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Exploring Ecological Task Analysis: The Experience of Choice Among Adults With Mobility Impairments

by

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DEDICATION

This thesis is dedicated with love to my husband Jody and to my parents John and Shelley. From the moment I began this journey you have stood by me with never ending encouragement, love, and support. You have helped make this all possible for me. Thank you.

ABSTRACT

Using ecological task analysis as a conceptual framework, this study sought to describe the experiences of choice in physical activity contexts for adults with mobility impairments. Experiences of 3 female and 2 male participants with mobility impairments, ages 18-23 years were explored using the phenomenological research methods of interviews, written stories, and field notes. Thematic analysis revealed three themes: (a) *Interpreting the setting* described participants' interpretation of the environment, person, and task when making movement choices; (b) *It just felt right* described how participants actively engaged in a process of analyzing alternatives and choosing among them; and (c) *Implications of choices made* described participants' evaluations of good and bad choices and what could be learned. The implications of this exploratory study include enhanced understanding of the assumptions surrounding choice, and appreciation for the multiple layers of affordances and constraints that influence choices in physical activity contexts.

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1. Introduction

When I began attending University I knew intuitively that I wanted to work closely with people. Initially my goal was to be a physical therapist, or perhaps a psychologist. I did not know the vast number of opportunities that existed, and the adapted physical activity field had never really entered my mind. In fact, I didn't even really know anyone with a disability! Of course upon reflection I realized that I actually did have many relatives, friends, and classmates who experienced disability at different times and in various contexts. The point is that I had never considered the area of disability in general let alone the adapted physical activity field, and had never truly noticed how social and cultural practices disabled those around me.

At the end of my first year of University a classmate suggested I spend the summer working at a camp for people with disabilities. That summer was my first real experience working closely with people with disabilities and one that I enthusiastically repeated the following summer. It was after these summers spent working at camp that I leapt at the opportunity to take a course in adapted physical activity. This was the beginning of a period in time during which I spent many hours each week volunteering with adapted recreation programs for children and adults with disabilities, assisting with an integrated dance program, and completing a practicum placement with an adapted fitness group for people with spinal cord injuries. Not only was I sharing my time with these programs and participants, but the participants were also teaching me in ways it would take years for me to understand. I made many friends along the way and quickly

became an active participant in disability sport; learning wheelchair skills, playing adapted sports, and dancing with the integrated dance group; all at the encouragement of the individuals and groups with whom I was working. Each of these experiences opened my eyes and my heart to adapted physical activity and had a tremendous impact on the direction my education would take me.

The ecological task analysis framework (Davis & Burton, 1991) which provides a model for instruction in adapted physical activity, made a lot of intuitive sense to me from the moment I was introduced to it in my undergraduate adapted physical activity class. I easily saw how traditional forms of task analysis utilized to individualize instruction of motor skills, were problematic for persons with mobility impairments due to their "failure to include the person in the task analysis equation" (Davis & Burton, 1991, p. 159). Ecological task analysis was different from traditional task analysis in that it identified movement tasks in terms of function or what needed to be accomplished (e.g., propel an object). Furthermore, the second step of ecological task analysis was to allow the learner choice - choice in the skills selected (e.g., throw, strike, push), the movement form that would be used to execute the skills (e.g., for a throw, it may be underhand, overhand, side arm, or over the shoulder), and if appropriate the implement (e.g., size, weight, and texture of the object). Something about this alternative way of addressing task analysis and instruction of motor skills innately made a lot of sense to me, and choice seemed to be one element that that made this approach unique.

When the idea was suggested to look closely at how choice is experienced

when carrying out physical activity tasks as part of my master's program I was both intrigued and excited. My supervisor and I began discussing the construct of choice in great detail and as I examined more closely what choice is and how we can better understand it, I was left with far more questions than answers. What quickly emerged was a desire to seek a greater understanding of choice within physical activity contexts from the perspectives of people with mobility impairments.

Choices are a part of day-to-day life (Harchik, Sherman, Sheldon, & Bannerman, 1993) and are an essential part of functioning independently as an adult in society (Shevin & Klein, 1984). Words like choices, preferences, alternatives, options, decisions, and problem solving are used in everyday language, yet rarely do we examine the mutuality and distinctiveness of these concepts. Within the research literature, the importance and processes of making choices within a learning environment are poorly understood, particularly for people with mobility impairments (Wehmeyer, Agran, & Hughes, 1998).

Making choices can be defined as making a selection from two or more alternatives or options based upon individual preferences (Davis & Strand, 2007). Preferences, in turn, are reflective of the characteristics of the available alternatives. True alternatives are those that are both legitimate and meaningful to the individual making the choice (Fullwood, 1990; Monty, Geller, Savage, & Perlmuter, 1979; Taylor, Goodwin, & Groeneveld, 2007). An alternative is considered legitimate when the individual possesses the skills necessary to act on that alternative; and is meaningful when it has personal value or interest. When

alternatives are legitimate and meaningful, motivation and performance may be enhanced as individuals perceive a greater sense of personal control (Monty et al., 1979).

To date, little is known about whether individuals with mobility impairments recognize or actively seek out opportunities to choose among movement alternatives and whether the physical activity environment supports the ability to act upon the choices made. This research study sought to describe the experiences of choice in physical activity contexts for adults with mobility impairments.

2. Literature Review

People make choices in everything from what to wear and eat, to what career to pursue (Davis & Strand, 2007). Some choices are relatively simple, while others may have far reaching consequences. As such, making choices is part of the more complex processes of decision making and problem solving (Wehmeyer et al., 1998). Choices which are relatively simple, such as what to wear and eat, may be based solely on individual preference; whereas choosing one's career requires engagement in the processes of decision making and problem solving. Often these terms are used interchangeably, both in everyday language and in the research literature. The following section will attempt to clarify the distinction among choice, decision making, and problem solving.

2.1 Understanding Choice, Decision Making, and Problem Solving

Choice may be viewed as having the opportunity to make an un-coerced selection from two or more alternatives based upon individual preferences (Davis & Strand, 2007). This means the person makes the choice with a full sense of personal endorsement or wanting (Deci & Ryan, 2000). Preference, in turn, can be viewed along a continuum of acceptance and rejection (Davis & Strand), or in other words, what is desirable and undesirable.

Decision making is a process in which choice is embedded. To engage in the decision making process means that an individual has the ability to define a problem, collect information about the particular situation, use that information to identify alternatives for consideration, identify and evaluate the consequences and outcomes of each alternative, then choose one of the alternatives (Wehmeyer et

al., 1998). Once an alternative is chosen, the individual creates a plan of action then follows through and implements that plan. Decision making implies that the individual has the experience and knowledge necessary to evaluate the alternatives, act upon the choice made, and take responsibility for the outcomes of that choice. Individuals who have had limited opportunities to engage in decision making may lack the experience and knowledge necessary to employ the decision making process and make effective choices among a variety of alternatives (Schloss, Alper, & Jayne, 1993).

Problem solving and decision making are often viewed as interchangeable, however one key distinction exists; problem solving engages people in identifying solutions to a problem when obstacles prevent them from reaching a specific goal (Doll & Sands, 1998). As such, problem solving consists of a series of decision making steps, each involving a choice, which in turn influences the availability of future alternatives (Wehmeyer et al., 1998). Problem solving can therefore be thought of as multiple repetitions of the decision making process with a specific goal in mind to guide each choice of preferred alternatives.

There are five assumptions surrounding choice making (a) people are afforded a range of alternatives from which to choose (Fullwood, 1990), (b) they can identify the available alternatives, (c) they have preferences, (d) they know how to express their preferences (Shevin & Klein, 1984), and (e) they have the power, opportunity, and disposition to act upon their choices (Davis & Strand, 2007). When these assumptions are met, choice making becomes legitimate and meaningful.

2.2 Legitimacy of Alternatives

Presenting alternatives that are not within an individual's capabilities results in choice becoming irrelevant to the individual (Davis & Strand, 2007), which in turn makes decision making and problem solving unfeasible. For example, asking a young child who uses a wheelchair to shoot a basketball at a regulation basketball hoop using a traditional shooting pattern. If the child lacks the strength to propel the ball the required distance, the traditional shooting pattern may not be a legitimate alternative. However, changing the task or the conditions of the task by adjusting the height of the hoop, the size and weight of the ball, or the shooting technique may enable that same child to achieve success (Davis & Strand) thereby creating a legitimate alternative that is within the capabilities of the child and affords success.

Offering unattractive or dissimilar alternatives from which to choose is similarly equivalent to offering no alternatives at all (Fullwood, 1990; Monty et al., 1979; Taylor et al., 2007). As a result, the choices made may not be meaningful to the individual, decreasing feelings of motivation and control (Monty et al.). Unattractive alternatives are those which the individual does not prefer but from which must nevertheless choose. For example, when a basketball player reaches the end of the three second time limit in the key and chooses to shoot the ball even though scoring is unlikely, rather than drawing a penalty and turning the ball over to the other team anyway. The same holds true for dissimilar alternatives, or those that are not relevant to each other, such as asking an individual to choose from the alternatives of participating in a game of basketball

or being the scorekeeper. When alternatives are beyond the capabilities of the individual, unattractive, or dissimilar, the individual may still make a choice but the personal meaning and value will be diminished (Davis & Strand, 2007).

2.3 Restriction of Opportunities for Choice Making

Opportunities to choose have been removed or restricted for some groups of people including children, people with disabilities, and older adults (Davis & Strand, 2007; Wehmeyer, 2003). Restriction of opportunities for choice making may occur because an authority figure, or someone who is in a position of influence; be it a parent, teacher, physician, or caregiver; believes the person is incapable of making good choices (Davis & Strand; Prosser 1992). The authority figure may believe that an individual lacks the experience to make informed choices, or may be vulnerable to making poor choices, and thus needs to be protected from the potential consequences of those choices (Fullwood, 1990). As a result, the authority figure may restrict alternatives or make the choice on behalf of the person (Rossow-Kimball & Goodwin, 2009). The notion of an authority figure mediating opportunities for choice making for individuals with disabilities may create a power structure that marginalizes people by removing opportunities for the expression of choice, decision making, and problem solving; which are essential to expressions of personal agency and self-determination (Rossow-Kimball & Goodwin, 2009).

2.4 Affordances and Constraints in Choice

By examining the affordances that an environment provides, individuals may be able to identify skill and movement form alternatives and choose among

them to successfully meet task goals. An affordance is an opportunity or potential for action that a particular environment offers (Gibson, 1977) and can be thought of as the physical environment, objects, or personal alternatives from which individuals may choose when carrying out specific tasks. Ultimately, affordances mediate the number and variety of alternatives from which a person may choose. Similarly, constraints are the features of the environment and the performer that can impinge upon the number and variety of available alternatives (Davis & Burton, 1991).

Physical activity environments provide a variety of affordances depending on their structure and contents (e.g., the availability of equipment). Although the environment may afford certain alternatives, each individual must also perceive these affordances and choose to act upon them. According to Gibson (1977), a person may have misperceptions of the existing affordances if the information available is inadequate, or if the process of taking in the available information is deficient. Goodwin and Watkinson (2000) questioned whether instructional strategies apparent in inclusive physical activity settings actually assist individuals with mobility impairments to perceive, attend to, or actively seek out affordances. They further wondered whether introducing the concept of affordances during motor skill instruction would contribute to active choice making among legitimate performance alternatives.

2.5 The Benefits of Opportunities for Choice

Iyengar and Lepper (2002) and Davis and Strand (2007) found that having the opportunity to choose among alternatives is a powerful intrinsic motivator and

enhances feelings of personal control, autonomy, and empowerment. It has also been found that people participate more freely in activities, rate activities as more pleasant, perform better, and have reduced problem behaviour when given the opportunity to make choices (Davis & Strand, 2007; Harchik et al., 1993; Monty et al., 1979). In addition, providing opportunities to make choices places the individual at the center of the learning process by encouraging the most effective and efficient movement form for each individual, connecting movement with cognition or knowledge, and encouraging creative problem solving (Balan & Davis, 1993; Pagnano & Griffin, 2001).

2.6 Choice and Disability in the Research Literature

Much of the literature surrounding choice as it relates to individuals with disabilities has focused on those with intellectual impairments or severe physical disabilities (e.g., Frey et al., 2005; Monty et al., 1979; Shevin & Klein, 1984; Treece, Gregory, Ayres, & Mendis, 1999). Additionally, research pertaining to choice has often focused specifically on choices between limited alternatives in closely controlled environments. For example, Datillo and Barnett (1985) examined the affective responses of four children ages 8-12 years with severe mental retardation and additional secondary disabilities. The children were given the choice of participating in a leisure activity by turning a video recorder on or off. When turned on, the video recorder played an age appropriate television show. The children demonstrated more positive facial expressions and vocalizations when they were given the opportunity to choose to turn the television program on or off. Datillo and Barnett concluded that manipulating a

switch to activate a television program provided a means for individuals with severe handicaps to exert control over their environments and actively engage in making choices in leisure activities.

It has been suggested that studies about choice and persons with impairments may be confounded by the assumption that they have acquired the experience and skills necessary to make choices, when in fact this may not be the case. Lack of experience in choice making may mask non-legitimate, unattractive, or dissimilar opportunities to make choices based on their preferences (Wehmeyer et al., 1998).

2.7 Conceptual Framework

The central tenet of ecological task analysis is that motor skills, movement forms, and performance outcomes are the result of the dynamic interaction between the task goal, the environment, and the capabilities and intent of the performer (Davis & Burton, 1991). The ecological task analysis model proposes that the affording features of the environment and the performer specify which skills and movement forms can be used to accomplish an identified task goal. Prior to discussing ecological task analysis specifically, a brief description of traditional task analysis is presented.

2.7.1 Traditional task analysis

Over the years numerous forms of task analysis have evolved (e.g. developmental task analysis, hierarchical task analysis) (see Goodwin, 2003) as a means of systematically breaking down complex motor skills (e.g., throwing,

catching, kicking) into sub-components for the purpose of instruction. An underlying assumption of traditional task analysis is that neural-maturation is primarily responsible for motor development. With maturation, typical motor development patterns unfold at a rate and in a form that is similar across most people (Thelan & Smith, 1994). These patterns or stages of motor development and the times at which they emerge have been well documented (Wickstrom, 1983).

A further assumption about the efficacy of traditional task analysis for motor skill instruction is that the musculo-skeletal systems of the learner are intact. However, we know that changes in the structure and function of the body (e.g., missing limbs, muscular imbalance, loss of sensation) can make achievement of typical movement patterns difficult or impossible (Kalnins et al., 1999). If motor skill acquisition is solely interpreted from a traditional motor development perspective, then the use of traditional task analysis as an instructional tool for individuals with physical impairments may be a contributing factor to their exclusion from physical education, recreation, and sporting opportunities (Goodwin, 2003). A lack of competence in fundamental motor skills can become a barrier to success in more advanced skills or those higher up the hierarchical chain of performance.

