work hard and get better. (A1).

Another athlete spoke specifically about how a positive environment helped her in learning to play well, “Definitely a positive team environment pushes me to learn. It is about people who are happy and that I have a really solid personal relationship with - but who aren’t afraid to call me out if I am not working hard enough that day” (A5).

Other learning situations

There were also several athletes who spoke about learning situations later in their careers, sometimes outside of sport that, in some ways, influenced how they learned and played within their team. For example, one athlete said, “Learning to study a week in advance instead of a day prior to an exam, helped me in school, and sort of transferred to playing. Certainly watching other players when I was young and watching 5th years study on breaks and trips – I did have good examples of that” (A3).

Disjuncture

Another theme that emerged from the analysis of interviews was the notion of disjuncture. Jarvis (2006) defines disjuncture as occurring “at the intersection of the inner self and the outer world and so learning always occurs at this point of interaction, usually when the two are in some tension, even dissonance, which I have always called ‘disjuncture.’” (p. 7). In the process of interviewing the women athletes about how they learned to be good volleyball players, it became clear that all of them experienced numerous disjunctures in their volleyball lives that created possibilities for learning to occur. These disjunctures included emotional life events, change of playing position, changes in team environment, injuries, and failure to reach their own personal expectations. What is important to note is that, in many cases, each of these athletes saw these disjunctures as opportunities to learn and improve as an athlete.

Emotional life events

One of the athletes spoke of the devastating loss of her father and how this tragedy had a significant impact on her volleyball and athletic learning in both the short and long term:

I think one of the hugest learnings for me was in grade 10 - my dad died that year - it was two weeks before provincials, and I had to make a choice about whether I was going to play or not. I had decided to play but then I remember right before a game, I was so upset. I was on the floor crying, 'I don't know if I can do it - I don't know if I can handle this kind of pressure right now' and my coaches just saying 'you know what, nobody expects anything of you right now. If you want to play you can play, if you don't want to play, that's fine.' And I played, and to this day that is the best game I ever had. I think just learning to be able to trust my teammates and trust my coaches and kind of let them carry me for a little bit was something that was really good for me as an athlete because I had to let my guard down, I allowed myself to be really vulnerable. For me that was a huge learning experience. And I also learned how to kind of turn emotions off; emotions that were going to affect my play in a negative way (A1).

Another athlete described the emotional process of deciding to leave one university program due to coaching issues and return home. She said:

I think deciding to leave my first university, because of the coaches, was the first step in realizing that I had to do things for myself and start taking care of myself. I thought, 'Ok, I need to start taking care of who I am as a player' (A7).

Another interesting example of how a life experience can indeed impact learning within sport came from an athlete who was upset after breaking up with her boyfriend:

I was really upset and crying at practice, but at the same time I was really mad. I was going up and ripping balls. So my coach said, 'We have to get you in that mindset more often'. So that is kind of how I learned to consistently just rip it (A3).

Change of playing position, change in team environment

All of the athletes interviewed talked about seeing the try outs, selection process, and changing roles on a team, as learning opportunities. One of the women athletes remembered several situations that helped her learn as a result of a new, and what she called, uncomfortable environment:

The first provincial team that I made, I was much younger than the other girls and I had a very tough time. I was very home sick, because my parents had been a big source of support for me when I had a tough day. I ended up getting injured but it turned into a time when I really questioned myself – not if I should play volleyball but in thinking about how much I had to do to progress as a player. And then another time when I really had a big punch in the face, other than National Team tryouts, was when I went off to university. I just remember feeling humbled because I realized I had so many things to learn - but I did so – I progressed a lot as a player (A7).

Two of the women athletes spoke about the impact of changing playing positions. One athlete, after playing a lengthy period of time in one position, was asked to change roles at the

national team level. She felt that this change in role possibly forced her to learn more than at any other time in her career:

I felt like I really learned a lot about myself, because I had always played outside and I had to learn a lot fast. Yet I learned more about my game as a result of that change than at any other time. It was so different from playing middle where I didn't have to think so much (A3).

The second athlete who spoke about the impact on changing roles when she moved to the national team said:

It was different at the national team level. Here I had to learn to score and be effective even if I only get the ball every so often. When I was with my university team or even in professional volleyball, I was the 'go to' player, but on the national team I am probably the second or third option and that took some getting used to – that took some adjustment on my part (A9).

