To the Graduate Council:

I am submitting herewith a thesis written by Susan L. Montgomery entitled "An Exploration of Kayaking and Its Direct Relationship to Persons with a Physical Disability". I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Recreation, Tourism and Hospitality Management.

Mary Dale Blanton, Major Professor

We have read this thesis and
Recommend its acceptance:

Accepted for the Council:

Associate Vice Chancellor and
Dean of The Graduate School

AN EXPLORATION OF KAYAKING AND ITS DIRECT RELATIONSHIP TO PERSONS WITH A PHYSICAL DISABILITY

A Thesis
Presented for the
Master of Science
Degree
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Susan L. Montgomery
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"One cannot step twice into the same river."

--Herakleitos

I dedicate this thesis to the memory of my Grandmother, Meta Perkins Montgomery, for teaching me that I can do anything.

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ABSTRACT

The purpose of this study was to investigate the sport of kayaking and how it relates to persons with physical disabilities. To accomplish this, the following problems were addressed: a) to identify demographic traits of persons with a physical disability who have participated in the sport of kayaking, b) to identify current level of usage by persons with a physical disability, c) to identify reasons participants with a physical disability selected kayaking as a leisure pursuit, d) to identify barriers to participation in kayaking encountered by persons with a physical disability, and e) to identify effective facilitative methods and improvements to instruction delivery and equipment modification.

To collect this data, the researcher distributed 38 self-developed Kayaking Interests Surveys (Appendix A) to three organizations that teach kayaking for people with physical disabilities. The organizations then distributed the surveys to participants within the past five years. Forty percent of the Kayaking Interests Survey were returned to the researcher. The population for this study was composed of 15 kayakers over the age of 18 with one or more physically disabling conditions (Appendix E).

The data obtained in researching this thesis shows the following conclusions. Nine females and six males participated in the study. The largest age group was 36 to 45 years old. The majority of participants have

had their disabilities for less than 25 years. Fourteen of the fifteen respondents had attended college, held a college degree, or a graduate degree. The largest group of respondents reported an income of $10,000 or less. Three had an income level over $50,000. The majority of respondents reported driving their own vehicles. The respondents were from California, Nevada, Oregon, and Washington.

Most of the participants have been paddling for five years or less. Flatwater and sea kayaking were most popular. Fourteen of the fifteen respondents reported spending ten days or less kayaking per year. Enjoying water sports was indicated by 90% of the respondents as a reason for participation. When questioned about the importance of kayaking in their lives, the majority of respondents reported neutral to very important.

The main barriers to participation were: access to the lake, river, or ocean, financial reasons and transportation difficulties. The majority of respondents were satisfied with their kayaking instruction received. In flatwater and ocean (sea) kayaking, the majority of respondents indicated their skill levels were novice.

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CHAPTER 1

INTRODUCTION

"Two hundred and fifty years ago, and possibly for as many as four millennia before, the kayak was a tool for fishing, hunting, and transport" (Krauzer, 1995, p. 66). Over time kayaking has evolved into a recreational pastime. It is an extremely versatile sport in that everyone can enjoy it. Recently, there was a television advertisement for the Real Yellow Pages featuring a paddler with a lower limb impairment. The advertisement ended with the paddler paddling off into the sunset. Ciccotto (1980), Ciccotto and Neville (1980), Nichols (1992 and 1994), Nichols and Fines (1995) and Taylor and McGruder (1996) all support the philosophy that kayaking is a sport in which both able-bodied persons and persons with a physical disability can participate as equals. Anne Wortham Webre and Janet Zeller (1990), canoeing and kayaking instructors and authors of Canoeing and Kayaking for Persons with Physical Disabilities, sum it up best:

> The freedom paddling offers pushes aside the barriers presented by disabilities. A body which may be uncooperative on land becomes part of a sleek craft gliding through the water. Together paddlers, able-bodied and disabled, can share all aspects of the sport. Water is the ultimate equalizer. (p. i)

Persons with spinal cord injury, paraplegia, traumatic brain injury, multiple sclerosis, cerebral palsy, muscular dystrophy, strokes, amputations, and

hearing impairment are just a few examples of persons with a physical disability who can participate in kayaking. Ann Dwyer, owner of California Rivers, Inc., has even guided a blind man on a kayaking trip (St. Pierre, 1988). In addition, participation in kayaking can provide a fun opportunity for social integration of persons with a physical disability with non-disabled persons.

People with a physical disability face all types of barriers in their everyday life. Unfortunately, recreation is no different. Kayaking is an ideal recreational activity for persons with a physical disability because both the kayak and paddle can easily be custom tailored to accommodate the individual. It is extremely important that today's recreation service professionals be knowledgeable about modification of kayaking equipment and instructional strategies. Kayaking is also unique in that "if environmental barriers are encountered during an expedition, they are experienced equally by *everyone.*" (Nichols, 1994, p. 61). An example of this would be if a log had fallen in the river, blocking the usual route, everyone in the kayaking group would have to find an alternate route.

In the past, persons with a physical disability have actually been discouraged from participating in risk-associated activities such as kayaking because they were assumed to be too dangerous (Austin, 1987; Nichols & Fines, 1995). Some of these fears are not being to escape the kayak if it capsizes and lack of strength to maneuver the craft. Robb and Ewert (1987) cited Perske's view that people who work with persons with a physical

disability tend to overprotect them. This overprotection actually does more harm than good and prevents the person from attempting new life experiences. Fortunately, recreation providers have recognized these views and are now tailoring risk-oriented programs to include people with physical disabilities. Articles and books by Ciccotto (1980) and Ciccotto and Neville (1980), Evans (1983), and Lichen (1997) all encouraged persons with a physical disability to explore the sport of kayaking.

Kayaking offers an excellent opportunity for outdoor adventure benefits to be attained. Physical benefits may occur in the form of increased muscular strength, increased cardiovascular endurance and balance, to name a few. Kayaking in the outdoors provides endless opportunities for educational benefits, including nature studies and outdoor and conservation education (Ewert, 1989). Psychologically, participation in kayaking and other outdoor adventure activities can increase individuals self-concept and self-confidence (Ewert, 1989). Outdoor adventure pursuits have also shown sociological benefits for participants. These benefits include normalization and social integration of persons with a disability and persons without a disability.

Statement of Purpose

The purpose of this study was to explore the versatile sport of kayaking and its direct relationship to persons with physical disabilities. To conduct this study, the following problems were addressed:

1. To identify demographic traits of persons with a physical disability who have participated in the sport of kayaking.
2. To identify current level of use by persons with a physical disability.
3. To identify reasons participants with a physical disability selected kayaking as a leisure pursuit.
4. To identify barriers to participation in kayaking encountered by persons with a physical disability.
5. To identify effective facilitative methods and improvements to instruction delivery and equipment modification.