One of the fundamental criticisms of traditional task analysis is the failure to take into account performer capabilities and individual differences (Goodwin, 2003). Ecological task analysis was proposed by Davis and Burton (1991) to address the limitations associated with traditional task analysis approaches for

instructing motor skills for individuals with disabilities. The significant difference between traditional task analysis instructional strategies and an ecological approach to task analysis is that in the latter, the task is presented in terms of what needs to be accomplished. This means that the task "should not be a skill, like throw or jump, but a function….Once the functional behavioural objectives are established, then the specific skills that may be used to carry out the task (there will usually be more than one) can be identified" (Davis and Burton, 1991, p. 166-167.) Davis and Burton provided an example for the task of propelling an object (functional task) such as a soft ball, from third to first base before the runner crosses the base. The possible object propulsion skills for meeting the task could include pushing, carrying, striking, or throwing the ball. In applying this instructional approach, individuals with physical impairments now have a number of skills by which the task goal of propelling the soft ball to third base can be achieved. The significance of the ecological task analysis approach is derived from the performance possibilities now afforded the performer who may not have yet achieved or may never achieve the fundamental motor skill of throwing. Matching the performer's abilities to the task identified within the established environmental context may enable legitimate and meaningful participation.

There is also evidence in the research literature for the learning of higher-level skills without mastery of the pre-requisite skills, further bringing the application of traditional tasks analysis into question for learners with motor impairments. Gelinas & Reid (2000) conducted an investigation of the developmental validity of traditional learn-to-swim progressions for children with

disabilities. In the study of 40 children with physical disabilities, 5 to 12 years of age, it was determined that most children could achieve the functional task goal of the front crawl without learning the prerequisite sub-skills of rhythmic breathing, front float, and front glide. These outcomes provide additional support for an individualized and task goal focused approach to skill development.

2.7.2 Ecological task analysis

Ecological task analysis identifies movement tasks in terms of function or what needs to be accomplished rather than skill. For example, the role of the batter in softball is to "put the ball in play," rather than strike a pitched ball. If the task goal is defined as "put the ball in play" the solutions to the task goal are expanded far beyond striking a pitched ball (e.g., push, carry, throw, strike). Ecological task analysis breaks down specific task goals into the fundamental components of environment, task, and performer, to pinpoint potential sources of performance difficulties and to facilitate instruction or remediation (Burton & Davis, 1996) (see Figure 2.1). The ecological task analysis framework can be used to manipulate variables within the person-action system to enable success and provide challenge for an individual on a given task.

While originally developed with physical education in mind, ecological task analysis has applications beyond instruction in a physical education context. For example, ecological task analysis has been applied to the assessment of playground skills (Watkinson & Causgrove Dunn, 2003; Mohora, 2007) and has been utilized within coaching contexts (Kidman & Davis, 2007).

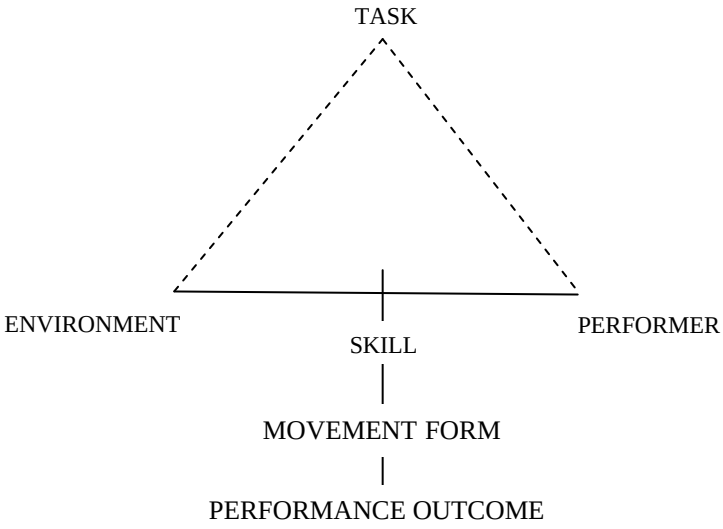

Figure 2.1. The Action Process of the Ecological Task Analysis Model (Davis & Burton, 1991)

On the playground, Mohora (2007) applied the ecological task analysis framework to develop a comprehensive tool for assessing and teaching playground skills to children. Using ecological task analysis to assess playground skills was purported to enhance individualization by focusing on achieving tasks that were relevant to each individual, and addressed the social and emotional contexts that may play a role in making choices toward the completion of tasks (Watkinson & Causgrove Dunn, 2003; Mohora, 2007).

From a coaching perspective, ecological task analysis has been utilized in "empowerment coaching" contexts (Kidman & Davis, 2007). Traditionally, coaching has been reported to utilize a prescriptive "do as I say" method, however the empowerment coaching model gave athletes choices, provided opportunities

for decision making, and encouraged personal input into the athletes' training. The empowerment coaching model incorporated methods that enabled athletes to take responsibility and ownership in their own performance (Kidman & Davis). This included such steps as establishing mutual goals, allowing athlete choice and control, manipulating variables in the sporting environment to facilitate athlete performance, and providing instruction; which are strikingly similar to the steps utilized in the ecological task analysis model. In the empowerment coaching model, coaches pose questions to athletes, encouraging them to think and problem solve independently. Through this method, Kidman and Davis (2007) purported that athletes gained a greater knowledge and understanding of sport, and their learning and performance was enhanced.

2.7.3 Using ecological task analysis

Ecological task analysis is grounded in the theory of affordances, in which individuals perceive their environments in terms of functional utility (Davis & Burton, 1991; Gibson, 1977). It consists of four steps (Davis & Burton; Burton & Davis, 1996) (see Figure 2.2). In step one the instructor establishes the task goal (often within the framework of a curriculum) then structures the physical and social environments for that particular goal.

The second step of ecological task analysis introduces the concept of choice by allowing the individual to choose a movement solution from among alternatives in order to achieve the task goal specified in step one (Davis & Burton, 1991). This means that the individual chooses the skill (e.g., throwing, rolling, or striking an object) and movement form or movement pattern - or how

the skill will be executed (e.g., overhand or underhand). If applicable, the individual may also choose among projectile alternatives (e.g., ball, bean bag, foam shape), and goal conditions - or the conditions which moderate challenge and success (e.g., distance to, height of, and size of target) in order to achieve the task goal of propelling an object with accuracy. Once each individual has made the applicable choices, time is given for practice while the instructor observes and evaluates the initial choices and subsequent outcomes for each individual.

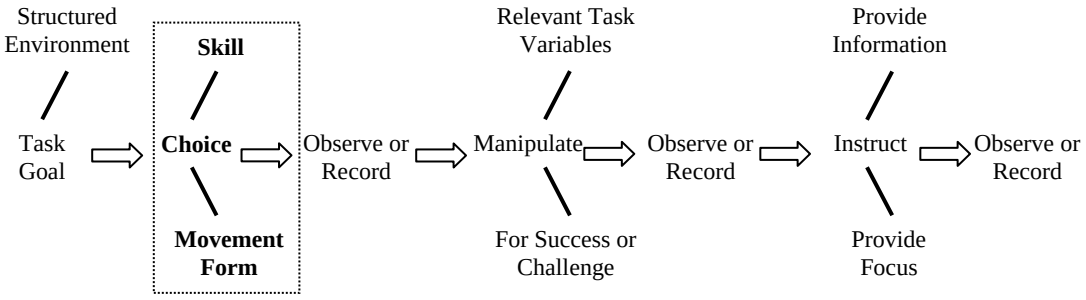

Figure 2.2. Ecological Task Analysis Model (Davis & Burton, 1991)

Functional task goals and movement related movement skills are broadly classified into five categories (Davis & Burton, 1991) (see Table 2.1). The functional categories are (a) locomotion, (b) locomotion on an object, (c) object propulsion, (d) object reception, and (e) postural maintenance and orientation. As outlined earlier, the participants' experiences span the functional categories of (a), (b), (c), and (e) above. Functional task categories may be further specified in terms of performance criteria including accuracy, speed, distance and efficiency.

An example of a functional task goal would be propelling an object with accuracy.

Table 2.1. Functional movement task categories and related movement skills (Davis & Burton, 1991, p. 162)

Functional task categories	**Related movement tasks**
Locomotion – to move from one place to another Criteria – to move with efficiency, precision, accuracy, speed, and/or distance	Roll; crawl/creep; walk/run; jump/hop/leap/glide; climb; swim
Locomotion on an object – to move on a self-propelled object from one place to another Criteria – to move with efficiency, precision, accuracy, speed, and/or distance	Propel bicycle, boat/canoe, skateboard/scooter, skates/skis, wheelchair
Propulsion - to propel a stationary or moving object or Criteria - to move with efficiency, precision, accuracy, speed, and/or distance	Carry, drop, lift, pull-push (bounce, dribble), strike (bat, kick, hit), throw
Reception – to take or receive a (a) stationary, or (b) moving object or person Criteria – to secure in hands, feet, or other body part or in an implement (e.g., glove, net); to bring to a halt at a close proximity to self	(a) Grasp (b) Catch/block
Orientation – (a) to change position of body or body parts relative to an object, person, terrain, or event, or (b) to change position of an object or person relative to body or body part or object Criteria – to move with efficiency, precision, accuracy, speed, and/or distance	(a) Bend (lean)/reach/turn/ twist (b) Manipulate/write/ colour/draw

In step three of ecological task analysis the instructor offers suggestions for manipulating the environment and/or task variables in order to challenge or

assist the individual to achieve success (Davis & Burton, 1991). The instructor may encourage variations such as shortening or lengthening the distance to the target, increasing or decreasing the size of the target, changing the stability base of the individual (e.g., standing, sitting, stationary, moving), or changing the characteristics of objects being propelled (e.g., size, weight, type of material). Additional time may also be given for the individual to practice and experiment with different choices for achieving the task goal.

After ample time has been given for individuals to make choices, practice the task, and manipulate the relevant variables, the fourth and final step entails direct instruction. The instructor, after careful observation and suggestions, provides direct instruction to establish a successful and efficient movement form (Davis & Burton, 1991; Burton & Davis, 1996). The instructor may provide information relating to specific skills or movement forms through demonstration or instruction, or may encourage the individual to focus on a particular aspect of the chosen skill (e.g. body positioning, movement mechanics, focusing on target).

2.7.4 Choice and ecological task analysis

It is step two of the ecological task analysis model which incorporates the concept of choice as a fundamental process in solving a movement problem and achieving a task goal. As highlighted in Figure 2.2, this second step is the main focus of this study. As the first step of selecting the task goal may already be established by curriculum guidelines, it is this second and arguably most important step which places the individual at the centre of the learning process (Davis & Burton, 1991). The individual identifies and chooses among the relevant

skills, movement forms, task dimensions, and goal condition alternatives in order to achieve the task goal. Where an instructor is present, he or she observes the choices made, and while honouring those choices, evaluates and manipulates relevant task dimensions to provide challenge, develop motor skills, and enable success (Davis & Burton).

2.8 Purpose

To the best of my knowledge, no studies have explored the *experience* of making choices (e.g., what learners think, feel, and know) in physical activity contexts from the perspective of the individuals with mobility impairments. Understanding how people with mobility impairments experience making choices in physical activity contexts, and whether or not they perceive and attend to the affordances in the environment, may have important implications for how we instruct and structure physical activity environments.

The purpose of this exploratory study was to describe the experiences of choice[1] in physical activity contexts for adults with mobility impairments.

[1] For the purpose of this study, choice making will be delimited to within-task choice making as described in the Ecological Task Analysis Model (Davis & Burton, 1991). For clarification, this means that the phenomenon of interest is the experience of choice that occurs within an identified task goal (e.g., object propulsion). This is in contrast to the choice making that may be involved in selecting between two participation alternatives (e.g., being goal keeper or being score keeper)

Method

3.1 Research Approach

A qualitative research approach was utilized for this research study as it provided a systematic approach for understanding how individuals made sense of their experiences and their lives (Creswell, 2003). The approach was phenomenologically informed in the sense that the methods of phenomenology bring sensitivity toward an understanding and meaning of lived experiences from the participants' perspectives (van Manen, 1997). Moreover, phenomenologically informed studies address the experiences of individuals who have first-hand experience with the phenomenon, in order to capture as closely as possible the way in which it was experienced within the context in which it took place (Giorgi & Giorgi, 2003).

A phenomenological approach captures or creates an understanding and description of an experience that is placed in memory (a lived experience) because of its evocative, functional, emotional, or repetitive nature (Creswell; Giorgi & Giorgi, 2003). Researchers using the techniques of phenomenology aim to understand how people perceive, describe, feel about, judge, remember, make sense of, and talk about a phenomenon by sensitively and carefully describing the experienced phenomenon (Patton, 2002). A phenomenon may be an emotion, relationship, action, program, organization, culture, or some other shared experience for a group of people (Patton). The phenomenon of interest for this study was the experience of choice within physical activity contexts.

Beyond describing, researchers attempt to interpret the meaning of the

essence of an experience. The essence is “the inner essential nature of a thing”, or rather, “what makes a thing what it is, and without which it would not be what it is” (van Manen, 1997, p. 177). van Manen (1997) suggests that people who have had common experiences attach a mutually understood meaning to that experience. Because people cannot consciously understand their experiences while they are living through them, phenomenologically informed studies are inherently retrospective (van Manen). The focus then is on examining memories and descriptions of experiences after the fact. Through recalling and assigning memories to lived experiences, individuals create personal meanings that may be reflected upon, interpreted, and reconstructed.

3.2 Sampling Strategy

Purposeful sampling permits in-depth inquiry and understanding of a phenomenon (Patton, 2002). In selecting a purposeful sample, we look for information rich cases or participants from which we can learn a great deal about the topic of interest. Criterion sampling was the primary sampling strategy that was utilized for selecting participants in this study, and was well suited to the research question because it allowed me to focus on a specific group of people who had experienced the phenomenon of interest (Patton). In criterion sampling, the participants must meet specific inclusion and exclusion criteria to be considered for participation. The inclusion criteria were:

- Male or female adults between the ages of 18 and 25.

  Both males and females were included in the study, and equal representation from both genders was sought. The age range

allowed for individuals who had already completed high school, and had the understanding and capacity to comprehend the research question and reflect upon their experiences in a variety of physical activity contexts.

- Have a mobility impairment requiring the use of a mobility aid. Mobility aids included canes, crutches, prosthetics, or a wheelchair.

  The presence of mobility aids can immediately portray and label someone as having a disability (Haller, 2000). These portrayals of disability in our society often shape the perceptions of and attitudes toward those with disabilities (Sherrill, 2003), which may in turn affect how individuals with visible mobility impairments are afforded opportunities to make choices. In addition, because people with mobility impairments may not always adhere to typical motor development, they may not accomplish motor tasks in the same way as their non-disabled peers, thus requiring adaptation to achieve the same task goals.

- Currently pursued or within the last twelve months had pursued regular physical activity outside of physical education.