At the national team level, one of the athletes also spoke about encountering a coach that embraced the idea of pushing athletes out of their comfort zone in order to progress:

It was in environment where the coach was really keen to put people in situations they had never been in - so I played libero, I hit power. Everyone was kind of all over the place, which was really cool but we didn't do very well. The team only won one or two games in the intra squad scrimmages that we had – and his comment afterward was that 'to be really successful and to be an elite player you can't lower the bar for yourself just because you are not in your comfort zone'and that was a huge lesson for me, in volleyball, and in life (A5).

Further recognition of learning came from one of the athletes who tried out several times before she succeeded in being selected for the national team, “I tried out a number of times for the National Team and didn’t make it. When I failed, that really made me think and learn” (A6).

Injuries

One of the more common situations that all athletes face is related to injuries. One athlete spoke of a time when an overuse injury sparked a discussion with her coach and created a learning situation for her around creating some recovery time so she did not get re-injured:

I couldn’t practice for a week and my head coach said “Ok, you are going to have to figure out how to balance this out, because I don’t question that you are working hard, we know you are working hard, but you have to figure out the balance between working hard and overexerting physically to the point of injury (A7).

Another athlete spoke of coping with surgery for her shoulder. The year of rehabilitation proved a turning point, and she said, “It took me a long time to recover from my surgery, and as I was playing again I felt what it was like not to be the ‘go to player’ anymore - and then I learned how to be more of a team player” (A3).

Failure to reach their own personal expectations

A final disjuncture that the women athletes in this study spoke of was related to failure to reach their own standard of personal expectations relative to performance. One athlete vividly recalled a poor volleyball performance that lead to significant learning for her:

I remember in my first year, we were at U of x and I just could not do a single thing right, and I pride myself on being fearless. And I remember

I got 'liberoed' out. I left the gym and I watched racquetball for like six points or something. I came back and I played awesome the rest of the game and I think what happened was I just totally cleared my mind, by doing something else. I had gotten so worked up and I was in my rookie year and I expected so much of myself. So I learned how to actually find good distractions that helped me clear my mind - and then I can come back to the court and I am 100% zeroed in again (A2).

Another athlete also spoke of learning how to deal with the high expectations she placed on herself:

I remember actually, it was in our conditioning training. I would run an 800m and then I would be so stressed about the next one that I would forget to breath and then I would just die.... and for my first year I was just very bad at them and I had to realize 'Ok, you have to work hard but you have to let yourself relax.' I had to start learning how to handle being stressed about my personal expectations while still breathing! (A7).

Yet another athlete used a poor performance in her first international play to gain perspective and motivate herself to learn more:

It was my first tournament as a left side with the National Team and I didn't have a very positive tournament - when I went in I really struggled. I remember going back and watching this awesome volleyball final and thinking 'Oh, even they make mistakes and that's OK to make some mistakes. I learned a lot from that' (A3).

Finally, one athlete spoke about a different disjuncture, one that was inherent in the game of volleyball, “I really liked the length of competition in volleyball. It is never predictable – there is always a change in this player or that situation. I liked the challenge of that type of situation compared to gymnastics, where it was the same routine over and over again” (A8).

Learning situations: Developing motor skills

A final theme that emerged from the analysis of the interviews focused on the mechanics of learning the sport skills. The women athletes spoke of the importance of basic repetitions, of observing others and visualizing, and of learning by playing.

Basic repetitions

All ten of the athletes, in reflecting on their learning in volleyball, spoke of the importance of repetition to develop initial competency. They talked about drills they liked to do in order to improve their level of skill. For example, one athlete, at the time of being interviewed said she was looking forward to heading back to her university team after some time with the National Team so that she could once again participate in a drill that provided her with quality repetitions:

We always talk about the fact that we like the weaves and we can't figure out why. I think it is because we get a lot of contacts in a weave, you do one and then you can go back and re-set for a second. You go in and go out. For me it is just getting a chance to feel confident through repetitions – and I get better (A3).

This athlete, who was an ex-gymnast, emphasized that the repetitions were her way of learning early on in her career:

I didn't want to hear what you had to say, I just wanted to do it. I would do it a million times and hopefully that would make me better. That may not have been the best way to learn but for me it seemed to work. Gymnastics was all about repetitions. We would do 50,000 hand springs and 50,000 pushups, just to teach your body to do that motion and I think that carried over into volleyball (A4).