Definitions of Terms

The following terms were defined in order to better interpret the study:

Kayak: "a small boat, generally designed for one occupant, which is paddled from a sitting position with a double bladed paddle" (Bridge, 1978, p.9)

Physical Disability: any disability of the physical body that affects a persons "...co-ordination, mobility, balance, agility, strength, endurance..." (Bullock & Mahon, 1997, p. 190) including, but not limited to: spinal cord injury, stroke, amputation, and spina bifida

Barriers: "something that acts to hinder or restrict" (Berube, et. al., 1982, p. 159) a person from participating in a chosen activity

Modification: "a small alteration, adjustment, or limitation" (Berube, et. al., 1982, p. 807) of equipment (from its original state) to suit individual needs

Assumptions

The study was conducted with the following assumptions:

1. The participants responded honestly to survey questions.
2. The kayaking agencies cooperated fully in the identification of past participants.
3. The participants of the study would be representative of the population of persons with a physical disability seeking to learn kayaking.
4. The participants possessed the desire to learn to kayak

Limitations of the Study

The following was found to be limitations of the study:

The ability of the researcher to locate past participants of agencies that teach adaptive kayaking programs.

Delimitations of the Study

The following were found to be delimitations of the study:

1. The participants surveyed were from three kayaking agencies, The Center for Adaptive Kayaking, Ski-for-All and the U.S. Adaptive Recreation Center.
2. The participants surveyed included only adults 18 years of age and older.
3. The participants were restricted to only persons with one or more physically disabling conditions.
4. Participants received their instruction within the last five years.

Significance of the Study

According to the U.S. Census Bureau (1995), over 20 percent of the population is estimated to have some form of disability. Because this number is so high, it is important to include people with physical disabilities when programming for recreation. Sugarman (1996) stated that "people with disabilities are becoming increasingly involved in integrated recreation programs" (p. 44). Since kayaking is one such program that can and has been integrated, this study was needed to identify barriers to participation in kayaking by persons with a physical disability. To further encourage persons with a physical disability to participate in recreational kayaking, the researcher will seek to identify better teaching methods as reported by actual participants. Also, currently there are no known kayaks designed specifically for paddlers with physical disabilities. Therefore, equipment modification will also be

addressed. Also, reasons participants most often chose kayaking as a leisure pursuit will be determined.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of reviewing literature was to investigate the sport of kayaking for persons with physical disabilities. The researcher found the review of literature in this topic area was very limited. Articles discussing kayaking for persons with disabilities and articles covering leisure and recreation for persons with a physical disability were presented. This review was divided into the following three sections: (a) equipment modifications and skills, (b) barriers to leisure, and (c) outdoor adventure benefits.

Equipment, Modifications and Skills

Equipment

For anyone to begin kayaking, knowledge of basic equipment is necessary. The main piece of equipment is the kayak itself. Kayaks come in many different styles, each suited for a particular type of boating. There are both solo and tandem kayaks available in all styles (whitewater, touring, and sit on top). Tandem kayaks are a viable alternative for persons who have balance problems, hearing impairments and visual impairments (Webre and Zeller, 1990 and Evans, 1983) and those who fatigue easily. White water kayaks are generally between 9 and 13 feet and are designed for

maneuverability. Because of their relatively low volume and thus lack of storage space, they are more suited for half-day to one day trips than for touring and camping excursions. Touring kayaks are longer, between 15 and 20 feet and are designed for tracking, stability and speed (Webre and Zeller, 1990). Built into touring kayaks are watertight storage areas for gear (Krauzer, 1995), which makes them ideal for multi-day trips on flatwater and in the ocean. Yet another style of kayak available in both whitewater and touring models is the sit on top. Instead of sitting inside the kayak, the paddlers sit on top of the kayak and use thigh braces to hold themselves on the kayak. While sit on top kayaks are easy to get in and out of, they offer no protection against cold water and weather. They also lack back and side support, which might prove difficult for a paddler with a balance problem. Last there is the inflatable kayak, upon which a paddler also sits on top. They are similar to the sit on top kayaks in that they too are easy to get in and out of and offer no protection against cold water and weather. Most inflatables have moderate back support and side support. Ciccotto (1980), a cervical injured paddler, emphasizes comfort and stability as the two main factors in picking a boat (p.52). In addition, Krauzer (1995) suggests renting and borrowing boats to determine personal preferences before actually purchasing a boat (p. 21).

Traditionally, kayaks are "worn" by the paddler so that the kayak becomes an extension of the paddler's body. To attach themselves to the kayak paddlers must wear a spray skirt. This piece of equipment "consists of

two parts: the tunnel, which is what fits snugly around your waist; and the skirt itself, which snaps over the rim of the cockpit" (Krauzer, 1995, p. 29). In addition to attaching the paddler to the kayak, the spray skirt also serves to keep water from entering the craft.

Other equipment needed is a double bladed paddle with which to propel the kayak through the water. "Paddles are available in a variety of lengths, weights, materials, blade shapes and blade angles" (Webre and Zeller, 1990, p. 19). Ciccotto (1980), notes the importance of choosing and wearing an appropriate life jacket (p.52). When paddling whitewater it is advisable (and sometimes required by law) to wear a helmet to protect the head from rocks encountered in the riverbed. "Helmets should provide full coverage of the forehead, temples, and ears and be securely strapped in place." (Krauzer, 1995, p. 35) Last, and quite possibly one of the most important pieces of equipment, is the first aid kit. Krauzer (1995) humorously notes that "the first aid kit is the apotheosis of gear you will never need—except when you need it" (p. 109).

Equipment Modifications

There are as many adaptation opportunities as there are individual disabilities. Following the philosophy of less is more, modifications on any piece of equipment should be done only as needed. When choosing and outfitting a kayak, the disability of the paddler must be considered.

For arm and/or hand impairments if there is a problem gripping the paddle, Zeller and Webre (1990) offer several solutions. The first is building up the shaft of the paddle with duct tape and foam pipe insulation. Bicycle grips available in bicycle shops can also be used to build up the paddle shaft. Another suggestion is to put Velcro® on the paddle shaft and in the palm of a pair of paddling gloves. An adaptive hand cuff can be designed out of rectangle shaped waterproof nylon and attached to the paddle with screws or staples allowing the "paddler to slip her hand into it, up to the knuckles" (Webre and Zeller, 1990, p. 47). To make an adaptive hand grip, Webre and Zeller (1990) recommend cutting a piece of bicycle innertube (big enough to fit over the back of the hand while holding the paddle) and attaching it to the paddle shaft with disposable cable ties. For paddlers using an upper limb prosthesis, "TRS makes a terminal device (an attachment for a waterproof prosthesis) designed for holding onto a kayak or canoe paddle." (Webre and Zeller, 1990, p. 51) Lichen (1997) writes of "a paddle that functions like an oarlock [that] allows both blades to be operated with one arm" (p. 25). If a person with an upper limb amputation has a problem with the fit of the life jacket, Webre and Zeller (1990) recommend adding crotch straps to secure the life jacket. If a paddler has a tremor resulting in lack of controlling the paddle, "weighted wrist cuffs and/or heavier paddles may help" (Webre and Zeller, 1990, p. 24). Webre and Zeller (1990) note that "if a paddler lacks upper body strength, a lighter boat might be preferable" (p. 17).