  Regular physical activity was defined as participating in either structured or unstructured physical activity on two or more days per week. Some examples of physical activity included fitness facility use (e.g., cardiovascular exercise or weight training), swimming, sports participation, and dancing. Leisure activities

such as shopping and activities of daily living were not included in this definition of regular physical activity. By participating in activity outside of high school physical education, the participants had a range of physical activity experiences from which to draw upon when discussing the experience of choice in the physical activity context.

The exclusion criterion was:

- Individuals with secondary intellectual impairments (developmental delays or other cognitive impairments) that may have interfered with their ability to participate in interviews or their conceptualization of the research question.

  It has also been suggested that individuals with cognitive impairments may experience restricted opportunities for choice based upon assumptions about their cognitive functioning (Harchik et al., 1993; Prosser, 1992). This could potentially lead to differences in the experience of choice in physical activity contexts that were beyond the scope of this study.

3.3 Participants

3.3.1 Number of participants

Creswell (2007) recommends three to ten participants for a phenomenological inquiry, whereas Patton (2002) suggests it is more appropriate to specify a minimum number of participants. For this study, I sought a minimum of four participants; however it was important to be flexible with the final number

of participants in order to collect information until I reached a point of where the repetition of ideas and themes became apparent (Creswell). Focusing on a small number of participants allowed me to concentrate on gaining an in-depth understanding of the participants' personal experiences (Patton). Ultimately five individuals participated in this study, including two male and three female participants.

3.3.2 Seeking participants

When I began searching for participants, I thought that locating people who were willing to share their experiences and who met the inclusion and exclusion criteria, would be relatively straightforward. There are a number of disability sports organizations and adapted physical activity facilities with which I am familiar and have developed connections. I posted information posters at a busy adapted physical activity facility and to my disappointment, received no responses. Upon moving back to my home province just a few short months later I was able to share information about the intention and details of my study with potential participants through contacts I had established with disability sports organizations during my undergraduate studies.

First I spoke with a young man who I had met through wheelchair basketball and the adapted fitness program I worked with during my undergraduate practicum program, and had kept in touch with over the years. He had not been participating in the most recent basketball season due to an injury; however he offered to participate as a pilot participant in order to help ensure that my interview guide was relevant and effective at answering the research question.

He was very insightful, and gave feedback which allowed me to better understand the topic and his experiences. Although he initially felt that he was not eligible to participate in the study due to his recent lack of participation in physical activity, his interview transcripts and stories were later included as they were detailed and insightful.

The pilot participant helped me to connect with other participants through his network of contacts in wheelchair sports. This was akin to the chain technique described by Patton (2002) as a secondary recruitment strategy that can be utilized to contact additional participants who are rich in information pertaining to the research question. The pilot participant shared information about the study with others who he knew through wheelchair sports, and invited these people to contact me for further information. In addition, he asked these individuals for permission to share their email addresses with me so I could follow up with information about the study. This secondary recruitment strategy led to three additional participants. The final participant was a young woman who I knew through my previous involvement in integrated dance. We ran into each other one afternoon and I told her about my research project while we were catching up on the latest news. When she expressed interest in the study I emailed her the information poster and invited her to consider participating. In addition to the five participants who took part in the study, three additional individuals including a swimmer, a track athlete, and a tennis player, were contacted through the participants and expressed interest in the study. Unfortunately, coordinating schedules between school, work, and sports involvement prevented us from meeting to carry out the

interviews.

Before any data collection began, ethical approval was obtained from the Faculty of Physical Education and Recreation and Agricultural, Life and Environmental Sciences Research Ethics Board at the University of Alberta (see Appendix A: Ethical Approval). Each of the participants was fully informed of the purpose of the study and what involvement would entail and was given an information letter (see Appendix B: Participant Information Letter). The participants were then asked to complete a written informed consent form (see Appendix C: Informed Consent Form). Each participant was invited to ask questions before signing the consent form, as well as throughout the data collection process. All of the participants gave written informed consent prior to data collection, and all of the participants who volunteered for the study completed the entire study.

3.3.3 Description of participants

A description of the participants was gathered through a demographic form that was completed by each participant prior to the first interview (see Appendix D: Demographic Form). The information gathered from these demographic forms is presented below in aggregate to provide context for the participants' experiences while protecting their individual identities.

A total of five individuals participated in this research study, including three females and two males. Participant ages ranged from 18-23 years, with an average age of 20.2 years. Each of the participants had one or more mobility impairments, including cerebral palsy (2), spina bifida (2) and spinal cord injury

(2). Of the two participants who had an acquired a spinal cord injury, the time since injury was five and six years each. All of the participants used manual wheelchairs for mobility, with three of the participants using their wheelchairs full time and the other two using their wheelchairs mainly for long distances and participation in physical activity. One participant identified as being of Aboriginal ancestry, while the remaining four identified themselves as Caucasian. Four of the participants were full time University students, while one participant worked part time in order to focus on sports training, although she planned to attend University in the future.

Physical activity participation included wheelchair basketball, wheelchair rugby, integrated dance, track and field, walking/wheeling for leisure, weight training, and swimming. In addition, during the interviews participants also discussed activities such as learning to ride a bike and learning to maneuver oneself and a wheelchair in and out of a car. The activities that the participants were primarily involved in were organized by disability sports organizations. With the exception of one participant who had recently retired from sport, all of the participants reported participating in physical activity on a daily basis. All of the participants reported having tried a number of other physical activities in the past, including school based physical education. Two of the five participants partook in physical education throughout high school, while the remaining three withdrew from physical education beyond the mandatory grade ten required.

At the end of the first interview each participant was given the opportunity to choose a pseudonym for the presentation of results. The three women, Dawne,

Emily, and Ariel, opted to choose these names as their pseudonyms. The two men, Ryan and Andrew, chose to leave their pseudonyms at my discretion.

3.4 Data Collection

The data collected in this study consisted of semi-structured face-to-face interviews, artefacts, and field notes. A description of each data collection method follows.

3.4.1 Interviews

Interviews allow a researcher to gather "historical" information, that is, information about past experiences as participants describe them (Creswell, 2003). The purpose of interviewing was to help enter the participants' perspectives; to understand their feelings, thoughts, and intentions (Patton, 2002). Two semi-structured individual, face-to-face interviews were conducted with each participant at a time and location that was convenient to both the participant and me.

Because choice plays a central role in ecological task analysis, the ecological task analysis model facilitated the development of the interview guides and supported the interpretation and presentation of the data (see Appendix E: Interview One Guide and Appendix F: Interview Two Guide). The pilot study with Ryan was completed to determine the appropriateness and relevance of the interview guides and other data collection techniques. Furthermore, the pilot study allowed me to refine my skills as an interviewer and practice using the prepared interview guide. In discussion with Ryan, it was determined that no

changes were needed to the interview guides or the data collection methods.

The ideal location for interviewing was a quiet, neutral setting that protected confidentiality, such as a meeting room at the University. The actual locations for the interviews included the participants' homes, two University cafeterias, a hotel seating area, a meeting room at the University library, and a coffee shop; some of which were better suited to interviewing than others. I personally found the quieter locations such as the participants' homes and the University library to be more conducive to discussion. We were able to listen clearly to each other without interruption, and there was no opportunity for concern with being overheard. The coffee shop, hotel seating area, and cafeterias were all noisier locations with other patrons walking by or having conversations nearby. When I asked each participant that was being interviewed in a non-ideal location if they were comfortable speaking about their experiences in this setting; or if they would prefer to choose an alternate time or location; each indicated that the location was acceptable and opted to continue the interview at that particular time and location.

Seidman (1998) suggested that approximately one and half hours is most appropriate for interviews, as a sixty minute interview may be too short to explore experiences with great depth, however two hours may be too long as participants could become fatigued. Each interview was within these recommendations, lasting one to one and a half hours, although additional time was often spent visiting with each of the participants before and after the interviews. These informal conversations with the participants before and after the interviews served

to help me reconnect with the participants and were particularly helpful in developing additional rapport with those participants that I did not know well prior to the interviews (Patton, 2002). Furthermore, just as I knew the participants through my previous involvement in disability sports and the disability community; the participants were also aware that I was familiar with disability sports and the disability community of which they were a part. This may have further allowed for a sense of empathy and understanding of their thoughts and experiences.

All interviews were audio-recorded on both digital and microcassette, with the exception of the first interview with Ryan which was recorded on two micro-cassette recorders, and the second interview with Emily which was recorded only on microcassette due to the batteries failing on the digital recorder. Having two different recording methods ensured that I would have a backup recording in case any problems arose with the primary recording. Furthermore, the backup recordings served as a way to easily confirm what was said during transcription if any part of the primary recording was unclear. Following the interviews, I personally transcribed each interview verbatim.

Interview one. The first interview was semi-structured in nature. The interview guide was developed in advance to ensure that the same topics were covered with each participant (Patton, 2002) (see Appendix E: Interview One Guide). To ensure that the interview guide captured the phenomenon of interest, it was developed following a review of the literature, discussions with members of the disability community, and consultation with adapted physical activity

researchers. In addition, a pilot interview was conducted to "test" the wording, clarity, and overall utility of the interview guide in capturing information relevant to the research question. The questions were open ended in nature encouraging the participants to tell stories of their experiences and the thoughts, feelings, and beliefs associated with them (Patton). For example, when exploring the alternatives that could be utilized to achieve a particular task, I asked questions such as:

> Tell me what you think about when deciding to complete the task this way?
>
> What choices do you have in how you complete the task?
>
> Describe for me what is going through your mind as you are doing the task?

When evaluating why a participant chose to do a task a particular way, I went on to ask:

> Why does doing the task this particular way work for you?
>
> How do you know that this way is the best way for you?

During the first interviews, I found that the prepared structure of the interview worked very well in guiding the participants to discuss the topic of interest in depth. Each participant began by sharing information about the physical activity contexts that they participated in primarily. These included wheelchair basketball, wheelchair rugby, wheelchair racing, and integrated dancing. We then went on to discuss all of the skills necessary for participation in the chosen activities. Finally, the participants each selected a specific skill which

we explored in depth.

Ryan was the first participant, having been the pilot participant for the study. I first interviewed Ryan at his home during the Christmas holidays, where we explored his experiences learning to shoot layups in wheelchair basketball.

Ariel was the next participant in the study, and I was fortunate we were able to arrange to meet while she was visiting a nearby city for a sport training camp. For the first interview we met after regular business hours during the evening in a quiet cafeteria at the University. Aside from the occasional person walking by, only one other patron was present, and was seated at the opposite end of the cafeteria from where we were seated. Together we discussed her experiences with choosing how to pass the ball in wheelchair rugby.

Andrew met with me just two weeks after I had met with Ariel. We met after regular business hours at another quiet cafeteria at the University and found a table that was several tables away from the other patrons who appeared to be using the cafeteria as study space. Andrew shared his experiences with shooting in wheelchair basketball during our first interview. In particular we discussed his experiences in trying to find the perfect shooting technique from the free throw line.

The next participant, Emily, met me at a small meeting room at the University library for our first interview. Together we explored stroke techniques for wheelchair racing. This was a skill that was relatively new to me, as I was less familiar with wheelchair racing than with other sports. She patiently took the time to explain the stroke technique and all of the considerations involved.

I met with the final participant, Dawne, at her home. We discussed her experiences with a particularly tricky dance move which involved spinning in a circle while an able bodied dancer balanced upside down on her wheelchair.

The task goals described in this study during interview one were as follows:

1. Ryan – object propulsion in basketball
2. Andrew – object propulsion in basketball
3. Ariel – object propulsion in rugby
4. Emily – locomotion on an object (wheelchair) in racing, and
5. Dawne – postural maintenance and orientation in integrated dance.

Interview two. At the end of the first interview I asked the participants to think about a time when making a choice was particularly memorable for them in a physical activity context. I left them with a simple letter (see Appendix G: Story Writing Letter) that asked them to write a story in no more than three pages, double spaced, addressing the statement "tell me about a time when making a choice in a specific physical activity task was memorable for you." I discussed the writing task with them to ensure the request was clear. All participants quickly indicated that they had an idea of a particular moment that they were going to write about, but wanted to think about it more before writing the story.

Each participant was given the choice to (a) write the story prior to the second interview and either email it to me or bring the story to the interview, or (b) take time at the beginning of the second interview to write the story or dictate it to me as I typed. If participants chose to write or dictate their stories at the beginning of the interview, they were then given time to read through their stories

and make any additions or changes they felt necessary. I subsequently emailed the dictated stories to the participants. If a participant chose to write the story in advance and email it to me, I then printed it and brought a copy to the interview.

The written stories were used to stimulate discussion in the second interviews. By the participants providing a context specific and self-selected moment, I then continued to explore and better understand the participants' personal interpretations and meanings of choice. I utilized a loosely prepared interview guide (see Appendix F: Interview Two Guide). Examples of questions utilized in the second interview included:

What were you thinking about when this was happening?

How did you feel before you made this choice? During the choice? After the choice was made?

What sense do you make of this experience now that you've "re-lived" it?

I completed the second interview with Ryan two months after the first interview, as coordinating our schedules amongst his attendance at university and my subsequent move back to my home province prevented us from meeting sooner. This extended time period gave me the opportunity to transcribe and review his first interview in preparation for the second pilot interview. During the second interview which was again held at his home, Ryan asked me to type his story as he recited it. In the story, Ryan shared one particularly memorable moment when he enabled his team to win by scoring an unexpected basket at a crucial moment in a wheelchair basketball game.

The second interview with Ariel was held one week after the first, as she

was again visiting a nearby city for a training camp. For the second interview we met in a seating area outside the pool at the hotel she was staying at. While this location was not particularly quiet; with the sound of children and families enjoying the pool nearby; we found ourselves a comfortable couch away from the crowd to have our discussion. Ariel asked me to type her story as she recited it, sharing with me a story about her experience learning to ride a two wheel bicycle.

Andrew wrote his story about a particularly memorable moment when he was faced with a choice to shoot, pass, or wait during a particularly intense basketball game. He emailed it to me before our second meeting, which was held one week after the initial interview. I brought a paper copy of his story to the interview so we could refer to it while we discussed this experience at length.

The second interview with Emily took nearly two months to coordinate our schedules around final exams and training schedules. The second interview was held at a local coffee shop, and while it was not an ideal location with music playing in the background and other patrons coming and going; we seated ourselves several tables away from other patrons and Emily assured me that she was comfortable sharing her thoughts and experiences in that environment. Emily recited her story to me while I typed it. Her story explored several choices that she made that allowed her to commit to training and moving forward in her sports career. While these choices did not focus on a specific task as much as I had hoped, it was a memorable moment for her and provided valuable insight into her experiences.

Finally, Dawne used my laptop computer to type her story, taking

approximately thirty minutes at the beginning of the second interview to do so. I later emailed the story to her. She wrote about her experiences learning to manoeuvre her wheelchair in and out of her car. While some may suggest that this is an activity of daily living rather than a specific physical activity task, participation in dance would not be possible if she could not get herself to the rehearsal venues, so in an important way this is a task required for her to dance. In addition, there was considerable technique involved, and she considered it to be a physically complex and demanding task, making it both memorable and relevant for her.