Another athlete spoke of the helpful rhythm that was created by repetition:

I found drills that ended up having somewhat of a rhythm that made me stop thinking so much. So drills that would take my mind off or only allowed my mind to be focused on one thing - I did well with that, and I really liked them because I found I really improved this way (A6).

In the summary part of every interview, the athletes were asked to convey a short list of elements they would include in the perfect learning process for themselves. Without fail, every participant listed the need for repetitions.

Observing others/visualizing

The opportunity to observe a skill or a tactic being executed was a comment made by a number of the athletes when reflecting on how they learned. In many cases, observing another player worked in conjunction with repetitions or visualization. For example, one athlete remembered a particular assistant coach that was able to physically demonstrate a skill:

For me, the first step in learning was seeing a skill done properly. I had

an assistant coach for setting and she used to play on the Polish national team.

I watched her set and saw how it should be done, and I compared myself to her.

Once I saw it done properly, I could see it in my head and I had a really good idea of how to do it well. I just remember her hands - I think it was just constantly trying to be her (A7).

Another athlete spoke of observing others while training in small, position specific groups, and then beginning to learn to recognize technical problems:

We would have middles practice where there might be two or three of us rotating through with a coach, and that gives you an opportunity to see other players and what is being corrected in their swing by the coach - which helps me a lot to see someone else doing it well and then I would start to be able to recognize in other people what they need to correct before the coach would say it - so that you can start recognizing in yourself (A5).

Another athlete recounted a similar use of observing teammates, but not those at the same position as a visual reference for learning, “I would look at the middles – I always had a person I kind of ‘creeped’ on. I always kind of found an example for everything – like for blocking it would be this person and for digging it would be this person” (A6). This same athlete remembered watching players from other teams, looking for examples to learn from, “Even with the national team I used to watch players from other countries do things and think ‘Oh, I can do that ‘(A3).

Closely related to observing others as a way to learn a sport skill, is the skill of visualization. One of the athletes, at the time of being interviewed, offered a very specific example of how she used visualization in combination with basic repetitions:

I would go up against a wall with a tennis ball and just flick it at the wall. And I would ask the coaches what can I do better and they would say 'well you need to snap your wrist more and so I would just stay against the wall and continue. And I would sit in my room to just feel and see the motion - just to work my way on to the starting line-up - and I think that is when I really took off in terms of improving (A2)

Another ex-National Team player described how visualizing was an important way to learn a skill:

Whenever I would see someone really amazing do a skill – for the next month I would just completely picture it and I could almost feel how it would feel if I did it properly – so it is a big visual for me –definitely the visual is how I learn (A6).

One athlete told us that she had spent a number of years in sport not buying into the concept of visualization and then found herself recognizing the value of this learning process when she was away at university and learned to drive a standard car:

In gymnastics, we did a lot of visualization but I never really bought into it. Then with Regional teams we had a mental trainer and he talked about visualization and again I didn't buy into it at all. Then I remember trying to learn to drive a standard car. I went away to school and I thought about it a lot – when to clutch and stuff. Then when I came home, all of a sudden I could drive standard. I had never practiced, I had just thought about it a lot and I think that got me thinking about the power of visualization.

Now I find it huge – I would learn a lot through sitting there and doing a million serves in my head, and really thinking about what my

body was doing. I also spent an entire Christmas break thinking about the technique of passing and honestly, I came back, January 1st and I could pass, and I hadn't even practiced with one ball (A4).

Learning by playing

While all of the athletes interviewed in this study spoke of the value of repetitions, with equal consistency they also talked of the positive impact that game situation drills and competition opportunities had on their overall learning process. Athletes spoke of the value of taking responsibility for their learning and sometimes working on being their own coach instead of relying on the coach for all the corrections and learning cues. This is certainly related to who these athletes were, and their ability to reflect on their skill development. For example, one athlete demonstrated a maturity when she discussed learning in game situations:

In games you are a little bit more on your own, and it forces you to figure it out yourself and not always rely on the coach. Being able to do that is something that is really good to know because they are not always going to be there or they may not know exactly what to say – so I definitely learned how to rely on myself a little bit more to fix what was going wrong (A1).