For lower limb and/or trunk impairments there are several modifications. Webre and Zeller (1990) recommend gluing closed-cell foam or neoprene to provide additional padding in the seat of the kayak. Another option offered by Webre and Zeller (1990) is to purchase a commercial wheelchair cushion that is actually worn by the person. Wildwater Design manufactures a contoured padded kayak seat that can be attached directly to the existing kayak seat. (Zeller and Webre, 1990) Backrests (available commercially or homemade) can provide additional support for the kayaker with a trunk impairment. (Lichen, 1997 and Webre and Zeller, 1990)

Lower limb and trunk impairments can make entering the kayak from a wheelchair a challenge within itself. Webre and Zeller (1990) suggest using a mid-point transfer. This consists of placing an object such as a cooler between the kayak and wheelchair. The person then transfers from the wheelchair to the cooler and then into the kayak. Webre and Zeller (1990) also recommend using a slick camping pad placed on the back deck of the kayak. The person then sits on the pad and slides down into the kayak. Nichols (1994) advises using a "slide board" made of wood to transfer from wheelchair to kayak. Also, grab handles may be installed on the kayak for ease of entering the kayak. (Webre and Zeller, 1990)

Lower limb impairments can also pose a balance problem for the paddler. Nichols (1994) recommends duct-taping sandbags to the floor of the kayak to aid in balance. This method is very useful for persons with a physical

disability who have "pronounced muscle, tissue, and bone loss in the lower body" (Nichols, 1994, p. 63).

For lower limb discomfort or leg spasms Webre and Zeller (1990) recommend rolling a piece of foam and placing it under the paddler's knees. Doing this keeps the knees flexed, allowing the muscles to stay relaxed and helps prevent sliding forward in the seat. (Webre and Zeller, 1990, p. 63)

For paddlers with a hearing impairment, Webre and Zeller (1990) suggest the paddler "cover the ear hole in the paddling helmet to reduce the amount of water reaching the aid" (p. 65). To aid paddlers with a visual impairment tape a popsicle stick on the "paddle shaft near the paddler's thumb where she can easily feel it in order to check the position of the paddle blade". (Webre and Zeller, 1990, p. 66) Also available to paddlers with visual impairments is a compass manufactured by Silva® with a Braille face for kayak touring.

Skills

Ciccotto (1980) and Ciccotto & Neville (1980) briefly discuss skills necessary to enjoy the sport of kayaking. The importance of the Eskimo rescue (using the bow of another paddler's boat to right oneself from an upside down position), paddle strokes (forward power stroke, back power stroke, forward sweep, back sweep, pry and draw) and braces (keeping oneself upright using the paddle) are highlighted (Ciccotto & Neville, 1980).

The author also suggests intentionally capsizing the kayak to learn timely and proper responses (Ciccotto, 1980, p.53). Once comfortable with a wet exit (exiting the craft from an upside down position) the paddler may want to learn the Eskimo roll. This is "a self rescue technique used by competent decked and open boaters to re-right the boat after a flip. Rolling is accomplished by executing a series of underwater paddle strokes while performing intricate body English" (Nealy, 1986, p. 157). Kelly (1998) cites McKibbin who states that "Learning the basics of kayaking is easy. Knowing a handful of paddle strokes are pretty much all that's required". Kelly (1998) goes on to note DeHart as saying "What you learn doesn't change. There's not more to learn. It's using what you've learned in different weather, water and in duration of trips."

Barriers to Leisure

Three types of barriers to recreation for persons with a physical disability identified are: (a) human barriers (attitudes of society and recreation providers), (b) environmental barriers (weather, transportation, and facilities), and (c) physical barriers (degree of injury). It is widely thought that accessibility is the number one barrier preventing persons with a physical disability from many forms of recreation. However, Austin (1987) noted 1982 and 1984 studies by West that imply it is actually the attitudes of the recreation providers as well as the community that are hampering the opportunities for

recreation participation by persons with a physical disability. Austin (1987) also cited Carrie and Sygall (1991) and Lord (1991) in that society causes most of the problems preventing persons with a physical disability from recreational participation.

Human Barriers

Based on the lack of literature concerning kayaking and equipment adaptations, Nichols (1992) believes persons with a physical disability are not being encouraged to pursue outdoor activities. In a 1995 article, Nichols, along with colleague Fines, noted that recreation professionals, medical professionals, parents and educators tend to direct disabled persons away from pursuing risk oriented activities and recreation.

This belief is further supported by the results of their study of self-concept, leisure satisfaction, and leisure attitudes of eight subjects during a 12-week recreational kayaking program. The subjects were recruited from recreational and rehabilitation facilities. They were between the ages of 19 and 55. Their traumatic brain injuries were sustained in motor vehicle accidents or sport accidents. All had severe posttraumatic amnesia. All scored at least 7.0 on the Rancho Los Amigos Test [a scale for measuring level of head injury; level seven indicates reflexes are automatic and appropriate (burlingame & Blaschko, 1997)]. They were all out of inpatient rehabilitation care for at least a year. The Tennessee Self-Concept Scale

(TSCS) by Roid and Fitts (1991) was utilized. It measured the variables of: (a) Physical Self, (b) Social Self, (c) Personal Self, (d) Identity, (e) Behaviour, and (f) Self Satisfaction. Total Positive Score was also calculated. Scores of all seven measures increased significantly from pre-test to post-test (p. 41). Based on the Total Positive Score, the subjects had low levels of self-esteem prior to the kayaking program. The increase in the Total Positive Score after the kayaking program showed "enhanced feelings of self-worth, confidence, physical appearance, feelings of adequacy, and a sense of improved worth in social interactions, as well as the ability to follow through and become physically involved in active recreation" (p. 41).

Nichols and Fines (1995) also used the Leisure Attitude Measures (LAM) test by Beard and Ragheb (1980, 1982). It measured cognitive, affective and behavioral attitudes towards leisure. Total Score was also included. Affective and behavioral attitudes were the only two measures that had significant differences among mean pre- and post-test scores. The LAM identified "the opportunities to (1) choose from a variety of leisure pursuits, and (2) physically and psychologically experience the benefits and characteristics of leisure participation" (p. 42) as barriers to participation.

The test of Leisure Satisfaction Measures tested the following variables: (a) psychological, (b) educational, (c) social, (d) relaxation, (e) physiological, and (f) aesthetic. Significant gains were shown between all pre- and post-test scores. Nichols and Fines (1995) state these significant gains support the

position of Beard and Ragheb (1980), IsoAhola and Buttimer (1982), McGuire (1984), and Riddick (1986) that "knowledge of leisure resources and leisure attitudes of significant others will influence leisure satisfaction" (p. 41), thus reinforcing the idea that human barriers exist.