The experiences and task goals explored during interview two were as follows:

1. Ryan – object propulsion in basketball (scoring the winning shot)
2. Andrew – object propulsion in basketball (choosing to wait, pass, or shoot)
3. Ariel – locomotion on an object (learning to ride a bicycle)
4. Emily – choosing to push through fatigue and making a commitment to training for racing
5. Dawne – object manipulation and posture and orientation (learning to maneuver herself and her wheelchair in and out of her car)

3.4.2 Artefacts

The typed stories provided secondary artefact data to add to the richness of the information collected. This secondary data source was important as in addition to describing what happened during a particular experience, stories can express emotions, thoughts, and interpretations from the storytellers' point of view

(Chase, 2005). Stories enable us to examine an experience by looking inward at the feelings, hopes, and reactions; as well as outward to the environment in which the experience takes place (Clandinin & Connelly, 2000). In addition, we can address temporal issues by looking not only at a specific experience, but also what occurred before and after the event. The stories were carefully reviewed during the data analysis for these multiple layers of information.

3.4.3 Field notes.

Field notes are essential to qualitative research (Patton, 2002) and can be used as a supplement to interviews in phenomenological research (Richards & Morse, 2007). The first role of the field notes was to describe the context for the data collection process. This included where the data collection took place, the individuals present, what the setting was like, what interactions occurred, and what activities took place, using as much detail as possible. These descriptions allowed me to return to that context during later analysis. The field notes also contained my own feelings, reactions, reflections of personal meaning, insights, interpretations, and the beginnings of analysis about what was happening and what this might mean (Patton). Throughout the study I systematically collected field notes by writing brief notes and observations during each interview and more detailed notes and reflections following each interview.

In addition to field notes taken during and immediately following each interview, I also kept an ongoing reflexive journal throughout the research process. This journal included thoughts and experiences related to the research, questions that arose, and personal perspectives that helped to develop my own

self-awareness and served as an ongoing evaluation of my knowledge, assumptions, and perspectives (Patton, 2002).

3.5 Data Analysis

The purpose of analysis is to tease out what we consider to be essential meanings from the raw data (Ely, 1991) by reducing, reorganizing, and combining the data so we can share the findings in an economical and interesting fashion. Patterns and themes in the data may have begun to take shape during the data collection process as described in the field notes (Patton, 2002). Formal data analysis was carried out through a series of four steps:

1. Interviews were transcribed verbatim.
2. A thorough reading of each of the transcripts and stories several times helped me to gain familiarity with the information, as well as identified or reinforced potential areas of commonality (Patton).
3. The transcripts and stories were deductively coded line-by-line using descriptive and topic coding. This helped to identify common ideas and linked together the data with the goal of going from messy, unstructured data to more organized ideas about what was going on in the data (Richards & Morse, 2007). A code was a label for assigning units of meaning, and was attached to words, phrases, sentences, or whole paragraphs (Miles & Huberman, 1994). In the line by line approach, I looked at each sentence or cluster of sentences and asked "what does this reveal about the phenomenon or experience being described?" (van Manen, 1997). Descriptive coding was carried out to

bring out information that was known about the data, including knowledge about the participants and the context in which their experiences took place, together with information provided by the demographic form (Richards & Morse). Topic coding was used to assign labels to organize the different topics within the interview transcripts, thus sorting data into a broad number of relevant topics (Richards & Morse). Significant codes or portions of the transcripts were then assigned a label that represented the idea or topic revealed.

4. Finally the labels were visually displayed, along with particularly relevant quotations, in color coded tables. These labels and quotations were examined to determine any associations among them and how they could be organized into more broad and encompassing themes (Richards & Morse).

Once the topics that emerged from the data had been organized into themes, I set about writing a thorough description of each of these themes, incorporating direct quotations from the participants transcripts and stories in order to illustrate the findings in the participants own words (Patton, 2002). These themes are discussed in depth in the results and discussion chapters.

3.6 Trustworthiness

Trustworthiness, or the believability, accuracy, and truthfulness of the research, was enhanced by implementing strategies that addressed several primary and secondary trustworthiness criteria. While often similar and intertwined, primary criteria are important to incorporate within all qualitative inquiries,

whereas secondary criteria simply provide further benchmarks but are more flexible within their application to specific research studies (Whittemore, Chase, & Mandle, 2001). Trustworthiness is enhanced through the conscientious attention of the researcher to accurately and truthfully describe and interpret the truth of the participants' experiences (Patton, 2002; Morse, Barrett, Mayan, Olson, & Spiers, 2002). Part of establishing trustworthiness requires building steps into the research process in which data is systematically checked, focus is maintained, and the fit of the data and the conceptual work of analysis and interpretation are constantly monitored (Morse et al., 2002). A researcher must continually move back and forth between design and implementation to ensure congruence between the purpose of the research, the research questions, and the data collection methods. Whittemore, Chase, and Mandle (2001) developed a synthesis of criteria that incorporated both primary criteria and secondary criteria. A summary of these criteria is presented in Table 3.1. I have attempted to build several strategies into the research design and implementation to establish trustworthiness in this research study.

Table 3.1 *Criteria for Assessing Trustworthiness (adapted from Whittemore, Chase, & Mandle, 2001)*

Primary Criteria	**Techniques**	**Application to Study**
Credibility	Researcher reflexivity Peer debriefing	Reflexive journal, field notes, multiple coding and ongoing discussion
Authenticity	Verbatim transcription Giving voice (Direct Quotations)	Verbatim transcription, direct quotations
Criticality	Triangulation (Method and Researcher) Disconfirming evidence Data saturation	Multiple methods of data collection, multiple coding, ongoing discussion, flexible participant #
Integrity	Member checks Expert checks Detailed description	Member checking, ongoing discussion, multiple coding, detailed descriptions
Transferability	Detailed description Purposeful Sampling	Detailed participant description, criterion sampling
Secondary Criteria	**Techniques**	**Application to Study**
Explicitness	Audit trail	Reflexive journal, field notes
Vividness	Detailed description	Detailed description, direct quotations
Creativity	Flexible research design	Flexible design, utilizing artefacts
Thoroughness	Purposeful participant selection	Purposeful selection, multiple interviews
Congruence	Reflexive journal Detailed description	Reflexive journal, field notes, detailed description
Sensitivity	Obtain ethical approval Community consultation	Ethical approval, maintaining confidentiality, securely stored data, discussion with disability community

3.6.1 Primary criteria and methods

The primary criteria for ensuring trustworthiness include credibility, authenticity, criticality, integrity (Whittemore et al., 2001), and transferability (Guba, 1981). *Credibility* is the extent to which both the findings and the researcher are believable and convincing, and is addressed by the question "do the results of the research accurately reflect the experience of the participants or the context in a believable way?" (Whittemore et al., p. 534). In order to establish credibility in this particular study, researcher reflexivity was developed through my reflexive journal and carefully documented field notes that included thoughts, observations, biases, and the decisions made throughout the research process (Lincoln, 1995). These field notes allowed me to become more aware my own influences and biases in the research and aided in ensuring that it was the experiences of the participants which were reflected in the findings, and not my personal biases or assumptions. In addition, peer debriefing with my supervisor, and the second coding of the transcripts was completed by two graduate students in adapted physical activity. If there was a discrepancy between the two coders and myself, we discussed the analysis until an agreement was reached.

Two level participant member checking was also completed. The participants received a copy of their transcribed interviews and were provided with the opportunity to indicate that the transcript was an accurate account of what they said, or wanted to say by adding or deleting information from the transcripts. All of the participants felt that the transcripts accurately conveyed what they wanted to say, and no information was added or deleted from any of the

interviews. Once analysis was complete, the participants were provided a summary of the themes and their descriptions by email. They were asked to indicate if they saw their experiences reflected in the theme labels and descriptions and if they did not, what they would add. Three of the five participants responded with feedback, indicating that the analysis accurately reflected their thoughts and experiences. Andrew responded in his email: "I think your analysis is spot on in the summary! For the variations and types of choice to how much goes through your mind and the ways the outcomes were interpreted from the athlete I believe you have it cased." In addition to email feedback, I also met with Ryan in person and we discussed the results in their entirety. Throughout our discussion, Ryan indicated that each of the themes and explanations made sense and were accurate according to his experiences. He also added further insights to some of the experiences that have since been incorporated into the results.

Authenticity refers to the genuineness of the findings; or how accurately they reflected the truth of the participants' experiences. Authenticity was addressed by asking the question "does a representation of the emic perspective exhibit awareness of the subtle differences in the voices of all participants?" (Whittemore et al., 2001, p. 534). Authenticity was established through verbatim transcription of all of the interviews conducted in the study, followed by giving the participants a voice in the presentation of findings by using direct quotations from their interview transcripts and artefacts in the results and discussion (Lincoln, 1995). Furthermore, I attempted to present quotations that represented

each of the participants' voices, and explored unique experiences among the participants' experiences.

Criticality refers to the extent that judgment and discernment were demonstrated, and was addressed by asking the question "does the research process demonstrate evidence of critical appraisal?" (Whittemore et al., 2001, p. 534). Criticality was established through triangulation, examination of disconfirming evidence, and ensuring data saturation. Triangulation of sources involved using multiple methods of data collection; including interviews, artefacts, and field notes; while researcher triangulation referred to having multiple people contribute to the research process (Richards & Morse, 2007). The individuals involved in the research process for this study included my supervisor, the pilot participant, the two individuals who did a second coding of transcripts, and me. Disconfirming evidence; or findings which appeared to be incongruent; were explored and discussed with the pilot participant and other graduate students in adapted physical activity to ensure all aspects of the findings had been considered and critically appraised. Finally, data saturation was achieved by seeking additional participants until a repetition of ideas and themes became apparent (Creswell, 2007). In total, five participants were interviewed and while each participant had individualized experiences, there were common experiences across all of the participants.

Integrity refers to the accuracy of the findings and was addressed by asking the question "did the research reflect recursive and repetitive checks of accuracy as well as a humble presentation of the findings?" (Whittemore et al.,

2001, p. 534). Integrity was established by carrying out a second coding of the interview transcripts by two additional coders, as well as member checks. I also discussed the research design with my supervisor and committee, and explored analysis throughout the research process with my supervisor and the participants to ensure all aspects of the analysis had been taken into consideration. Finally, the accuracy of the participants' experiences was enhanced by using their own words to illustrate the themes.

Transferability refers to how well the knowledge could be transferred or applied from one context to another and was dependent upon the degree of similarity between the research context and other contexts (Guba, 1981). In this study transferability was enhanced by collecting and providing a detailed description of the participants and the context of their experiences, thus enabling the reader to decide how the information might be applicable to other similar contexts (Guba). In addition, participants were purposefully selected for inclusion in the study, as the intent was to describe the experiences of a specific group of people in a specific context.

3.6.2 Secondary criteria and methods

Secondary criteria are additional guiding principles that enhance trustworthiness in qualitative inquiry. While the techniques utilized to establish some of these criteria overlap with the techniques for the primary criteria, the purpose was to further enhance the trustworthiness of the study by being aware of and addressing these criteria. Secondary criteria included explicitness, vividness, creativity, thoroughness, congruence, and sensitivity (Whittemore et al., 2001).

Explicitness addresses how the researcher makes decisions, carries out interpretation, and comes to an understanding of their biases. This was accomplished through keeping an audit trail (Lincoln, 1995) which included a detailed record of decisions, thoughts, and reflections throughout the research process in my reflexive journal and field notes (Lincoln, 1995).

Vividness portrays the findings of the study with artfulness and clarity (Whittemore et al., 2001). This was achieved through presenting the findings with a detailed description including direct quotations in the participants' own words, and describing the context in which it took place.

Creativity in the research process was accomplished through having a flexible research design, as well as creative and imaginative ways of organizing, analyzing, and presenting the data (Whittemore et al., 2001). Allowing the participants to share personal experiences through a story gave them the opportunity to be creative and was a unique source of information for this study. In addition, the interview guide was open ended, allowing me to explore ideas as they emerged with each participant.

Thoroughness asks whether the findings addressed the questions with completeness and saturation (Whittemore et al., 2001). Purposeful sample selection and a flexible number of participants were used to achieve data saturation. In addition triangulation of data sources that included multiple interviews with each participant helped to ensure the questions were addressed thoroughly (Morse et al., 2002).

Congruence addresses whether the process and findings were congruent,

the themes fit together, and the findings fit into a context outside the study situation (Morse et al., 2002). I was mindful of congruence and kept a reflexive journal and field notes that were reflected upon during analysis. Providing a detailed description of the themes enables the reader to come to his or her own judgment regarding the believability of the findings and applicability to other people and contexts (Lincoln, 1995; Patton, 2002).

Finally, *sensitivity* addressed the need to be sensitive to the participants and their cultural and social contexts (Whittemore et al., 2001). Sensitivity is often reflected in researcher efforts toward anonymity. By being anonymous, participants may feel that their stories are being protected while at the same time feeling that they are not breaching the trust of their own community. Anonymity was preserved by such actions as the careful storage of data and information forms, the use of pseudonyms, and the removal of potentially identifying information in the dissemination of results (Patton, 2002). In addition, as I was familiar with the participants prior to the study, there was a sense of rapport and trust in my integrity as a student researcher and that I would protect their confidentiality as outlined in the informed consent forms. Furthermore, member checks were completed in an attempt to respect the ownership of the stories and reflect them as accurately as possible.

4. Results

Through this research I sought to describe the participants' experiences of making choices in physical activity contexts. Moreover, I wanted to explore how the participants perceived and experienced the environment, the task at hand, and their own abilities when making choices. It became evident throughout the interviews that the distinction between choice and decision making was a grey area with the participants often using the terms interchangeably, even within a single statement.

Keeping the discussion focused on the processes the participants' experienced when making a selection from two or more alternatives when completing a movement task goal was in some ways as much a tribulation for me as it was for the participants. Finding ways to ask the participants to consider their own thinking within the narrow realm of the experience of choice was challenging as they had not been previously asked to reflect upon the experience of making choices in physical activity contexts. That being said, the participants eagerly shared stories of the choices they made and appeared to enjoy the opportunity to reflect on their own learning.

Throughout the interviews, choice was discussed in broad terms relating to participation in physical activity in general, as well as more specifically in terms of the finite nuances that go into carrying out specific tasks. It was those finite considerations and experiences when making choices within specific tasks which were the focus of this study. In reviewing the transcripts, it became clear that reflecting upon choices in skill and movement forms was a new way of thinking

of motor skill performance for the participants. I have done my best to present information that is specific to the research question that was gleaned from much broader discussions of choice.

While the participants took part in a range of physical activities and each had unique experiences to share, three themes encapsulated the participants' stories about choice *(a) Interpreting the setting, (b) It just felt right, and (c) Implications of choices made.* Each of the three themes and their respective subthemes (see Table 4.1) are explored in detail and supported with the participants' own words from their interviews and written stories. Where applicable, descriptions from my field notes have been added.