An opportunity to play through mistakes also created learning opportunities for several of the athletes. As one said, “I know I will make a mistake ... and if I do maybe someone will get mad at me but I need to learn this for myself and it may take a few mistakes and a struggle (A3).

In summary, the findings of this study indicate that there were a number of different learning situations utilized by the ten women athletes. Certainly the women in this study were a unique group of athletes, eager and open to learning and driven to be the best. They learned from

their peers, their coaches, and embraced what Jarvis (2006) calls disjuncture, which they encountered on a regular basis as they progressed through their playing careers.

CHAPTER V – DISCUSSION AND CONCLUSION

The purpose of this study was to explore how elite women volleyball players have learned throughout their athletic life. The research question that guided the in-depth, qualitative inquiry was “How have you learned to become an elite volleyball player?” The number of cases chosen has provided insight into the athlete learning process in a manner that will begin to provide positive direction to coaches and instructors who are responsible for creating optimal learning environments.

Using Jarvis’ (2006) theory of human learning and his key concepts of biography, social context and environment, and disjuncture has allowed us to better understand how elite women athletes learn to become expert volleyball players. The inner self is referred to by Jarvis (2006) as one’s biography, and an individual’s biography, similar to Moon’s (2004) concept of cognitive structure, is made up of an individual’s experiences to date, and influences what she chooses to pay attention to and what she chooses to learn in different learning situations.

The findings of this study indicate that the women athletes’ biographies influenced how and what they chose to learn. All of the women athletes possessed an inner drive to excel in the sport of volleyball. They were competitive which, in turn, led them to be inquisitive, open to feedback from both coaches and teammates, and willing to seek out experts in order to improve. The athletes also provided numerous examples that illustrated a depth of self-awareness and ability to reflect on their actions that was very much a part of who they were. Moon (2004) has defined reflection as a “form of mental processing” (p. 82) and has stated that “reflection is applied to relatively complicated, ill-structured ideas for which there is not an obvious solution and is largely based on the further processing of knowledge and understanding that we already possess” (p. 82). Certainly, for the women athletes in this study, there was a maturation process

involved in becoming reflective. They spoke of how, as they matured, they began to think more about how to play well, and the importance of taking greater personal responsibility for their improvement.

The athletes in this study seemed to embrace 'who they were' in an effort to help themselves in their sport environment and in moments of disjuncture. Jarvis (2006) refers to the concept of disjuncture as a "fundamental motivating force in learning" (p.7). He notes that moments of disjuncture occur during the interaction between the inner self and the outer world. Specifically he has defined disjuncture as occurring "when our biographical repertoire is no longer sufficient to cope automatically with our situation, so that our unthinking harmony with our world is disturbed and we feel unease" (Jarvis, p. 16). Jarvis argues that we are constantly exposed to learning opportunities, and this could not be more apt than for an athlete working towards excelling in a sport context. The findings of this study show us athletes who had developed into individuals who faced new challenges with aplomb.

The athletes described a variety of events or learning opportunities that could be classified under the concept of disjuncture. When reflecting on the experiences that seemed to cause moments of unease, the women athletes discussed events such as changes in playing position, changes in their expected role, traumatic life events, and not reaching their own performance expectations. These situations of unease or disjuncture were all difficult experiences for the athletes. What is interesting to note is how they responded. They did indeed see these events as opportunities to learn instead of reasons to quit. One particular athlete summed it up best when she recounted, "I am going to stay neutral and not get upset, because I need to learn this for myself. It may take little mistakes and struggle but that is what it takes to learn."

It seems clear from the discussion above that the existence of disjuncture is not, by itself, the singular process contributing to learning; but rather it is the combination of disjuncture (life experiences) and the corresponding process of reflection that learning can be attributed to. While the athletes in our study did not refer to the use of ‘learning journals’, which Moon (1999) identifies as a useful tool for adding a depth dimension to reflection, they did describe many in-depth moments of reflection and internal decision making that were necessary to close the loop on the learning process when faced with daily disjuncture. It may therefore be critical for a coach to not only develop awareness of athletes’ possible moments of disjuncture but also work to provide ample time and resources to aid the necessary reflection that turns the moments of disjuncture into moments of learning.