Environmental Barriers

A study by Coyle and Kinney (1990) of 790 adults with physical disabilities revealed data in support of the existence of environmental barriers. The purpose of their study was to identify leisure characteristics and to question why there is little information on demographics and leisure characteristics of adults with physical disabilities. The authors solicited voluntary participants by media announcements. Of the 790 participants, 35.5% had acquired disabilities and the other 64.5% had congenital disabilities. Fifty-one percent of the participants were female and 49% were male. Caucasians accounted for 71% of the participants, followed by Blacks (27%), Hispanics (1%), and Orientals (1%). The age range showed 43% between 18-30 years, 39% between 31-40 years and 20% between 41-55 years. Eighteen percent had no high school degree. The remaining 72% did. Thirty-one percent of the participants reported being employed full or part time. Thirty-eight percent were unemployed. The other 31 % consisted of homemakers (9%), students (15%), and other (7%). The income level was less than $11,000 for 46.5%. Disabilities reported were: (a) spinal cord injury

(23%), (b) cerebral palsy (16%), (c) multiple sclerosis (11%), and (d) visual impairment (11%). Of the participants, 60% never married, 22% were married, 5% were in a long term relationship, 11% were divorced or separated and 2% were widowed (p. 68)

Coyle and Kinney (1990) used subjective testing to achieve a composite score. Individuals responded with a Likert-type answer to the following questions:

> How do you feel about the amount of recreation and leisure in your life?
>
> How do you feel about the amount of fun and enjoyment in your life?
>
> How do you feel about the amount of spare time in your life?
>
> How do you feel about the extent to which you experience joy in your life?
>
> How do you feel about how interesting your day to day life is?

To test attitudes of potential barriers to leisure involvement, participants were read a series of statements (from existing literature on barriers for non-disabled participants) and asked to respond by degree of agreement or disagreement (p.66). The Activity of Daily Living Scale (ADL) by Katz, Ford, Moskowitz, Jackson, and Jaffee (1963) was utilized to measure the degree of functional impairment. Results of the leisure characteristics identified in this study will be covered in the social section of this review of literature. Coyle and Kinney's (1990) study identified "issues concerning the weather (48.9%),

transportation (48.7%), and facilities (43.3%)" (p. 69) as the top three barriers to the leisure participation of persons with physical disabilities.

Physical Barriers

It is important to note that lack of physical ability (41.5%) and insecurity concerning abilities (31.6%) were also identified in Coyle and Kinney's (1990) study. Obviously, the degree of the person's injury may have an effect on the degree of leisure in which they can participate. Take for example a paddler with a spinal cord injury. The higher up the injury to the spinal cord, the more impairment a person will have. Also, the degree of impairment will depend on whether the injury is complete (no sensation or movement) or incomplete (having some sensation or motion). It is important to note that a persons disability may not be directly observable by sight.

Outdoor Adventure Benefits

Researchers have identified many personal benefits as a result of participating in outdoor adventure programs. Ewert (1989) categorizes these benefits into physical, educational, psychological, and sociological domains. These benefits may be experienced regardless of whether a person has a physical disability or not.

Physical Benefits

The physical domain would appear to be the most obvious benefit of outdoor adventure participation. "Skills, strength, coordination, exercise and balance" are key physical improvements noted by Ewert (1989). Ewert (1989) goes on to cite a 1983 study by Wright that shows cardiovascular improvements after involvement in outdoor adventure activities.

It is also important to note that increased physical fitness is often associated with competitive sports. Kayaking as outdoor adventure is an ideal activity in which to gain physical benefits in a non-competitive atmosphere. In Coyle and Kinney's 1990 leisure characteristics study, 11% of the participants identified individualized non-competitive sports as their favorite activity (p. 69).

Educational Benefits

Outdoor adventure is also a good means of providing educational benefits to participants. The very nature of being in the outdoors offers endless opportunities for nature awareness, outdoor skills training, outdoor education and conservation education (Ewert, 1989). In addition, Ewert (1989) states problem solving skills and values clarification are also educational benefits gained from outdoor adventure participation.

Kayaking is an excellent base for all of the above educational opportunities. For many participants, the kayak serves as a mode of transportation to get to an area for nature awareness, outdoor education and

conservation education that might not be otherwise accessible. Outdoor skills training benefits are also easily integrated with kayaking. For example, on a weekend camping trip the participant can carry their camping and fishing equipment to a remote site perhaps only accessible by boat.

Psychological Benefits

Of the many psychological benefits of outdoor adventure activities, self-concept has been studied most often. Ewert (1989) cites several studies that suggest improvement in individuals self-concept after participating in outdoor adventure programs. Improvement in self-confidence has also been noted as a benefit of outdoor adventure programs. Ewert (1989) cites Darst and Armstrong (1980) who believe that feelings of success are a contributing factor in increasing popularity of outdoor adventure pursuits.

Kayaking holds the potential for participants to gain self-concept and self-confidence benefits. It is a unique sport in that individuals of varying skill levels can all participate and thus, gain individual benefits.

Sociological Benefits

Sociological benefits that have been noted are compassion, developing friendships, communication and normalization.

Normalization

Nichols (1992) states kayaking for recreation is a means of normalization for persons with spinal cord injury (SCI) or lower mobility impairments based on the fact that it is "an activity where the major piece of equipment used is a vehicle in which all participants are seated" (p.47). Nichols (1992) goes on to say, "The person with a lower body impairment is visually identical to all other participants. All participants are expected to be seated and therefore any possible stigma [intentional or otherwise] attached to that position is avoided" (p. 47). Zeller (1990) states:

> We meet other folks on the water and often again at the take-out. They are amazed when my husband lifts me from the kayak and places me in my wheelchair. On the water I am just another sea kayaker. My equality with other paddlers is based on my skill and that feels great. (p. ii)

Taylor and McGruder (1996) noted in their study of 3 paraplegics and kayaking that "kayakers with or without disabilities experience essentially the same thing—being on the water and paddling" (p. 43). The recreational therapist involved with the study pointed out that kayaking "takes the wheelchair out of the activity" (Taylor and McGruder, 1996, p. 43).

Non-competitiveness

Although competition can be brought into almost any activity, for the most part, kayaking is a non-competitive, individualized sport that can be enjoyed with a group. In Coyle and Kinney's 1990 leisure characteristics

study, 11% of the participants identified individualized non-competitive sports as their favorite activity (p. 69). Socialization was also identified as a favorite leisure activity.

Social Integration of Persons with a Disability and Persons Without a Disability.

Coyle and Kinney's (1995) study also revealed that 42% of the participants report leisure participation with disabled and non-disabled people (p. 69). Forty-six percent said they normally participate with only non-disabled people. Eleven percent stated segregated (only disabled) leisure participation. When asked about their preference to participate in integrated or segregated activities 18 % had not thought about it, 28% did not care, 41% preferred an integrated activity and 12% wanted to participate with only non-disabled persons.

Nichols (1992) states kayaking is "an independent, individual activity which facilitates easily-integrated social interaction" (p. 47). Nichols and Fines' (1995) study of recreational kayaking describes it as a unique activity in that those with mobility impairments can participate, it doesn't require a lot of muscular strength, the craft is somewhat stable and most importantly (for many) it is a social sport and all abilities can participate. Their study drew in both disabled people and "their able bodied peers" (p. 39). Taylor and McGruder's (1996) study identified the importance of social interaction as a

significant theme in the meaning of kayaking for persons with a spinal cord injury (p. 42).