Table 4.1 *Summary of themes and subthemes*

Theme	Subthemes
Interpreting the Setting (pre choice)	Environment - physical - social Equipment Personal Abilities and Performer Variables
It Just Felt Right (making and acting on a choice)	Identifying Alternatives Choosing Amongst the Alternatives
Implications of Choices Made (post choice)	Good Choices, Bad Choices Reaction of Others Learning from Choices Made

4.1 Interpreting the Setting

Repeatedly during the interviews when I asked the participants what they were thinking about or considering when making a choice, their responses began with the caveat “well, it depends.” This simple statement highlights how much understanding and consideration was applied to a wide variety of factors as the participants *interpreted the setting*. The theme explores how the experiences of choice encompassed awareness of the physical and social environments (e.g., playing surfaces and teammates), availability and utility of equipment, and personal and performance variables (e.g., skill and role of teammates). These considerations provided the base from which potential movement alternatives were identified.

The research literature refers to the information that learners consider when making choices in terms of affordances and constraints. While the participants of this study did not use such formal terminology, they were clearly knowledgeable about variables in the environment, the task, or their own abilities which impacted their choice of functional movement solutions to achieve a task goal.

The participants described their experiences in terms of the physical and social environments and their expectations and roles within these contexts. In addition, the participants demonstrated a keen understanding of not only their own personal strengths and limitations, but also considered the strengths and limitations of their teammates and opponents.

Physical environment. The experience of choice involved an awareness of the impact on performance imposed by the physical environment. Playing surfaces and the weather were of particular importance to the participants.

When asked how the environment impacted his experience of completing a layup in basketball, Ryan immediately pointed out, "it depends on the flooring I suppose. Whether it's a good floor or a bad floor... good floors are nice, smooth floors…" A bad floor for a wheelchair basketball layup, according to Ryan, was a cork floor. This was because it interfered with his speed toward the basket, thereby impacting his momentum and the distance travelled as he moved into a layup position. The functional movement task he was describing was that of propulsion of a stationary object while moving. The playing surface influenced his movement form alternatives and choices, and ultimately his performance outcome. Ryan described the constraining features of the floor further:

> Because it's squishy you can't roll, so like when you're going in for layups you just stop. You like to have some momentum going in cause then you don't have to shoot as hard… but if you don't have the momentum from a nice floor you don't roll and you have to shoot harder.

When considering a different physical activity context, that of integrated dance, Dawne was even more specific about the impact of flooring on her ability to perform a spin and presented an alternate scenario to that of a wheelchair basketball layup. In contrast to Ryan's experience, a smooth floor that offered limited resistance (cushion) and friction (newly waxed) constrained Dawne's

ability to maneuver her wheelchair with precision and accuracy while dancing. Compensating for qualities of the floor surface meant Dawne had to alter her speed leading into and following spins as well as the forces used during spins. Dawne recalled:

> If it's a slippery floor my spin is going to be quite a bit slower, cause I'm going to be spinning out… The surface that we're moving on makes a huge difference. If it's say a wood floor that's just been waxed, I'm not going to go very fast; I'm not going to go very far.... We can't stop either on a slippery surface, generally.

Emily, who often trained and competed outdoors, spoke about weather as an environmental factor that influenced her movement choices. Wheeling in the rain altered the movement form Emily used from that of fair weather racing. She spoke of sacrificing speed for a much needed increase in movement precision. Emily stated:

> Mostly rain affects your push and stuff, because typically in rain you can't rely on power so much, because if you try to hit the rim with all your force you're more likely to slide right off... you have to concentrate more on squeezing in and making sure that contact is solid.

Alternately, in dry conditions, wind also constrained Emily's racing form and pacing. She had to maintain power in her stroke to keep her speed against a head-wind but also was cognizant of the overall distance she needed to cover.

Emily explained:

> Wind is a little bit of a factor, in that lots of times in wind if you try to accelerate more into the wind you'll just tire yourself out more. So you're better off just staying relaxed, and if anything, trying to put a little bit more power into it to maintain your speed.

Social environment. In addition to the physical environment, the social environment was a component of the choice making experience for the participants. The social environment most often included coaches and teammates. The participants indicated that the coaches played a key role in providing the participants with the foundation to develop the skills and movement forms needed to complete specific tasks. Given the skill information provided by the coaches, the participants spoke of making effective choices in how to individualize their movement forms to meet the specific task at hand. Ryan explained:

> Coaches are responsible for showing me how to do it… to give you the foundational knowledge of what's the proper way to do it, or work with you to find out what's the best way for you to do it.

Emily also explained that she took her coach's advice and guidance very seriously when choosing the best way to perform her stroke in wheelchair racing. Her coach provided information on performance factors related to relative timing, force, and technique that she would then integrate with environmental (e.g., rain, wind) and personal constraints (e.g., technical skill); choosing the movement form that best addressed the task goal (moving from one place to another as quickly as

possible). Emily relayed:

> We're still working on my stroke and my technique and everything. Mostly I'm just trying to think about all the things that John is telling me about, so the driving through, squeezing in, getting the flick, getting like, contact. You know, recovery back around. He's trying to get me to drive through with my head a bit more, just to get more downward force.

Emily's description of the movement form she was working to emulate highlights the importance of the coach, particularly when learning movement skills necessary to complete specific tasks. With practice and experience, these foundational skills become adapted to suit the individual participant's abilities and the affording and constraining environmental conditions.

In a dance environment, the instructor/choreographer was important to the generation of the overall theme of the dance and its components, however the movement solutions were left to the dancers. When choosing how to perform a spin with an able bodied dancer, the dancer balanced on the "sit down" dancers' wheelchair and movement alternatives were then generated. The evaluation and ultimate choices made rested with the dancers as they evaluated, discarded, and refined movement forms. Dawne explained:

> It's a cooperative thing. Marlene [the choreographer] has ideas, she throws them out there, tells us to figure out how to do them, because really no one knows how to use the chair better than we do.... The stand-up dancer is given the chance to figure out how to make it work. Marlene will give

> input and ideas and throw things out there but we have to try them and if they don't work we have to figure out alternatives…. We actually started experimenting with a few different moves, cause we were trying to come up with a trick right. Cause there is always a trick in our dances.... for a challenge, it's more fun, and it looks better for the audience! My stand-up dancer took the initiative of kind of throwing herself all over my chair and trying all kinds of different things.... She just had to play around. So in her playing around I figured out where my arms could go. So we figured out what works best for us.

The participants also described the negative experiences or consequences of accepting coach directives in support of technically superior performance. Andrew described how you can make a choice that was technically correct according to the coach, yet could result in poor short term performance. Andrew recalled:

> A coach will always encourage you to take a left handed shot, but if you're willing to take a left handed shot and let's say it's the last shot of the game and you miss that layup cause you took it left handed, I mean, I mean you made the right choice but at the same time maybe it wasn't the right choice. I mean technically it was the right choice, but theoretically you probably could make that shot with your right hand much better. Right?

> Although the coach may have encouraged a particular movement form in a

given situation, it was still up to the participant to choose what was best within the context. In addition to the coach or instructor, the social environment also included teammates. In basketball, teammates impacted the availability of movement alternatives (e.g., pass or shoot) depending upon how they set up the on- court play. Ryan explained how the team can work together to support the choices involved in completing a layup in basketball:

> Teamwork is really important…they (teammates) could pass it to you and you can do a layup. Or they can get the person out of the way. They can pick [block an opposing player] and you can go around them. There's different ways that they can help you.

Ariel also described how the alternatives from which she chose her rugby passing form depended on the functional ability of the teammate receiving the ball. Players with more hand and arm function were perceived to have better ability to catch the ball, whereas others trapped the ball in their laps. By knowing her teammates skills through practice and experience, choosing the best passing form became apparent. Ariel explained:

> It depends on the class really. So like if it's a high class[2] [better trunk and arm function] then you can put it ahead of them, but if it's a low class [lower trunk and arm function] you have to put it right to them so they can get it… usually if it's low class, like a really low class, you actually have to do a bounce pass to them… it all depends, you have to really be

[2] Wheelchair rugby players are classified on a scale of 0.5-3.5 based upon functional ability. Low class players or those closer to 0.5, have the greatest functional limitations, whereas high class 3.5 players have the highest functional abilities.

> thinking about who you're passing to... you have to be able to practice with them beforehand and realize where they can catch the ball, how they can catch the ball, etc.

In the individual sport of wheelchair racing, the teammates and opponents played a role in the movement form alternatives that Emily utilized. Although she stated that "as far as the race goes, my performance doesn't affect [my teammates]", there are still some aspects of teamwork. An example she used was practicing drafting, an important aspect in long distance races when racers are gathered close together in a pack. Taking advantage of drafting required her careful attention to distances and the link between what the lead racers afforded her and the implications of falling behind. To maximize her performance, she had to accommodate to changing conditions and choose the correct race strategy and movement form in order to remain competitive. Teamwork had a dynamic impact on what type of stroke Emily used and the force she expended as she responded to the increases and decreases in the group's speed. Emily recalled:

> Working with them... you don't even feel time going by, you're not feeling like you're working, but you're having fun more cause you're working together. You're concentrating on the draft.... In a draft, someone in front can surge, like excel forward and you have to catch up. And so you have to go from a long relaxed stroke to suddenly more of a start stroke, very short so you can pick up speed very fast to get back in there. The same can happen if they slow down, 'cause you have to slow down

your stroke.

4.1.3 Equipment

Each of the participants spoke about their choices of equipment and how they modified and personally tailored equipment to meet their functional abilities. The selection or configuration of wheelchairs occurred far in advance of the performance of a specific skill or movement form; however, these choices impacted their ability to complete functional movement tasks. In the example below, Ryan highlights the importance of personalizing his wheelchair to enable him to complete the functional movement tasks involved in object propulsion and body orientation:

> It depends on your level... of disability, to what kind of equipment you need.... if your chair isn't set up for you specifically then you'll miss. It completely affects how you hold the ball, how you can stay up, it's everything really.... If the equipment isn't set up for you then you're toast.

Ariel also described how having specific adaptations to her wheelchair allowed her to explore movement forms that would enable her to successfully pass the ball in wheelchair rugby. By using a lower back on her wheelchair and adding straps for her feet, Ariel developed a movement form unique to her that utilized her entire body to propel a ball. Because of muscle spasticity associated with her cerebral palsy, she braced her body with feet straps to increase her stability and hence increase the force that she could impart to the passed ball. Ariel relayed:

> My back bar is back more so I can lean farther so I can get more force on the ball when I'm going to throw a pass... for me in particular... if I didn't have my strap on my feet the ball wouldn't be able to move off my hand because I, when I throw the ball I use my feet to force the ball, to push the ball.

Conversely, Dawne chose a wheelchair with a higher back that could accommodate torso bracing, as it provided an orientation in her wheelchair that facilitated her body orientation and balance. In doing so, she could develop functional movement forms required for dance. Dawne shared:

> We modified the chair so that the back was higher than it normally would be. It comes past my shoulder blades now. Normally it comes up halfway up the back, and that just doesn't work for me, with my lack of balance....I strap myself to the chair.

Emily spoke at some length about the importance of the gloves she used in wheelchair racing. Outside of her wheelchair, her gloves were her next largest equipment concern. She took into consideration the interface of the support her gloves provided with her wheeling stroke form. She examined alternatives in materials, shapes, and the manner in which the gloves functioned. Choice in equipment selection was experienced as fundamental to her success in wheelchair racing. Emily recalled:

> I'd say the biggest choice we have is the type of glove we use... it's still

> fairly new, the development of hard gloves, which is what I push with. It's plastic that's been formed to your hand, so it's individual for everybody, so it's shaped to your hand and the way that you push. The way that you contact the rim, the way you come off the rim... cause everybody has slightly different ways.

While each sport had unique considerations, equipment that provided meaningful alternatives that impacted functional movement were considered by all of the participants to be an integral component of successful participation. These examples of modifications were integral to the participants having alternatives available to them and the choices they made to facilitate achievement of the task goal.

4.1.3 Personal abilities and performer variables

In addition to the various facets of environmental considerations, the participants all actively recognized and took into consideration their own personal abilities and limitations when choosing among movement alternatives. Many examples were shared throughout their stories. Ariel described taking her knowledge of how her body worked (e.g., performer variables of flexibility, balance, strength) into account when explaining why she chose to use a baseball pass over other forms of object propulsion in wheelchair rugby. Ariel was sensitive to and understanding of the functional impact of her impairment on her balance and strength. She explained:

> Since I was born I have had a disability called cerebral palsy. It is a

> disability that doesn't allow me to have the best balance or coordination. I've always had troubles being able to do certain things because I am shaky….The baseball pass is best for me because I have more control on my right. I do the right hand baseball pass because my right hand… I'm able to catch and throw the ball easier and more accurately.

In dance, Dawne also demonstrated an understanding of her physical abilities, explaining how she created movement solutions that fit best with her abilities. She was part of a group of dancers; however, she worked with her own functional movement to find an orientation or body position that emulated the choreographic aim identified for all the dancers. Dawne saw movement alternatives available to her within the context of much broader dynamic movements displayed by her able bodied dance mates. Dawne's skill execution choices reflected her perception of the task, the environment, and her personal attributes. As Dawne's torso was fixed to the wheelchair to facilitate her balance and stability she recognized that her functional movement alternatives would be related to the orientation of not just her body in her wheelchair, but her wheelchair itself. She changed the position of her wheelchair in relation to the other dancers, thereby providing precision to her movements overall, replicating and synchronizing the movement of the other dancers using a movement alternative that was legitimate and meaningful to her. Dawne recalled:

> Some of us can do some things, and some of us can't. The stuff with backbends and all that kind of stuff, I can't do at all. I can't twist my back in any way, shape, or form. I have no use of my torso in that regard. I can't

> even do a little simple twist in my shoulder blades. I have to compensate where my chair sits... so I could replicate what they were doing so the lines were right.

It is apparent that the participants engaged in a sophisticated analysis of a wide variety of factors when they interpreted the setting. These considerations facilitated the subsequent generation of movement alternatives which they were able to choose from in order to achieve task goals in each of their specific physical activity contexts.

4.2 It Just Felt Right

It just felt right describes how participants experienced and engaged in the *process* of making choices in physical activity contexts. The participants discussed the process of analyzing, and sometimes overanalyzing, performance alternatives. They contemplated possible outcomes, the risks involved, and the chances of success or failure with each alternative. Despite this thorough analysis and weighing of alternatives and outcomes, the participants were often unable to describe exactly why they made a particular choice, but rather stated, “it just felt right” or “it just felt natural.”

To make a choice on what skill and movement form to enlist, the participants, having already *interpreted the environment*, identified possible movement alternatives. They then described the experience of analyzing the alternatives, often in terms of the perceived outcomes. Several of the participants noted feeling that they often overanalyzed or over-thought the alternatives and

outcomes, resulting in lost opportunities and decreased focus on the task at hand. Remarkably, even though the participants engaged in this analytical process, they were often unable to actually describe *why* they actually made a particular choice over another. Instead, the choice often came down to a matter of "it just felt right" or "it just felt natural."