Jarvis (2006) also sees a relationship between disjuncture and emotions. He says that initially, when a disjuncture occurs “we feel an unease, we are no longer in harmony. The first emotion then is one of being in disharmony, dissonance, unease with ourselves and our environment” (p. 180). He goes on to say “anxiety hinders learning, but if more positive emotions are masters during the experience of learning there will most likely be more positive outcomes” (Jarvis, 2006, p. 181). The findings of this study support this notion. All of the women athletes, in speaking about learning situations with coaches, were emphatic about needing a perhaps demanding, but always positive environment in which to learn. One athlete offered the best summary of this when she commented, “the only way I can learn and be open to constructive criticism is when it is in a positive setting – I have a coach that I have a good relationship with and I kind of feel free to play.”

Importantly, the women athletes did not face their experiences, or situations of disjuncture, alone. They spoke of a variety of learning situations with coaches, teammates, and

within a range of training environments. Coaches offer an obvious constant throughout the life of an elite athlete. The women athletes spoke extensively of their coaches creating a positive and productive learning environment through visual demonstrations of correct execution of skills and tactics, and through the provision of insight into approaches that could be taken in dealing with situations of required change. Ultimately their coaches set the tone of the environment which seemed to directly and indirectly influence the athletes' learning. One athlete was very clear on the impact her coach had in the gym, saying "my coach had an extremely successful career when she was an athlete and I looked up to that and, in a sense, I think some of her attitude and her personality rubbed off on me."

Teammates also offered a great source of support for learning. In particular, many of these women athletes played on teams where they had older, more experienced teammates who acted both as role models and as sounding boards for queries. The willingness of these athletes' to seek information and be open to advice and direction from their teammates seemed to be a necessary skill to not only survive but eventually thrive and develop as an elite player.

It is also interesting that a number of the athletes in this study referred to their role as a leader or impact player as a significant factor in their learning process. It is clear, in the experience of these particular athletes, that learning was a response to the challenge of being in the spot light or being counted on by teammates and coaches. Awareness of this possible learning opportunity, when athletes are mature enough, and well prepared enough to take it on, could be valuable for coaches and coach education programs to understand as they work to provide the most productive learning environment for developing athletes.

The results of this study also support recommendations from the Long Term Athlete Development model that Volleyball Canada is currently using a framework for guiding more

effective and positive training and competition in Canada. The LTAD model is centered on the idea “that developmental age, instead of just chronological age, be considered when creating sport programs” (Anton, p. 9). For example, the athletes in this study discussed the beneficial aspects of being surrounded by multi-aged teammates. One national team athlete described in detail the way in which a spectrum of experienced players helped in her learning environment: “Just their example and their experience - that helps. I just watched them, and compared to where I was at, and I tried to be at the same place. That is how they ‘pushed’ me.” Again, these elite women athletes took a challenging environment, such as one with better or older athletes around them, and chose to be motivated by it and push their learning process to ‘close the gap.’

It is also vital to recognize that the athletes in this study arrived at a relatively similar description of the learning situations that advance the development of motor skills in volleyball. Ericsson et al. (1993) view “elite performance as a product of a decade or more of maximal efforts to improve performance through deliberate practice” (p. 400). In apparent agreement with this notion, the women athletes in this study identified a necessary volume of basic repetitions as the largest contributing factor to the acquisition and indeed the mastery of a skill or execution required for volleyball. They also described a variety of effective ways to ensure the repetitions are executed in a manner that results in learning and progression. They suggested that repetitions combined with one on one feedback from a coach, repetitions in isolation, and repetitions within the context of play were all valuable to the process of learning. These specific comments on the range of optimal learning environments for elite athlete development would be useful to consider in future coach education courses. It is interesting to note, as well, how this concept of deliberate practice may not be as independent as some would suggest. While the athletes in this study identified their preference for basic repetitions and volume of practice, they never abandoned

their belief in the importance of ‘who they are’ and how that influenced how much they were drawn to deliberate practice at any stage in their athletic development. Without the necessary personal motivation, the prescribed ten thousand hours of practice may not be reached and in turn elite performance never realized. This is a link that continues to support the idea of elite athletic learning as a complex process involving multiple elements.