Implications

The review of literature has revealed several opportunities for further research. First is the subject of kayaking itself and it's relevance and/or benefits (social, emotional, or physical) to persons with a physical disability. The second subject is, while many of the authors stated the need for recreation providers to advocate the need of accessibility and awareness of recreation opportunities for people with a physical disabilities, they did not state how to go about this. And last, with new and improved kayaking equipment for non-disabled persons being manufactured every year (and none for persons with disabilities), the topic of modification will always have room for research and development.

CHAPTER 3

METHODS

The purpose of the study was to research the sport of kayaking and its relationship to persons with physical disabilities. Five basic research objectives were formulated: (a) to identify demographic traits of participants with a physical disability who have completed an experience in the sport of kayaking, (b) level of usage, (c) to identify reasons participants with a physical disability selected kayaking as a leisure pursuit, (d) to identify barriers to participation in kayaking encountered by persons with a physical disability, and (e) to identify effective facilitative methods and improvements to instruction delivery and equipment modification. This chapter is divided into the following sections: (a) population, (b) instrumentation, including: development of the instrument, administration of the instrument and (c) statistical analysis.

Population

The participants for the study were 15 adults, aged 18 or over, with one or more physical disabilities who had voluntarily participated in kayak instruction programs at either the Center for Adaptive Kayaking in Breckenridge, Colorado, Ski-for-All in Bellview, Washington or the U.S.

Adaptive Recreation Center in Big Bear Lake, California. The instruction took place within the last five years. The researcher contacted ten agencies across the United States known to conduct adaptive kayaking programs. Of these ten agencies, only three agreed to assist the researcher on this project.

Instrumentation

Development of the Instrument

The survey (appendix A) used in the study was developed by the researcher. In order to assure validity, the survey was reviewed by the following: a) Mr. Tim Craven, a kayaker with a physical disability, b) Mr. Eric Howard, a kayaking instructor certified by Perception and c) Dr. Buck Jones, a University of Tennessee professor with expertise in the field of statistics and development and implementation of research surveys. Mr. Howard commented on question 12 which asks the participant to circle a number on a Likert-type scale of one to seven indicating their skill level of kayaking in flatwater, ocean or whitewater kayaking. Mr. Howard indicated that "class 7 in whitewater does not exist according to most standard scales". Even though the question was based on a Likert-type scale the researcher decided to change the whitewater scale to Class I through Class VI for clarity. Mr. Craven suggested a grammatical correction to question ten from " What type(s) of kayaking you participate in:" to "What type(s) of kayaking have you participated in:" The researcher accepted the change. Dr. Jones suggested a

grammatical change of question five from "Please circle no or yes if any of the following are a barrier to your participation in kayaking" to "Are any of the following a barrier to your participation in kayaking? (circle response)". The researcher changed the question to the later. Overall, the jury members commented the survey looked good and wished the researcher good luck with the project.

Each question in the survey was developed to contribute to answering a specific research problem. Questions 1, 2, 3, 16, 17, 18, 19, 20 and 21 were created to address the identification of similar demographic traits among participants with physical disabilities. Questions 4 and 11 were developed to identify reasons participants with physical disabilities selected kayaking as a leisure pursuit. In order to identify barriers to participation in kayaking encountered by persons with physical disabilities, questions 5 and 6 were included in the survey. Questions 7, 13, 14 and 15 served to identify facilitative methods and improvements to instruction delivery and equipment modification. Questions 8, 9, 10, and 12 addressed current usage levels.

Administration of the Instrument

The researcher contacted the program directors of the Adaptive Kayaking Center, Ski-for-All and the U.S. Adaptive Recreation Center by phone to request assistance in contacting past participants of their respective programs. Written letters were then mailed to the agencies to confirm

information per the phone conversations (Appendix B). A total of thirty-eight pre-stamped survey packets were mailed from May 29 to June 7, 1998 to the agencies to be distributed to past participants. A self-addressed stamped envelope was included in each survey packet. The survey packets also included the survey and an information sheet (Appendix C) stating the purpose of the study. At the beginning of the survey a statement was included that the voluntary completion of the survey served as informed consent. A pre-addressed post card (Appendix D) was also included in the survey packet for participants to request a copy of the statistical results of the project. Ski-for-All also elected to enclose a cover letter of their own stating their support for this project.

Of the 38 surveys sent out, 0 out of 6 were returned from the Center for Adaptive Kayaking, 6 out of 12 were returned from the Ski-for-All group, and 9 out of 20 were returned from the U.S. Adaptive Recreation Center for a total of 15. The surveys were returned to the researcher by July 31, 1998 for inclusion in the study.

Statistical Analysis

Upon return of the surveys to the researcher, SPSS (Statistical Package for Social Sciences) computer software was utilized to analyze the data. Descriptive data were derived in the form of parametric percentages and means. Data were categorized both nominally and ordinaly. In addition,

themes were discovered and presented from the open-ended questions 4, 6, 13, 14 and 15.

CHAPTER 4

RESULTS AND DISCUSSION

The purpose of this study was to investigate the sport of kayaking and how it relates to persons with physical disabilities. To accomplish this, the following problems were addressed: a) to identify demographic traits of persons with a physical disability who have participated in the sport of kayaking, b) to identify current level of usage by persons with a physical disability, c) to identify reasons participants with a physical disability selected kayaking as a leisure pursuit, d) to identify barriers to participation in kayaking encountered by persons with a physical disability, and e) to identify effective facilitative methods and improvements to instruction delivery and equipment modification.

To collect this data, the researcher distributed 38 self-developed Kayaking Interests Surveys (Appendix A) to three organizations that teach kayaking for people with physical disabilities. The organizations then distributed the surveys to participants within the past five years. Forty percent of the Kayaking Interests Survey were returned to the researcher. The population for this study was composed of 15 kayakers over the age of 18 with one or more physically disabling conditions (Appendix E).

The contents of this chapter will be arranged in the following order:

1. Demographics
2. Usage
3. Reasons for participation
4. Barriers to participation
5. Instructional Issues

Demographics

Demographic data were collected from survey questions 1, 2, 3, 16, 17, 18, 19, 20, and 21. These questions served to identify similar traits among kayaking participants with physical disabilities. The traits identified were: duration of disability, gender, age, educational level, income level, driving status, and state of residence.

Results

According to Table 1, 60% (9) of the respondents have had their disability for less than 25 years. The remaining six respondents (40%) have had their disability over 25 years. Only 20% (3) of the respondents have had their disability less than five years.

Table 2 shows that 55% (5) of the female respondents have had their disability less than 25 years. Of the males, 67% (4) have had their disability for 25 years or less. Of the 40% (6) who have had their disability for over 25 years, females accounted for 67% (4) and males accounted for 33% (2) of the respondents.