4.2.1 Identify alternatives

Each of the participants was able to quickly generate a list of skills and performance alternatives for their chosen sports. Andrew was particularly articulate at discussing each of the movement alternatives from which he could choose for the skill of a layup in basketball. Andrew explained:

> If you're going in for a layup from the left side and you're right handed, you can shoot a left handed shot, you can shoot a right handed shot, you can shoot a left handed reverse shot, or you can shoot a right handed reverse shot. Or you can do an overhand right handed shot or a left handed shot… those are some choices. I mean there's a huge variety of choices to make just in a layup. I mean, proper form is to use your left hand on the left side of the basket and your right hand on the right side. But you have a choice even still, do you want to use a scoop or do you want to do an over?

Andrew went on to explain how he took into account the proximity of defenders, as well as his own skills and abilities in identifying movement alternatives. He also considered the choice between a less practiced reverse shot

or a well practiced but more time consuming squared up shot. It was clear that upon reflection a great deal of consideration went into the available alternatives, all within just a few short moments. Andrew explained:

> In wheelchair basketball there's tilting shots, so you tilt up to get extra space between you and the defender, but you also lose some of your balance. So if you want to take a risk in making that shot... I could be under the basket and throw up maybe a reverse shot or I can turn around and take a squared up shot which is more likely to go in, but it's also not as quick, right? If you have the opportunity to throw up a reverse shot and you've practiced it, it's not a bad shot to take, but then there's an advantage in squaring yourself up and possibly drawing a foul too.

Similarly, Ariel identified the various forms that a pass to a teammate in rugby could take. She also knew quite clearly, based on knowledge of her own abilities and from experience, the optimal movement form for her pass. She recalled: "well you could do a chest pass, bounce pass, a baseball pass, or a hook pass. The baseball pass is my most accurate… and strongest.

4.2.2 Choosing amongst the alternatives

With the alternatives identified, the participants described their experiences of choosing the preferred performance based on their evaluation of the alternatives. The main criterion used to evaluate the alternatives appeared to be the performers` perceived degree of success in completing the task at hand.

Andrew described how he evaluated his alternatives to shoot, pass, or reset in basketball:

> I guess the big things are should I pass? Should I shoot? And then, what the right decision is based on how the next position is. Will I get to the basket? If I pass to him [a teammate] will someone grab it? I mean, I know the players we're playing against, we play with them all the time… they could probably grab that ball unless I make the pass really, really nice. There's also the three seconds in the key, you can't forget about that as well. Maybe I should move the ball down and just completely reset.

Although the participants understood that it was important to consider the alternatives and make a choice that would lead to success, the participants also discussed overanalyzing the alternatives, to the point where over-analysis led to missed opportunities and decreased focus on the task at hand.

When I spoke with Ryan about all the factors going through his mind when making a shot in basketball, he explained that overanalyzing could lead to his missing the shot by over-thinking what he had to do, or if he took too long to consider the alternatives the opportunity to shoot could be lost completely. In addition, he was weighing his alternatives and outcomes in terms of what would happen should he fail at the task, casting personal doubt on his ability to be successful. Ryan explained:

> You think, um, about hand positions, and what hand positions, how you're going to do it, but you can't overanalyze it either cause you're going to

> miss…I overanalyze things and it takes longer, in which case the opportunities will end, or I always have that niggling feeling that if this goes wrong it could be me that loses it and that sucks.

Emily also reflected on her tendency to over-think all the alternatives impacting her success in racing. She had actually developed a reputation for over-thinking during a race. The result was that she became distracted from the task at hand which could interfere with her ability to focus on the skill and movement form required for success. For Emily, the consistency and effectiveness of her stroke depended on her choice to remain calm and only think about what she needed to do in that moment. Over-thinking and a lack of focus were detrimental to her performance. Emily recalled:

> I've kind of gained a reputation for over-thinking everything and it's more of a distraction… it's about trying to calm down and look internally and think about nothing except for your stroke and what exactly you are doing in that moment… I can get mentally distracted relatively easy because I overanalyze everything and I'm always thinking about stuff. Um, so I've blown strokes just simply because I'm not focused enough.

Despite engaging in a sophisticated analysis of the movement alternatives, the participants were often unable to articulate *why* they actually made a particular choice. Again and again I was told "it just felt right" or "it just felt natural" when the participants were asked why they made the choice they did. When Ryan

discussed basketball shooting, he explained “I could have passed it off. I’m not a grand shooter, but I wanted a shot. It felt right. Things can just feel right and it felt right.”

Emily explained her choice of movement form for wheelchair racing as follows: “as far as stroke and technique, as I said, it’s the basic fundamentals and then it’s just kind of what feels natural and what feels right to you... that’s how you do it.” Andrew also agreed that “it’s kind of weird, it’s almost like, it’s not exactly subconscious but it’s not really thinking deliberately either. It’s kind of, I don’t know. It’s really sort of what you feel like in that situation.”

It was obvious that a lot of thought goes into making choices. Participants carefully considered the wide range of alternatives, the environment, their ability to complete each alternative, the risks and benefits, and the variety of possible outcomes. Despite these careful considerations, it seemed that the actual choice made was at times made because it *just felt right.* Although not articulated by the participants, choice making may be the natural outcome that occurs when a match of a skill or movement form alternative to the task at hand is made given the environmental context. The match *just feels right* because is it based on a sophisticated process of interpreting the setting, generating meaningful and legitimate alternatives, and evaluating them for suitability in meeting the task goal.

4.3 Implications of Choices Made

Implications of choices made describes the participants’ experiences *after* choices had been made and acted upon. The participants described looking back at

a choice and discussing whether it was a “good” choice or a “bad” choice. They also identified grey areas, where choices could be both good and bad depending on the context. “Good” choices were often ones that led to a favorable outcome, such as scoring points or successfully learning a new skill. “Bad” choices often resulted in failure to complete particular skills or tasks, or by disappointing the participants and those around them. The implications of the choices made were also subject to whether the participants were engaged in a practice environment or a competitive context.

Finally, the participants discussed which alternatives worked for them, which ones did not work, and which ones required more practice. They indicated that experience making choices led to an increase in their future confidence to make choices, and they described the importance of learning from their choices, regardless of whether the outcome of the choice was positive or negative.

4.3.1 Good choices, bad choices

The participants experienced the outcomes of their choices as good or bad, right or wrong, correct or incorrect. For these participants, a good choice was usually one that resulted in positive affect resulting from a favorable outcome, such as successfully completing a new skill, scoring a basket, or winning a game.

A favorable outcome occurred when environmental conditions supported the application of an optimal movement solution to meet the requirement of the task. Ryan described the experience as “it worked.” He described sinking a layup shot in basketball as follows: “It worked, it worked and I was thrilled… afterwards it felt good. It felt really good, that the basket went in and everyone

was cheering, and that's a good feeling."

Similarly when Andrew was successful in setting up a play that resulted in points in basketball, he wrote in his story "the play worked out beautifully, and I knew as well as my teammate that didn't get the ball that it was the right pass." When we discussed it later during the interview he said "everyone felt good, the team's happy… you put points on the board, your team is happy… whether it's a fluke shot or a bad shot, if you score the team is generally happy."

Unfortunately, with good choices also came bad or wrong choices. Often this equated to a choice that resulted in failure, such as missing a basket or losing the game. The emotional outcome of a bad choice was often frustration, failure, and disappointment, or as Andrew explained:

> A shitty feeling is probably the best way to describe it. It's not a good one. You kind of feel like, not only did you let your team down, but you made a mistake, and I mean no one wants to make a mistake in the game.

Ryan relayed a story of learning to shoot with one hand. He experienced repeated failure and started to doubt his own choice to persist with that movement form for shooting. Looking back on that experience he thought "this is crap, why am I doing this?... Always over the net or missed it completely… it was frustrating…completely screwing up."

Emily described another consequence of a bad choice, one that was experienced as a personal failure. She felt that choosing to give in to her pain and fatigue during race training would have been a choice that led to feelings of

regret. She stated: “If I had stopped and gone home, I would have regretted it… I’d be looking back on that and thinking why didn’t I finish that set?”

4.3.2 Reaction of others

When analyzing the outcome of a choice, the participants talked about taking into account the reactions of others, including their coaches, teammates, and even the spectators. Reactions of others were seen as both positive and negative, and again were often dependent upon whether the choice resulted in a positive outcome or a negative outcome for the team.

The reactions of others were sometimes viewed as negative, particularly if a choice was “wrong” or resulted in a negative outcome. When Ryan thought about the possibility of making a mistake he feared the rejection of his teammates because he might let them down. He recalled, “…fear of my teammates… like fear of them saying ‘oh why did you do that?’ sort of thing, or something that is discouragement… I don’t like to disappoint my team.”

Andrew also commented on the possible negative reaction of teammates when his choice of a skill during a practice did not have a strong outcome, resulting in tension between himself and his teammates:

> If you tried new things and um, and let’s say practices didn’t go well and someone like got in your face and was like ‘What were you doing? That was a horrible shot!’ You’d be like, you’d be kind of choked, and that would probably piss you off a little bit.

The participants were often pleased with the reactions of others when their

choice was good and a favorable outcome resulted. On the other hand, they were also worried about making a bad choice and the potential negative reactions of teammates. While the reactions of others varied, the participants used this information when evaluating the alternatives and also when considering what was to be learned from an experience with making choices.

4.3.3 Learning from choices made

The participants revealed that they regarded making choices differently in a learning and practice environment compared to a game or competitive situation. When learning a new skill or a new way of doing a skill in practice, the participants' experiences included stories of willingness to persist at their learning in the face of failure.

Emily felt that when she was first learning to do her stroke in wheelchair racing the choice of movement form was awkward and uncomfortable, yet something that just needed to be practiced in order to be more successful. She knew that in the beginning it was going to be challenging and awkward, but still persisted until her stroke felt natural and efficient. She recalled:

> When you first sit in a racing chair, with the size of the push rim and the way it's set up and the way that you're all kind of scrunched in there, it can feel really awkward to try and get the timing right to actually hit the push rim… just learning how to do that and getting comfortable with it, then you can go faster.

In yet another example, Dawne described her experience learning to do a

particular move in integrated dance. Despite injury the dancers continued to practice the skill until it could be performed with grace and fluidity. Dawne remembered: “there was lots of injuries involved, mild ones, but lots of injuries involved!... hair being pulled, people being hit, kicked, that kind of thing.” It was in each of these cases that despite the technique being awkward or not being immediately successful, the choice to do a skill or task a particular way was not necessarily seen as wrong. Rather the participants knew that they simply needed practice to learn and gain comfort with the technique that worked best for them.

In a competitive or game situation the choice to persist in the face of failure was clearly not as acceptable as in the practice or learning environment. In these situations the participants chose to perform particular skills or movement forms with which they were most comfortable and confident. Andrew felt that if you could not consistently perform a specific task successfully, or at least successfully 50% of the time, then it was better to choose not to attempt that task in a competitive situation.

Andrew explained, “if you practiced it [a reverse shot]… you can make those shots all the time, so take them. That’s your choice to make.” However he went on to say that making a shot this is not well practiced “ is the wrong decision to make because it’s not a shot you make consistently… if…you’re a 50% shooter from any place, then you have the right to take that shot.”

Finally, the participants spoke at length about the potential to learn from their experiences with making choices in how to complete specific tasks. They were able to learn what did and did not work when performing tasks and they

gained more confidence in their ability to make choices. When Ryan looked back on his choice to shoot the layup and win the game for his team he told me that he learned:

> I can make the right choices sometimes… I shouldn't always second guess myself in choices… it's just confidence. You get more confident with something by doing it over and over and then you're not afraid anymore… Sometimes you make the right decision, sometimes you don't. As long as you find out what works. I mean, sometimes I do a layup and think 'why did I do that?? That way'… and sometimes you think 'well that's good that I did it that way and not another way'

Andrew also discussed the importance of learning from mistakes – or bad choices - saying that it was important for him to "accept that something's crappy, you made a mistake, and then learn from it on the go and continue playing the game." Furthermore he felt that it was essential to:

> Cherish mistakes because you always learn from them. So the more you make mistakes, the more you learn, and the more you try new things, and if it doesn't work then it doesn't work, that's that, but if it does work then it's something new you can use… In the case it doesn't work, you won't do it next time, or you'll do it another way.

Regardless of whether a choice was good or bad, the participants felt that each choice had the potential to be a learning experience, an opportunity to

discover new alternatives, determine which skills needed more practice, and discarded alternatives that weren't effective for them.

5. Discussion

This study aimed to describe the experiences of choice in physical activity contexts for active young adults with mobility impairments. Although the intent of the study was not to put 'theory' to the test of 'practice,' the theory of ecological task analysis (Davis & Burton, 1991) was central to the formulation of the research question. The assumption that learners can make choices with ease and accuracy within this model was questioned. The taken-for-granted relationship of choice in motor skill performance for persons with mobility impairments was subsequently explored.

The participants described their experiences of choice as the interaction between their interpretation of the physical and social environment against their own attributes and those of others. The choices the participants made amongst alternatives were those that best fit the task goal and felt right. The outcomes of their choices were expressed through their evaluation of success in meeting the task goals, the reactions of others, and what they learned from their choices. Although the themes were presented linearly – representing pre-choice exploration, choice making, and post-choice reflections - it is not the intent to present the making of choices as a linear activity. The speed with which alternatives were identified, choices made, and evaluations completed may suggest that the process is circular rather than linear, as information is used to intervene on movement generation in the moment as well as during subsequent opportunities to choose. The following discussion reflects the exploratory nature

of the research question as I looked through a small window into the world of the phenomenon of choice in movement development.

5.1 Importance of the Environment

"Although the importance of the social and emotional as well as physical environment is noted in ecological task analysis, details of its structure and effect on motor development have yet to be explicated within this framework" (Burton & Davis, 1996, p. 291). The ecological task analysis model originally presented in 1991 did not explicitly discuss the interplay of social variables with performer variables. In the Burton & Davis (1996) and Balan and Davis (1993) papers, the complexity of "real world" of movement outcomes were highlighted, explicating that task goals can have conscious and unconscious intentions that are influenced by likes and dislikes and social as well as physical environments. The findings of this study suggest that the social implications of choice of movement form can influence choices made and the consequences of those choices.

The participants indicated that particular movement form alternatives may result in negative social consequences if they meant repeated failures and negative feedback from peers. Although the task goal may be single and well defined (e.g., sink the basket), the social structure of the environment can influence the process of making a choice by introducing social variables to the link between the task goal and the functional movement form chosen given the environmental context. Choice was defined in the research literature as a relatively simple selection among alternatives based upon personal preference (Davis & Strand, 2007). The participants' experiences suggested that making choices is multi-layered and

complex. Thoughts of rejection, conflict with teammates, and fear of letting the team down could be an outcome of movement choices that did not meet the task goals.