It is equally essential to note that, while positive, supportive conditions appeared to augment the learning process for most of athletes, the same athletes said that learning would not necessarily stop occurring in the absence of these conditions. In fact, some of the athletes interviewed brought up situations where they felt uninspired by the learning environment around them and yet they still progressed. They also noted that other athletes around them would stop trying or give up while they seemed driven to continue. Indeed, the athletes pointed out that this learning may have occurred in spite of the environment, in their opinion, due to who they were.

The findings in this study lead us to the realization of how complex learning is, and how difficult it is to try and explain the learning process. In this study, by asking the athletes for their perspective on how they have learned, we see that it is an intricate combination of factors. It is about who they are, which in turn influences how and what they chose to learn. At the same time other individuals, such as coaches and teammates, and a variety of situations such as, in these cases, the volleyball environment, all played an influential part in the complete learning process. As Jarvis (2006) has said, “what is clear is that there are elements of learning that must always be present: the person as learner; the social situation within which the learning occurs; the experience that the learner has of that situation; and the process of transforming it and storing it within the learner’s mind/biography” (p.198).

What I have learned

As the primary researcher in this study, I had a specific interest in the learning processes of elite female athletes. I am head coach of a university team, and have had the opportunity to work with our National Team programs at various times throughout my career as a coach. While the findings of this research are important in terms of how athletes learn, I was intrigued by my own learning as I conducted each successive interview. I could not help but reflect on how beneficial an in-depth understanding of these athletes' learning processes would be if I were to coach any one of the athletes. The interview guide provided me with an opportunity to discuss the history of the athlete's volleyball career and learning; and it allowed me to understand these athletes in a way that I have not experienced with traditional coach-player meetings or interviews. While the central question asked of the athletes was not particularly personal on the surface, the ensuing discussion offered a number of insightful perspectives on how a particular athlete might best learn or how I, as a coach, might help them achieve positive, effective learning in the future. In reflecting on this interview process I have started to formulate how I could create a similar interview or discussion with each one of my incoming athletes as we embark on a four to five year coach-player relationship at the university level. Why struggle through the typical 'tug of war' process to discover the best way an athlete reaches their potential when I might be able to jump start that process by just asking the athlete, "How do you think you learn?" I believe the interview skills I have developed through this research process, and the increased understanding that I now have, can be used for in-depth meetings, off the court, and will serve me well as I move forward as a coach. I believe we are more of an expert of our own learning process than we realize. Armed with that understanding I plan to ask the athletes I work with for their perspective and understanding of how they got to where they are now, so that we can work

together to build a productive and positive learning environment. I do not see this as a conscious attempt to 'empower' the athlete more or intentionally be an 'athlete centered' coach (although both items may occur). Rather, I will attempt to act on what I have learned myself, in this process. I believe, even more so now, that the athlete is far more of an expert on their own learning needs and processes than my actions in the past may have recognized. I have always believed in a relationship between who we are and what we experience, but I think I have felt somewhat powerless to impact that formula. It may be important to note that, prior to the beginning of this study I thought the athletes might say 'I want to be coached less.' What I have heard instead is that there may be an even greater relationship between the coaching environment and the athlete than I realized. I may not need to 'coach' more or less; but rather, spend more time planning how to develop greater coach-athlete awareness of the learning process. I do believe a key factor to help with this might be to provide more "mentoring" resources to the athletes I work with. To that end, it is my plan to involve past athletes and recent alumni of our team in the development process of current players when possible. It is not my intention to eliminate hurdles or challenges the athletes will inevitably face but more to try and augment the learning that may accompany those events and possibly accelerate the maturation process for the athlete. This research has changed my perspective as a coach. In attempting to explore the learning process of others, I have in fact undergone invaluable learning of my own.

Limitations

There are two major limitations to the present study. First, the research was limited to ten women athletes who played the sport of volleyball. It would be wise to consider further research with athletes of both genders in a variety of other sports, both team and individual. Second, only one interview was conducted with each of the ten athletes. Given that a discussion on how one learns is attempting to get at tacit knowledge, it would be useful, in future research, to conduct a series of interviews with each participant to ensure they have time to reflect on what and how they have learned and the interviewer has an opportunity to probe deeply. It might also be useful to interview an athlete's coach to build a more comprehensive picture of the learning environment.