Table 1. Duration of Disability

	Frequency	Percent	Cumulative Percent
0-5 yrs	3	20.0	20.0
6-10 yrs	2	13.3	33.3
11-15 yrs	1	6.7	40.0
16-20 yrs	2	13.3	53.3
21-25 yrs	1	6.7	60.0
over 25 yrs	6	40.0	100.0
Total	15	100.0	

Table 2 Duration of Disability by Gender

			Gender		
			Female	Male	Total
Duration of Disability	0-5 yrs	Count	2	1	3
		% within Duration of Disability	66.7%	33.3%	100.0%
		% within Gender	22.2%	16.7%	20.0%
	6-10 yrs	Count	1	1	2
		% within Duration of Disability	50.0%	50.0%	100.0%
		% within Gender	11.1%	16.7%	13.3%
	11-15 yrs	Count		1	1
		% within Duration of Disability		100.0%	100.0%
		% within Gender		16.7%	6.7%
	16-20 yrs	Count	2		2
		% within Duration of Disability	100.0%		100.0%
		% within Gender	22.2%		13.3%
	21-25 yrs	Count		1	1
		% within Duration of Disability		100.0%	100.0%
		% within Gender		16.7%	6.7%
	over 25 yrs	Count	4	2	6
		% within Duration of Disability	66.7%	33.3%	100.0%
		% within Gender	44.4%	33.3%	40.0%
Total		Count	9	6	15
		% within Duration of Disability	60.0%	40.0%	100.0%
		% within Gender	100.0%	100.0%	100.0%

Figure 1 shows 60% (9) of the respondents are female and the remaining 40% (6) are male. The largest group of participants (6) are 36 to 45 years of age (Figure 2). The second largest age group is 46 to 55 with 4 respondents. Figure 3 shows that females comprised 83% (5) of the 36 to 45 years of age group. Females and males were equally represented (13%) in the second largest category of 46 to 55 years of age.

According to Table 3, almost half (7) of the respondents held a graduate degree. Forty-seven percent (7) had attended college or had a college degree. Only one respondent (7%) had received only a high school degree.