5.2 Assumptions of Choice

The research literature has typically focused on individuals with developmental or extensive physical disabilities (e.g., Frey et al., 2005; Monty et al., 1979; Shevin & Klein, 1984; Treece et al., 1999) and suggested that individuals with disabilities often have limited opportunities to make choices (Davis & Strand, 2007; Wehmeyer, 2003; Prosser, 1992). Furthermore, when people with disabilities were afforded opportunities to choose, they were often limited to simple choices in closely controlled environments (Datillo & Barnett, 1985). Contrary to this, the participants in this study shared that they had multiple opportunities to make choices in the physical activity contexts in which they participated. They described in detail the nature of complex environmental considerations, the wide variety of alternatives available to them, and the potential outcomes that were possible. Furthermore, the participants demonstrated that they had developed the skills and experience necessary to make effective choices and to learn from the outcomes of those choices in the physical activity context.

The research literature identified five assumptions that surrounded legitimate and meaningful choice making (a) people are afforded a range of alternatives from which to choose (Fullwood, 1990), (b) they can identify the available alternatives, (c) they have preferences, (d) they know how to express their preferences (Shevin & Klein, 1984), and (e) they have the power,

opportunity, and disposition to act upon their choices (Davis & Strand, 2007).

The participants of this study shared experiences of legitimate and meaningful opportunities for choice, and described numerous alternatives from which to choose and select. For example, the participants described alternatives in gloves, wheelchair configurations, and movement forms (e.g., stroke techniques in racing, passing techniques in rugby). The participants were free to identify, choose among, and act upon preferences that gave them the best result. The participants described movement form alternatives that were within their abilities, or could be learned and practiced. When a movement form was not within their capabilities the participants discussed opportunities to generate alternatives, such as taking on a different role or working with others to achieve the desired task goal (e.g., integrated dance performance, completing a layup in basketball).

The research literature also outlined several benefits to being given the opportunity to make choices, including greater intrinsic motivation, and enhanced feelings of personal control, autonomy, and empowerment (Iyengar & Lepper, 2002; Davis & Strand, 2007). Furthermore, individuals who were given opportunities to choose participated more freely, rated activities as more pleasant, performed better, and had reduced problem behaviour (Davis & Strand; Harchik et al., 1993; Monty et al., 1979).

Although the participants did not specifically indicate that the freedom to choose made participation more pleasant, or that choice specifically increased their motivation or empowerment, they all suggested that they freely chose to participate and invest their time and energy in physical activity. Although the

outcome of their choices may have been *crappy* at times, they learned from the choices with continued practice. In addition, the opportunity to choose skills and movement forms to solve movement problems allowed the participants to become more confident in the choices they made – even if some of those choices were not always successful.

5.3 Affordances to Choice

From an adapted physical activity perspective we can look to the conceptual framework to transfer the findings of the study to similar contexts and participants. Ecological task analysis (Davis & Burton, 1991) proposed that the affordances of the environment and the performer specify which movement forms can be utilized to achieve a particular task goal. First and foremost this model was based, in part, on the theory of affordances (Burton & Davis, 1996; Gibson, 1977) whereby a particular environment inherently contains opportunities or potential for action. It is those affordances in an environment that mediated the number and variety of alternatives from which an individual could choose. While this intuitively makes sense, Gibson (1977) went on to say that not only do affordances exist, but the individual must be capable of perceiving and acting on those affordances. In light of this, Goodwin and Watkinson (2003) wondered whether individuals with disabilities actually perceived, attended to, or actively sought out affordances in the physical activity environment. The results of this study did indeed indicate that the participants were capable of perceiving affordances of their physical activity environments, and did so with great consideration to details. They took into account the physical environment, social

environment, equipment, and the abilities of not only themselves but also those around them when considering alternatives for action. Not only did the participants recognize that these affordances existed, they engaged in very careful and thoughtful consideration of the interactions of the affordances when making choices in the physical activity environment.

It is worthy to note that what was considered an affordance by one participant was not necessarily an affordance for another. For example, a high back on Dawne's wheelchair afforded her movement alternatives for dance that would not have been available to her with a lower back. Conversely, Ariel chose a lower back on her wheelchair that afforded her a movement form that best suited her passing in rugby. The movement form used for racing by Emily varied depending upon the weather conditions. Rain required a more precise and accurate movement form to prevent slipping off the wheels while stroking, in windy conditions she monitored her pacing so as not to fatigue prematurely, and when she was drafting, she needed to modify her stroke depending upon the lead racer she has following. The surfaces that wheelchairs must traverse could also afford movement alternatives that favoured one performer over another given their qualities.

The process of choice was dynamic in nature and involved the participants continually monitor the environment (physical and social), their use of equipment, and their abilities and those of their teammates and opponents in order to identify functional movement alternatives that best matched the task goal.

5.4 Constraints to Choice

While the participants experienced, recognized, and acted on affordances to choice, they also experience constraints in movement form alternatives. This was particularly apparent in the influence of their coaches as the participants` experiences of choice were intermingled with the "movement prescriptions" of their coaches. The coaches provided information on what could be considered traditional, able-bodied movement solutions to some task goals (e.g., basketball layup). Although the *normal model* may provide some useful information, the specific pattern may not be the most efficient one for a particular person, on a particular task, in a particular context (Burton & Davis, 1996).

Ecological task analysis is not intended to be prescriptive as there is no assumption that there is one single movement solution for a particular task (Burton & Davis, 1996). The result of coach prescription that is based on traditional movement forms, such as modifying able bodied lay-up technique for those who shoot from wheelchairs, may be that task goal becomes confused with the movement solution (e.g., a basketball layup is completed using a traditional one handed outside release). Standard able-bodied techniques may be given priority, dismissing the premise that there may be many possible solutions to a particular task. Using standard performance expectations, opportunities to observe or explore the interaction of environmental constraints, performer variables, and the task goals may never occur (Burton & Davis, 1996). One of the guiding concepts of ecological task analysis is that tasks should be classified by function (e.g., object projection) and not mechanism (e.g., one-handed outside

lay-up shot) (Davis & Burton, 1991) so that links between the constraints of the task, the performer, and the environment can be made.

The participants who played basketball were influenced by their coaches' expectations. They experienced long term success in achieving the coaches desired movement forms, but it was not without negative social consequences due to performance failures.

In traditional coaching and instructional settings, the focus may be on the movement process or form (e.g., the correct layup movement pattern) with less emphasis placed on the movement outcome (e.g., sink the basket); the logic being that the correct movement pattern will lead to a positive performance outcome. In the empowerment coaching model discussed by Kidman & Davis (2007), the role of the coach was transformed from that of relaying standard skill performance expectations and their criteria (e.g., "do as I say"), to asking the participants to consider their choices in goal setting, manipulating variables in the environment, and thinking reflectively about the choices made and their outcomes. Furthermore, when *correct* movement patterns are not possible due to physical impairments, the task goal over the specific movement form should take priority. Ariel highlighted this top down rather than bottom up approach vividly. In the top down approach one asks whether it is within the person's ability to complete the task goal. If the answer is yes, then movement form alternatives that provide the most accurate and efficient solution can be sought (Burton & Davis, 1996).

Ariel's experiences of passing a rugby ball was a good example of how she took traditional coach knowledge into consideration and developed a

functional movement form specific to her abilities, and achieved the task goal of projecting an object using modified equipment. She lowered the back of her wheelchair so that she could lean back in her chair, stabilized her body by bracing her legs against straps, and thus coordinated her entire body in order to pass the rugby ball on her strong side. It is clear that the choices of the participants were based on individual abilities, their preferred sports, and the specific task goals.

Choice is fundamental to ecological task analysis (Davis & Burton, 1991) which is purported to be an effective tool for teaching learners different ways to approach task goals, and also an effective tool for achieving success in physical activity tasks. As the results indicate, the participants in this study approached task goals from a functional perspective. This included such task goals as locomoting quickly in a wheelchair, projecting an object in basketball, sending a pass in rugby, and performing a spin with a partner in wheelchair dance.

In conclusion, the participants considered the affordances and constraints of the environment and their own personal abilities. Furthermore, they were able to identify and evaluate a wide variety of movement forms that could be utilized to achieve the task. The participants explored the different alternatives through experimentation and practice, and ultimately chose those that would have the greatest chance of success in particular environments and learned from outcome of their choices. Although the participants did not necessarily realize that they were engaging in a process akin to the ecological task analysis framework; and did not use terms such as affordances and constraints or movement forms and task goals; their ability to engage in the choice making process shows that this may

very well be an effective tool in physical activity contexts. In this context, people of various abilities can explore what works best for them to achieve the task goals required of them in a variety of contexts, including physical education, sports, or even creative movement.

6. Recommendations

6.1 Limitations of the Study

Several limitations have arisen over the course of this study that I would like to acknowledge. These limitations warrant mentioning so other researchers may learn from this study and take them into consideration when conducting further research in this area.

1. First of all the inclusion criteria allowed for participants within a fairly narrow age range, essentially including only young adults who had already finished high school. As a result, the participants only took part in physical activity at their own choosing and were no longer participating in school based physical education. This potentially limited the study in part because they only discussed and reflected upon experiences in their current physical activity participation. Furthermore, physical education provides a context in which they do not always participate by choice, and often have little control over the course content, thus experiences of choice may be quite different.
2. Participant recruitment was challenging as no participants came forward without being approached either by me personally, as I did with Ryan in preparation for the study and with Dawne in our chance meeting. The other participants were recruited through contact with other participants. While all of the participants shared interesting and high quality information, and voluntarily chose to participate; it was only after personal contact was made either by me or other participants that prompted them to

participate. Alternative methods of participant recruitment may have been more effective in seeking eligible participants.

3. All of the participants were known to me prior to the study, some simply as acquaintances, and others more personally through shared physical activity involvement. While this lends strength to the rapport developed between myself and the participants, it also may have led to less detailed exploration of their experiences simply through familiarity with the participant and their physical activity contexts. There is also the potential that despite my assurances of confidentiality, their comments may have been reserved given that I was familiar with others in their peer group and the disability community. It is important in future studies therefore to weigh the costs and benefits of familiarity or unfamiliarity with the participants and the physical activity contexts in which they participate.
4. The sampling strategy employed, resulted in participants of various ages, gender, and participation levels. This participation included individual activities such as wheelchair racing, riding a bike, or manoeuvring a chair in and out of a car; team sports such as rugby and basketball; and creative based group activity such as integrated dance. This resulted in discussion and stories of a very diverse nature. While common themes across the participants were clearly apparent, I would hesitate to say that the full experience of choice making was captured. The number of participants for this study was relatively small. I have attempted to ensure that each participant was represented equally in the selected quotations; however

some may have expressed their thoughts with more clarity than others and thus may have greater representation within the results.

5. The artefact collection was not as powerful as I had originally intended. Their stories were relatively short; limited to less than two pages each; and did not include the detail I had anticipated. Perhaps broadening the choice of artefact format to include such things as photos, poetry, and music; or perhaps engaging in a story writing exercise together may have helped. I was hesitant to provide significant guidance to the story writing as I wanted it to be the participants' stories which were captured; stories that were relevant to their experiences and not simply what I believed to be relevant. More guidance may have resulted in greater detail in the portrayal of the experience of choice.

6.2 Future Directions in Research

While these participants represent men and women with mobility impairments, as well as a variety of sport contexts, their experiences represent their specific biographies. Their stories and experiences provided valuable information about the phenomenon of making choices and the findings suggest that future research is warranted. The suggestions for future research are as follows:

1. Building on this exploratory research, it would now be appropriate to explore the experiences of young adults with mobility impairments with regard to participation in their distinct physical activity contexts. By this, I mean focusing specifically on those who participate in individual sports,

team sports, or dance for example. Even more specifically, one might consider exploring experiences within a very specific sports context; for example rugby, basketball, or wheelchair racing. Each context inherently contains very specific task goals, along with a multitude of movement forms that can be used to accomplish each task successfully. The experience of making choice may have context specific factors at play.

2. Researchers may wish to consider looking specifically at the experience of choice making when performing discrete versus continuous tasks. There may be a different variety of factors that could influence the choice of how a person will attempt to achieve a continuous task as compared to a discrete task. Furthermore, individuals may evaluate these tasks very differently. This was not explored explicitly in this particular study.
3. Ecological task analysis (Davis & Burton, 1991) was developed with physical education contexts in mind, although it is applicable to teaching and assessment in a variety of other activity contexts. It would be appropriate to explore the experiences of choice making in a younger population and include those who are participating in school-based physical education programs. Furthermore, physical education is not always a context which is chosen freely by the participants, rather is a requirement of our educational systems. Participants in physical education also typically do not have control over the course content. These factors may provide very different experiences of choice in a physical education context.

4. In addition to exploring the experiences of individuals who have mobility impairments, it may be interesting to explore the experiences of choice making with individuals who have other types of impairment. This could include those with sensory impairments, developmental or intellectual impairments, multiple disabilities, or even less visible physical disabilities. Their experiences may be unique given their unique limitations and the assumptions that others around them make based upon their limitations.
5. An ethnographic research approach may be an effective method for use in the disability community as it allows for more prolonged engagement in the field, thereby building greater rapport. It may be enlightening in future studies to actually engage in the physical activity environment with the participants, observing their participation and discussing their thoughts and experiences both in the actual physical activity setting as well as upon reflection afterwards. This could be accomplished by a researcher participating in the field with the participants, and may be particularly appropriate from an insider perspective, that is, conducted by a researcher who has a mobility impairment.
6. In addition to an ethnographic approach, it may be appropriate to broaden the participants to include the experiences and thoughts of other individuals surrounding those with disabilities. This could add more depth and richness to the findings. This could include parents, teachers, coaches, and peers both with and without impairments.
7. While longitudinal studies present many challenges, it would be

illuminating to explore the experiences of choice in physical activity settings over a length of time. This may be particularly interesting to explore the experiences as one transitions from elementary to high school, where participation in physical education becomes a choice rather than mandatory; and then into adulthood where one can choose to participate in lifelong physical activity.

6.3 Final Thoughts

As I look back on this research process and my experiences throughout, I am struck by how much I have learned and discovered. When I started this journey I didn't know exactly where it was going to lead me. Now that this part of my journey is nearly complete, I would like to take a few moments for reflection.

When I first started working with people with disabilities I was excited at the challenge. At one point a friend approached me and confessed that she was apprehensive around people with disabilities. Should she hold a door open? Say hello? Look or not look? Speak or not speak? Although I had spent two summers working at a camp with people who have disabilities, I didn't really have the answers to those questions. I had gained comfort in my ability to support others, and I wanted to help her find the answers she was looking for. Together we volunteered with a physical activity program for adults with disabilities. It was around the same time that I first stepped into Dr. Goodwin's introductory adapted physical activity course. The people I have come to know and respect in the years that followed were integral to the path I have now been following. The people I met in the disability community were welcoming, encouraging, and incredibly

supportive of my learning. What's more, that same friend who had first confessed her fears to me joined me in many of these ventures along the way, and continued to participate in them even after I had moved away to pursue my studies further.