Conclusion

In conclusion, the purpose of this study was to explore how elite women volleyball athletes have learned throughout their athletic life. The research question that guided the in-depth qualitative design was "How have you learned to become an elite volleyball player?"

The findings of the study indicate that the women athletes' biographies, or 'who they were' influenced what and how they chose to learn. The athletes also identified a variety of different learning situations that they both encountered and created for themselves, that enabled their development as elite athletes in the sport of volleyball. Specifically they faced numerous situations of disjuncture that they, for the most part, chose to see as learning opportunities. While each athlete spoke of their own unique life and sport events, different coaches and teams played for, and a variety of environmental conditions, the amount of commonality in the overall process of learning was striking. While the specific disjuncture may have differed, the choice to adapt

and learn was common to all the women athletes. The ability to evaluate a situation for its learning potential seems to take us back to the biographies of the athletes. In fact, a number of the women athletes in this study, when asked about their learning process, suggested that what it really came down to was who they were, not what they did. If we were to draw a diagram of the learning process of these ten athletes we would see an experienced athlete at the centre, surrounded by other experienced athletes and supportive, yet demanding coaches. In summary, the results of this study suggest that, while it is important to note the specific elements that provide for a positive, motivating learning environment and equally important to select learning processes or techniques to aid in an athlete's development, it seems that a higher level of importance, at least for the ten elite women athletes in this study, should be placed on understanding the athlete herself in an effort to help the process of learning throughout her sport career.

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APPENDIX A

CONSENT FORM

Understanding How Elite Women Volleyball Players Learn

Researcher: Lionel Woods

Supervisor: Penny Werthner Ph.D.

Institution: University of Ottawa

University of Ottawa

Faculty of Health Sciences

Faculty of Health Sciences

School of Human Kinetics.

School of Human Kinetics

I, _____, have been invited to participate in the Master's research project conducted by Lionel Woods under the supervision of Dr. Penny Werthner, from the School of Human Kinetics of the Faculty of Health Sciences at the University of Ottawa.

The purpose of the research is to explore the process of learning from the perspective of elite women volleyball players. This research will utilize a qualitative approach to study the experiences of elite athletes in an effort to create an in-depth picture of the process of learning.

My participation will consist of one interview, with the possibility of a second, follow-up interview. The first interview will take approximately one hour to one and a half hours in length, and will involve meeting face-to-face. The interview will be scheduled at a time and location that is convenient for me and that of the researcher. This interview will be audio recorded. I will be sent a copy of my interview transcript to review and authenticate its contents, and to identify any additions, modifications, or omissions that need to be addressed. At this time, one follow-up interview over land line telephone may be required. This interview will be conducted approximately two weeks to one month after the initial interview, and will take roughly thirty minutes to complete. The follow-up interview will include clarifying any comments, questions, or ambiguities, and making any necessary changes to the transcribed interview document. This interview will be audio recorded. I acknowledge that my interview(s) will be conducted in English.

I understand that there are numerous benefits to conducting research on athlete learning. My participation in this study will assist in identifying the factors, situations or environments that contribute to athlete learning and the conditions under which learning occurs. This research will yield a greater understanding and representation of how learning occurs at various stages and times in the athlete's life. I understand that the long term goal

of the researcher is to use the information to increase our knowledge about the different ways athletes learn.

I understand that this research deals with personal information about my learning experiences and that the risks involved of sharing personal information are very minimal, and include no form of physical distress, legal or social repercussions, or economic inconveniences. Several measures will be taken to reduce any potential risks that may arise from participating in the interview. Confidentiality and anonymity will be assured and respected, participants will be reminded that their participation in this study is voluntary, transcripts of their interview will be identified by a pseudonym, and audio tapes and transcripts will be destroyed after 5 years (in accordance with the University of Ottawa Research Ethics Board). I am requested to review the transcript of my interview for authentication purposes. This will allow for additions, omissions, and/or modifications of any information that I do not feel accurately reflects my experiences to be addressed. Should I regret disclosing something, the information I shared will be excluded from the database and I will be informed that the information will not be reported in any form of communication.

I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents of my interview will be used only for the purposes of this research and that my confidentiality will be respected. My anonymity will be assured by having a pseudonym assigned to me that will identify me on transcripts and research documents. This ensures that my name will not appear on any documents or publication.