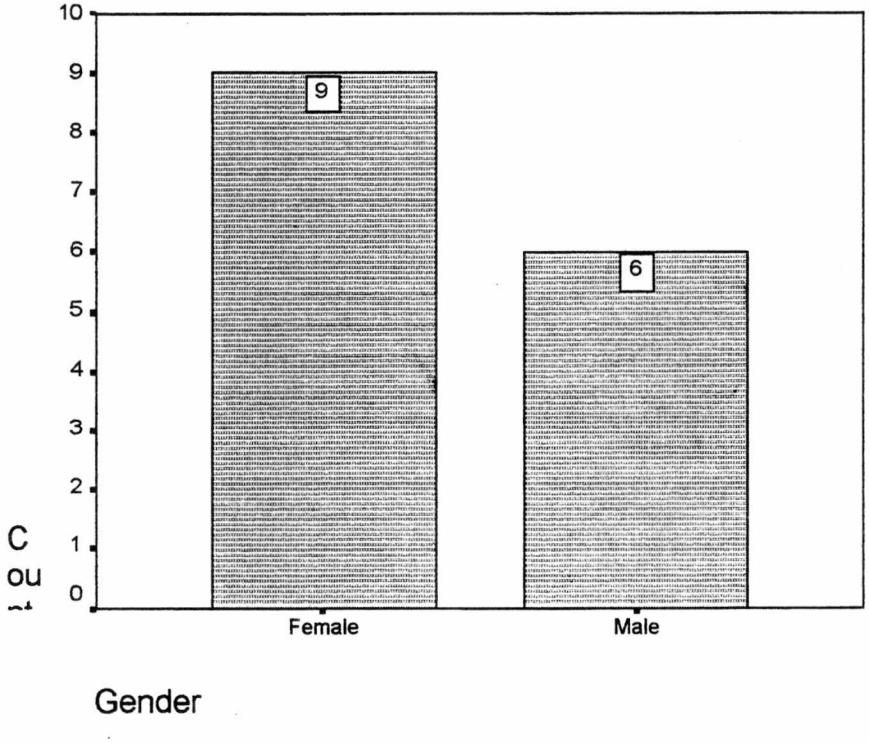


Figure 1 Gender

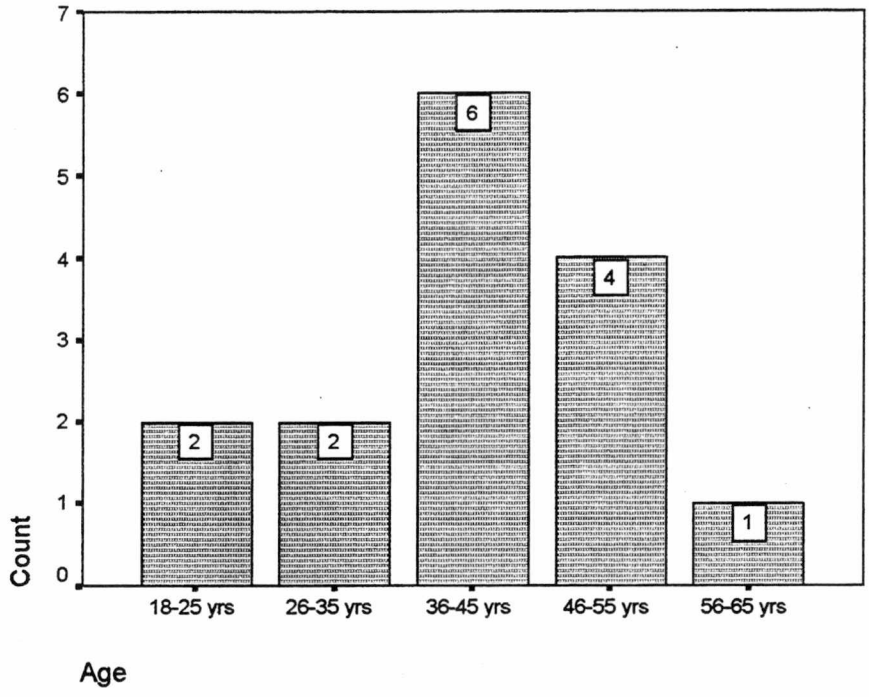


Figure 2 Age

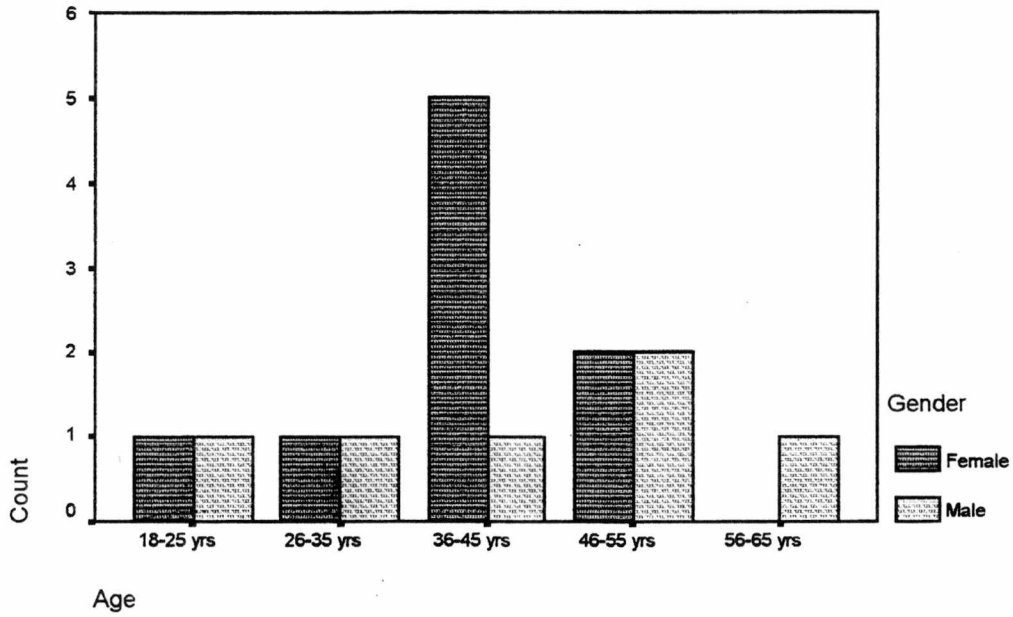


Figure 3 Age by Gender

Table 3 Education Level

	Frequency	Percent	Cumulative Percent
High School	1	6.7	6.7
Some College	4	26.7	33.3
College Degree	3	20.0	53.3
Graduate Degree	7	46.7	100.0
Total	15	100.0	

In Figure 4, four of the seven respondents with a graduate degree were female. Of the seven respondents who attended some college or held a college degree, four were female and three were male. The respondent holding only a high school degree was female.

Table 4 shows that 33% (5) of the respondents reported an annual income of $10,000 and below. Twenty-seven percent (4) earned between $10,001 and $30,000 and 31% earned between $30,001 and $50,000. Twenty-percent (3) of the respondents reported earning over $50,000.

Figure 5 shows that more female respondents than male respondents reported an annual income of less than $10,000. Males and females were equally represented in the $10,001 to $30,000 income bracket. More males than females reported annual earnings between $30,001 and $50,000. In the category of $50,001 and above, two females and one male responded.

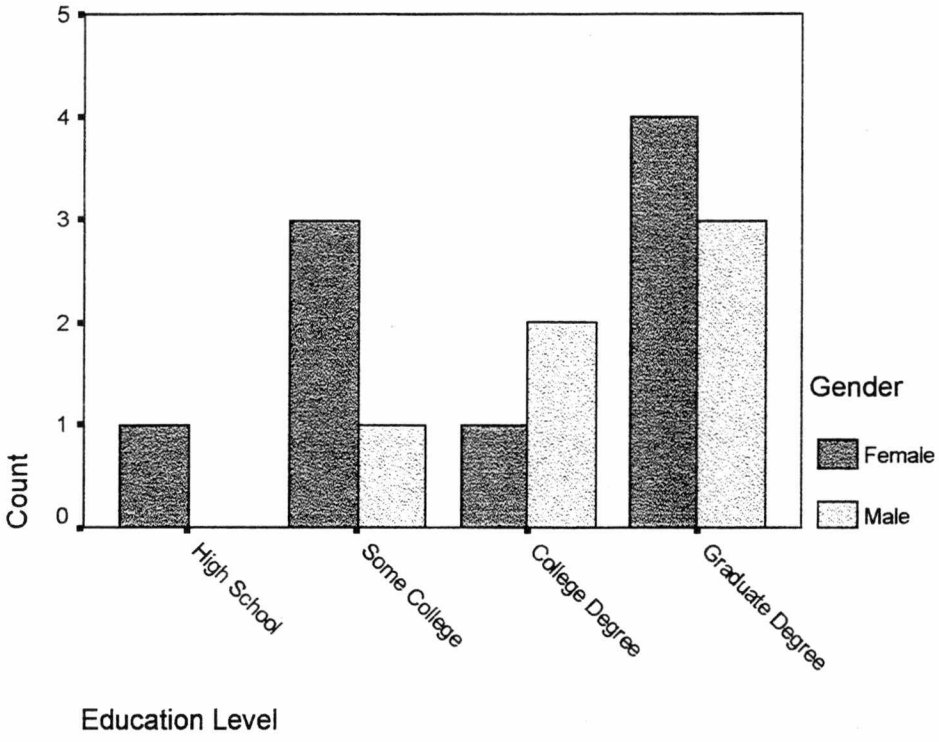


Figure 4 Education Level by Gender

Table 4 Income Level

	Frequency	Percent	Cumulative Percent
$0-10,000	5	33.3	33.3
$10,001-20,000	3	20.0	53.3
$20,001-30,000	1	6.7	60.0
$30,001-40,000	2	13.3	73.3
$40,001-50,000	1	6.7	80.0
Above $50,000	3	20.0	100.0
Total	15	100.0	

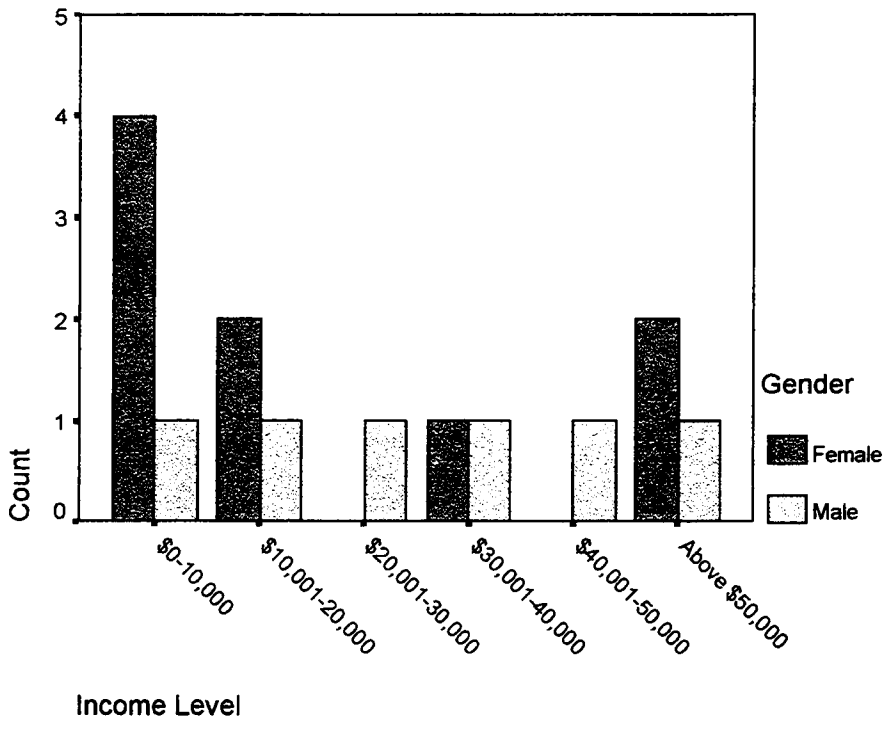


Figure 5 Income Level by Gender

Table 5 indicates that the majority (60%) of the respondents drive their own vehicle. Figure 6 shows that of the 60% (9) who drive, four respondents were female and 5 were male. Of the respondents that do not drive, five were female and one was male.