When I moved to Edmonton to pursue this Masters project at Dr. Goodwin's encouragement, I was confronted with many new experiences that challenged me to question and consider much more than ever before. I learned that although I can ask questions, listen, and discuss experiences at length, I can never truly know the experience of disability. Furthermore I cannot assume to know what is best for a particular individual, although I can get some measure of understanding from talking and engaging with people who have experiences that are different from my own. This knowledge gave me tremendous insight as I began my research. I took it upon myself to question everything, to make every attempt to avoid assumptions, and to consider very carefully before coming to conclusions, and even then going back to my participants to question whether these conclusions were accurate. This has helped me grow as a professional in the field of adapted physical activity, and as a qualitative researcher, and has only expanded my desire to ask questions and gain a greater understanding of others and their experiences from their own unique perspectives.

As this study reaches its conclusion I know I gave a tremendous amount of time and energy into exploring this topic and approaching my participants with an open mind. While there are always limitations with any project, and always learning that can only be done in hindsight, I believe this thesis does indeed reflect the experiences of my participants as they shared them with me. Their

stories add to our body of literature. Even more than that, I can see that there is so much more out there still to learn, and many avenues that this project can lead to in the future. I hope that this knowledge inspires others, and I know it has inspired me to continue learning, sharing, and experiencing with others, particularly those in the disability community.

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Appendices

Appendix A: Ethical Approval

UNIVERSITY OF ALBERTA
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Faculty of Agricultural, Life & Environmental Sciences and Physical Education and Recreation Research Ethics Board

Certificate of Ethics Approval

Applicant(s):	Lori Morphy
Co-Investigator(s):	Donna Goodwin
Faculty:	Physical Education and Recreation
Project Title:	***The experience of choice for active young adults with mobility impairments***
Grant/Contract Agency:	N/A
Research Ethics Application #:	08-129
Research Ethics Approval Expiry Date:	December 11, 2009

Certification of Faculty of Agricultural, Life & Environmental Sciences and Physical Education and Recreation Research Ethics Approval

I have received your application for research ethics review and conclude that your proposed research meets the University of Alberta standards for research involving human participants (GFC Policy Section 66). On behalf of the Faculty of Agricultural, Life & Environmental Sciences and Physical Education and Recreation's Research Ethics Board (ALES/PER REB), I am providing **research ethics approval** for your proposed project.

This research ethics approval is valid for one year. To request a renewal after the approval expiry date, contact me and explain the circumstances, making reference to the research ethics review number assigned to this project (see above). Also, if there are significant changes to the project that need to be reviewed, or if any adverse effects to human participants are encountered in your research, please contact me immediately.

Chair, Research Ethics Board
Faculty of Physical Education and Recreation

Print Name: Wendy Rodgers **Signature:**

Appendix B: Participant Information Letter

Title of Study: The Experience of Choice for Active Young Adults with Mobility Impairments

Contact Information:

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donna.goodwin@ualberta.ca

Dear Participant:

This letter is to invite you to take part in a research study, titled *"The Experience of Choice for Active Young Adults with Mobility Impairments"*. My name is Lori Morphy and I am a graduate student in the Faculty of Physical Education and Recreation at the University of Alberta. I would be grateful if you could take a few minutes to read this letter and to consider taking part. Your participation is voluntary and is not part of any physical activity program that you may be involved in. The information from this study will be used for my graduate thesis and may be published in a journal or presented at a conference.

Background and Purpose
It has been shown that there may be positive benefits to having opportunities to make choices. For example, when given the opportunity to make choices people take part more freely, rate activity as more pleasant, and perform better. Having the opportunity to make choices in physical activity can affect drive, promote positive feelings, provide self-direction and self-confidence, and support creative problem solving. Unfortunately, little is known about how people with mobility impairments actually *experience* choice in physical activity contexts.

The purpose of this study is to describe the experience of choosing among alternatives in physical activity tasks for active young adults with mobility impairments.

What will the study involve?
You will be asked to participate in two individual face to face talks. Each talk will last no longer than 1½ hours. The total time required of you for the study will be no more 4 hours. Your talks will be taped so that none of your important information is forgotten. Your taped words will be written out word for word and you will be able to check that the written words are right and correctly reflect our talk. For your second talk I will also ask you to write a story that is no longer than three double spaced pages about an experience that you have had with choice making in physical activity. You can write this story at home and bring it with you, or you can write the story when we meet for the second talk. We will then discuss your story and I will make a copy of it so that you can keep the original for yourself. I will not share any of your information with others, including your family, friends, volunteers, or staff at physical activity programs in which you may be involved.

Potential Benefits
You will have the opportunity to share your thoughts and experiences about choice in physical activity and give a voice to young adults with disabilities. By thinking and talking

about your experiences you may also better understand your own thoughts and experiences. The information gained from this study will help us to learn about your experience from an insider point of view, which will help us to understand choice making in physical activity.

Potential Risks
There are no potential risks involved. Participation in this study is entirely voluntary. If you feel anxious or uncomfortable about answering specific questions, you can simply say 'pass' and I will move to the next question. If I notice that you are uncomfortable with a certain topic or question, I will ask a different question or change the topic.

Confidentiality
All information will be kept private. The tapes and stories from the talks will be given a code number and will be kept in a locked filing cabinet to which only Dr. Goodwin and I will have access. Fake names will be switched for all names that appear in the talk and material for publication. You will not be identified in any presentation or publication of this study. The tapes and stories will be kept for a period of five years after publication, after which they will be destroyed.

The information gathered may be presented as themes that emerge from the talks and stories that you share. Quotations will be used to explain the themes; however your privacy will be a priority at all times. Every effort will be made to protect your identity. All names and other markers will be removed from the quotations.

Right to Withdraw
You will be reminded at the beginning of the talks that you have the right to refuse to answer any of the questions. You may withdraw from the study for any reason, at any time, without penalty of any sort; this includes current or future participation in physical activity programs. To withdraw from the study, you may indicate either verbally or in writing to either me or Dr. Goodwin that you no longer wish to participate in the study. No further explanation is needed. If you withdraw from the study any information that you have added will be destroyed.

Questions
If you have any questions about the study, please feel free to ask at any point. You are also free to contact me or Dr. Goodwin at the numbers provided above if you have questions at a later time. If you have concerns about this study, you may contact Dr. Wendy Rodgers who is the Chair of the PER-ALES Research Ethics Board, at (780) 492-8126. Dr. Rodgers has no direct involvement with this study.

Thank you for your consideration of this research project. Please feel free to contact me if you have any questions.

Sincerely,

Lori Morphy
Graduate Student Researcher
Faculty of Physical Education and Recreation, University of Alberta

Appendix C: Informed Consent Form

UNIVERSITY OF ALBERTA

Faculty of Physical Education and Recreation
E488 Van Vliet Centre
Edmonton, Alberta, Canada T6G 2H9

INFORMED CONSENT FORM

Part 1 (to be completed by the Principal Investigator)

Title of Project: The Experience of Choice for Active Young Adults with Mobility Impairments

Principal Investigator(s): Lori Morphy, Graduate Student, University of Alberta, Ph. (780) 492-2679

Co-Investigator(s): Dr. Donna Goodwin, University of Alberta, Ph. (780) 492-4397
Dr. Pirkko Markula, University of Alberta, Ph. (780) 492-7192
Dr. David Chorney, University of Alberta, Ph. (780) 492-0916

Part 2 (to be completed by the research participant)

Do you understand that you have been asked to be in a research study?	Yes	No
Have you read and received a copy of the attached Information Sheet	Yes	No
Do you understand the benefits and risks involved in taking part in this research study?	Yes	No
Have you had an opportunity to ask questions and discuss this study?	Yes	No
Do you understand that you are free to refuse to participate, or to withdraw from the study at any time, without consequence, and that your information will be withdrawn at your request?	Yes	No
Has the issue of confidentiality been explained to you? Do you understand who will have access to your information?	Yes	No
Do you give permission for the researcher to keep a photocopy of your story, which may be used for educational and publication purposes?	Yes	No

I agree to take part in this study:

_____ _____
Signature of Research Participant Date

_____
Printed Name

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ _____
Signature of Investigator or Designee Date

The information sheet must be attached to this consent form and a copy of both forms given to the participant.

Appendix D: Demographic Form

Date of interview: _____

Participant Information

Name:_____

Address:_____Postal Code:_____

Phone:_____ Email:_____

Date of Birth:_____ Age: _____ Gender: M ____ F ____

Nature of Impairment? _____

Is your impairment: Acquired _____ Congenital _____

Time Since Injury (If applicable): _____

Type of Mobility Aids Used: _____

_____

What is Your Ethnicity? _____

Are you currently attending school? YES _____ NO _____

Full Time _____

Part Time _____

What is the highest grade level you have completed?

Grade: 9_____10 ____11 __ 12 ____University ___ Grad Studies _____

College _____

Are you currently working? YES_____ NO _____

Full Time _____

Part Time _____

Hours per week _____

If YES, what is your occupation? _____

Where do you live? (Check one)

House _____ Apartment _____ Condo_ Other: _____

With whom do you live? (Check all that apply)

Parents _____ Siblings _____Others _____

Do you typically travel by? (Check all that apply)

Bus/DATS _____Own Vehicle__ Family_ Other: _____

Physical Activity Interests

In what physical activities do you currently participate?_____

_____

_____

Where do you currently participate in physical activity? _____

_____

How often do you currently participate in physical activity?

Daily ____ Weekly ____ Monthly ____ Seasonally _____

How long on average is each activity session? _____

Do you participate in any organized physical activity programs for people with disabilities?

YES ____ NO ____

If YES, what are they and who organizes them?_____

_____

In what other types of physical activity are you interested? _____

_____

_____

In what physical activities have you been involved in the past in which you no longer participate? _____

_____

_____

Do you or did you previously participate in Physical Education when in school?

Currently Participating in PE: YES _____ NO _____

Previously participated: YES ____ NO ____

If YES, until what grade did you participate or are you participating now? (Check one)

Elementary _____Gr. 9 _____ Gr. 10 _____Gr. 11 _____ Gr. 12 _____

Appendix E: Interview One Guide

Purpose: The purpose of this study is to describe the experience of choice in physical activity contexts for adults with mobility impairments.

1. Tell me about the physical activity in which you currently participate.
   Probes
   a. What sport skills do you need to be able to do in order to participate in that activity?
   b. Pick one skill in that activity that you would like to discuss.

2. Re-create for me how you do that particular task, moment by moment.
   Probes:
   a. What is most important for you about completing the task?
   b. Describe for me why that is the case.

3. Tell me what you think about when deciding to complete the task this way.
   Probes
   a. What choices do you have in how you complete the task?
   b. What do others ask you to do? How do their requests assist you/detract from you completing the task?
   c. Describe for me what is going through your mind as you are doing the task.

4. Why does doing the task this particular way work for you?
   Probes
   a. How do you know that this way is the best way for you?
   b. What do you think about?
   c. What makes one way of doing the task over another helpful to you?
   d. How did you learn to do the task? What was it like when you were first learning how to do the task?

5. Thinking about the particular task, are there other ways to complete the task?
   Probes
   a. What if you think about…?
      i. The environment and space around you
      ii. The equipment
      iii. Other people
   b. What could you do to make the task easier? More challenging?
   c. How does the environment (physical and social environment) influence how you complete the task?

6. Now that you've identified different ways of doing the task, do you think that doing the task differently would be an alternative for you? Why or why not?
   Probes:
   a. What if you couldn't do the task the same way that you do it now? Tell me what that experience might be like.
   b. Tell me about your experience with choosing the way that you complete tasks in your activity.
      i. Who is responsible for choosing how you do the task?
      ii. What do you *think* about your experience with making choices in how you do a task?
      iii. How do you *feel* about your experience with making choices in how you do a task?
   c. What kinds of things would enable you to make choices in how you do tasks? What kinds of things would discourage you from making choices?

For our next interview, I would like you to think about a story about a particular time when choice was memorable for you in physical activity. The statement I want you to address is ***"tell me about a memorable moment when you were making a choice in a specific physical activity task"*** *I would like you to write that story down, in no more than three pages double spaced. You can either write the story at home and bring it with you next time, or we can take time at the beginning of the interview to write the story. After that we are going to take some time to talk about your story during the second interview.*

Appendix F: Interview Two Guide

Purpose: The purpose of this study is to describe the experience of choice in physical activity contexts for adults with mobility impairments.

Interview Two may begin with a writing exercise if the participant has chosen to write the story during the interview time. Approximately 30 minutes will be allotted to writing the story. If the participant is hesitant to write the story, I may take this time to write my own story to share if this will help to put the participant at ease.

Discussing the participants' story or artefact
This interview will be based on what the participant writes in his or her story. I will be asking for more clarification of that particular experience, as well as lots of feeling and thinking questions.

Examples of questions that may be relevant:

- What were you thinking about when this was happening?
- What different movement alternatives/skills/or environmental conditions did you have to choose among? (As this is the second interview, the participants will be familiar with these terms. I will check with each participant that they understand what I am attempting to learn through the stories shared with me.)
- What kinds of things were you considering when you made this choice?
- Is there anything that would have assisted you or discouraged you in making this choice?
- What did it mean to you to make this choice?
- Given hindsight, would you have made the same choice or a different one? Why? Tell me about that
- How did it feel before you made these choices? During the process? After?
- What sense do you make of this experience now that you've "re-lived" it? What things do you see in that experience that you might not have seen at the time?
- Tell me more about _____...
- How did the environment play in to your experience? Physical environment? Social environment?
- Do you feel that you were given the opportunity to make choices? Or were the alternatives already chosen for you? Tell me more about that… what did you think, how did it feel?
- How has your experience of these choices affected other experiences you may have had with choice making?
- What would have made that experience more successful? More Challenging?

Appendix G: Story Writing Letter

The Experience of Choice for Active Adults with Mobility Impairments
Story Writing Guidelines

Dear Participant,

For our next interview, we are going to be talking about a story from your own physical activity experience. Please think about a particular time when choice was memorable for you in physical activity. I would like you to write a story addressing the statement:

Tell me about a memorable moment when you were making a choice in a specific physical activity task.

Guidelines:

- The story should be approximately 3 pages, single sided, double spaced.
- You may write the story by hand, or type it.
- You may write the story at home and bring it with you to the second interview, or we can take some time at the beginning of the second interview you for you to write your story then.

If you have any questions, please do not hesitate to contact me. I can be reached by phone at (306) 934-6846 or by email at lori.morphy@ualberta.ca

Thank you again for your participation in this study.

Lori Morphy

Examples: Your story may be any story about making a choice in a physical activity task, but here are some ideas that might help you get started:

- A time when you chose a particular way of doing something and experienced success or didn't experience success
- A time when you chose a particular way of doing something and you learned something about yourself or others
- A time when you chose a particular way of doing something and were recognized for it
- A time when you thought it was very easy or very difficult to make a choice