I have been informed that the audio tapes, interview transcripts, and data will be stored in the research supervisor's office to which only the supervisor and researcher have access. As well, the list identifying me will be kept in a separate, locked file cabinet in the supervisor's office so that no association between a pseudonym and my identity will be possible. The results of this study will be presented in sport and/or coaching journals and at conferences. The data from this study will be conserved for a period of 5 years, after which time, all audio tapes will be cut up and written transcripts and data will be destroyed by shredding.

I am under no obligation to participate in this study. If I choose to participate, I am aware that I am free to withdraw from the project at any time, before or during an interview, refuse to participate and refuse to answer questions without prejudice. If I choose to withdraw, all data gathered until the time of withdrawal will be cut up (audio tapes) and shredded (transcript).

If I have any questions about the conduct of the research project, I may contact the researcher or supervisor.

Any information requests about my rights as a research participant may be addressed to the Protocol Officer for Ethics in Research, 550 Cumberland Street, Room 159, University of Ottawa, Ottawa, Ontario, Canada, K1N 6N5, 613-562-5841 or ethics@uottawa.ca.

Enclosed are two copies of the consent form, one of which I will sign and return to the researcher and the other I may keep.

I want to review the transcript of my interview. Yes _____ No _____

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

APPENDIX B

Interview Questions for Elite Women Volleyball Athletes

1. BACKGROUND AND IDENTIFICATION

Tell me about yourself?

- a. How old are you?
- b. When did you start playing volleyball?
- c. What is your “home” province and city for volleyball learning?
- d. Can you give me a brief description of your resume in volleyball as a competitor (University years of experience, national team years, pro level & years?)
- e. How did you get involved in volleyball – Do you have family members involved?

2. MAIN RESEARCH QUESTION(S)

How do you feel you have learned to be an elite volleyball player? / What do you feel helped you develop as a player?

- a. Were there specific clinics, camps or courses that had a significant impact on your learning?
- b. Did you have particular experiences with coaches, peer players, etc. that you feel impacted your learning?

Probing for answers from above if particular formal practices, clinics, camps and instruction opportunities are identified as helping your learning, then please tell me about those experiences:

- a. How have they helped or not helped your learning?
- b. What have you learned from them that brings you to remember them as valuable or not?
- c. What specific learned things do you attribute to these structured opportunities?

Is there anything else in your life that you feel had a positive impact on your learning process?

Are there particular situations you feel contribute to your learning process?

Are there particular environments that you feel contribute to your learning process?

Are there particular styles, situations or environments that you feel *hinder* your learning process?

3. ADDED DEPTH QUESTIONS

Looking back, how do you feel you learn best in volleyball? (formally, informally, through experience)

- a. Do, or did you ever, contact/talk with other athletes about volleyball development? If so, what did you share or get from those experiences?
- b. Do, or did you ever, talk/share with athletes or coaches from other sports? If so, what did you share or get from those experiences?

4. SUMMARY QUESTION

“If you had to ‘build’ a coach or learning environment for yourself to help guarantee the most possible learning went on... what would it include, what would it look like, feel like and sound like?”

APPENDIX C

ETHICS APPROVAL



Université d'Ottawa University of Ottawa
 Service de subventions de recherche et déontologie Research Grants and Ethics Services

Ethics Approval Notice

Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Penny	Werthner	Health Sciences / Human Kinetics	Supervisor
Lionel	Woods	Health Sciences / Human Kinetics	Student Researcher

File Number: H04-10-07

Type of Project: Master's Thesis

Title: Understanding How Elite Women Volleyball Players Learn

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
06/29/2010	06/28/2011	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A

APPENDIX C

ETHICS APPROVAL



Université d'Ottawa University of Ottawa
 Service de subventions de recherche et déontologie Research Grants and Ethics Services

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove subjects from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (e.g. change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at:
http://www.rges.uottawa.ca/ethics/application_dwn.asp

Please submit an annual status report to the Protocol Officer 4 weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at:
http://www.rges.uottawa.ca/ethics/application_dwn.asp

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5841 or by e-mail at: ethics@uOttawa.ca.

Germain Zongo
 Protocol Officer for Ethics in Research
 For Dr. Daniel Lagarec, Chair of the Health Sciences and Sciences REB