Table 6 shows that 53% (8) of the respondents hailed from California with five being female and three being male followed by 33% (5) from Washington State with three being female and two being male. Nevada and Oregon each accounted for 7% of the respondents. Nevada accounted for one female and no males and Oregon accounted for no females and 1 male.

Table 5 Driving Status

	Frequency	Percent	Cumulative Percent
No	6	40.0	40.0
Yes	9	60.0	100.0
Total	15	100.0	

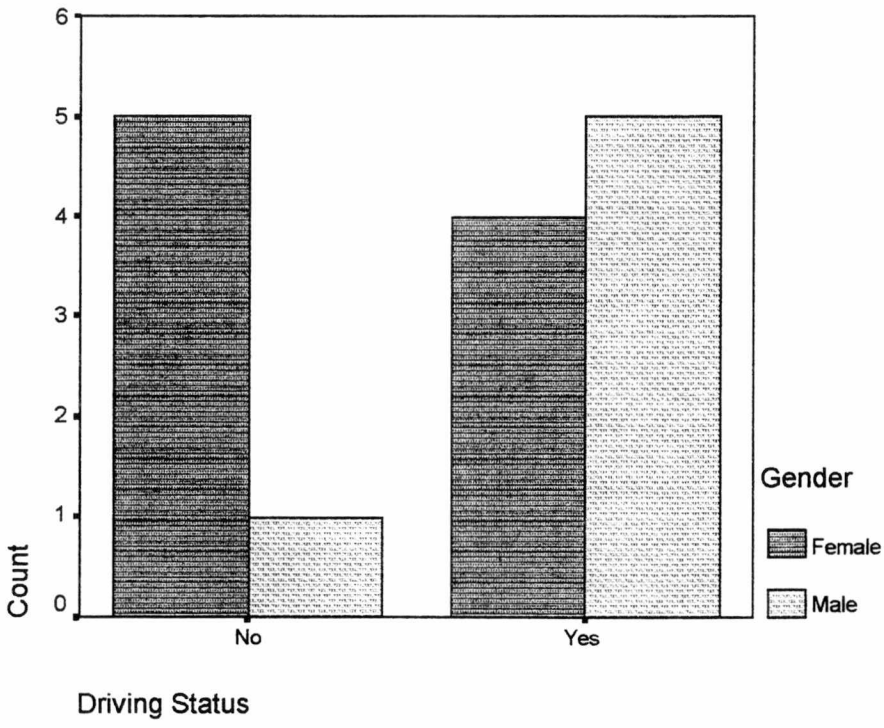


Figure 6 Driving Status by Gender

Table 6 State of Residence by Gender

Gender			Frequency	Percent	Cumulative Percent
Female	Valid	Washington	3	33.3	33.3
		Nevada	1	11.1	44.4
		California	5	55.6	100.0
	Total		9	100.0	
Male	Valid	Washington	2	33.3	33.3
		California	3	50.0	83.3
		Oregon	1	16.7	100.0
	Total		6	100.0	

Discussion

According to Table 1, the majority (9) of respondents had their disability for less than 25 years. More females than males had their disability for over 25 years (Table 2). Figure 1 shows nine females and six males participated in the study. The largest group of respondents were between the ages of 36 to 45 years old (Figure 2) with the ratio of females to males being 5:1 (Figure 3). According to Table 3, all but one participant had attended college or attained a college degree or graduate degree. Eight of the females and six of the males had attended college or attained a degree (Figure 4). The largest category of respondents (33%) reported an annual income of less than $10,000 (Table 4). Of those in the less than $10,000 category, four were female and one was male (Figure 5). Twenty percent (3) reported earnings over $50,000 (Table 4). Of these, two were female and one was male (Figure 5). Table 5 indicates, 60% (9) of the respondents reported they drive their own vehicles. Of this

60%, the ratio of females to males was four to five (Figure 6). Table 6 indicates that the majority (8) of participants were from California, followed by Washington State (5), Nevada (1) and Oregon (1). Of the respondents from California, five were female and three were male.

Usage

Usage data were collected from survey questions 8, 9, and 10. These questions served to identify how long participants have been kayaking (duration), the type of kayaking in which they are participating, and how many days per year spend kayaking.

Results

According to Table 7, over three-fourths (12) of the participants have been kayaking for five years or less. This is followed by 13% (2) who have been kayaking for six to ten years and 7% (1) who have been kayaking for 11 to 15 years.

Table 7 Kayaking Duration

	Frequency	Percent	Cumulative Percent
0-5 yrs	12	80.0	80.0
6-10 yrs	2	13.3	93.3
11-15 yrs	1	6.7	100.0
Total	15	100.0	

Figure 7 indicates that eight females and four males comprise the largest category of kayaking for five years or less. Two males have been kayaking for six to ten years and one female has been kayaking for 11 to 15 years.

Table 8 shows that almost three-fourths (11) of the respondents participated in flatwater kayaking and 47% (7) participated in sea kayaking. No one reported participating in whitewater kayaking.

According to Table 9, more females than males participated in flatwater kayaking. Females and males were almost equally represented in sea kayaking participation with a ratio of 4:3.

Table 10 shows that 93% (14) of the participants spend less than ten days per year kayaking and 7% (1) spend 11 to 20 days per year kayaking. Figure 8 shows that more females than males kayak less than ten days per year. One male and no females reported kayaking between 11 and 20 days per year.

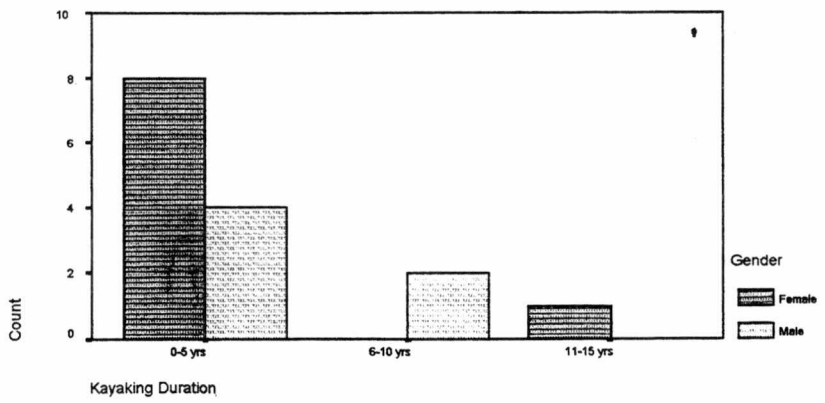


Figure 7 Kayaking Duration by Gender

Table 8 Type of Kayaking Participation

	Count	%
Flatwater	11	73.3%
Sea Kayaking	7	46.7%
Whitewater	0	.0%

Table 9 Type of Kayaking Participation by Gender

			Count	%
Gender	Female	Flatwater	7	77.8%
		Sea Kayaking	4	44.4%
		Whitewater	0	.0%
	Male	Flatwater	4	66.7%
		Sea Kayaking	3	50.0%
		Whitewater	0	.0%

Table 10 Days Kayaking per Year

	Frequency	Percent	Cumulative Percent
0-10 days	14	93.3	93.3
11-20 days	1	6.7	100.0
Total	15	100.0	

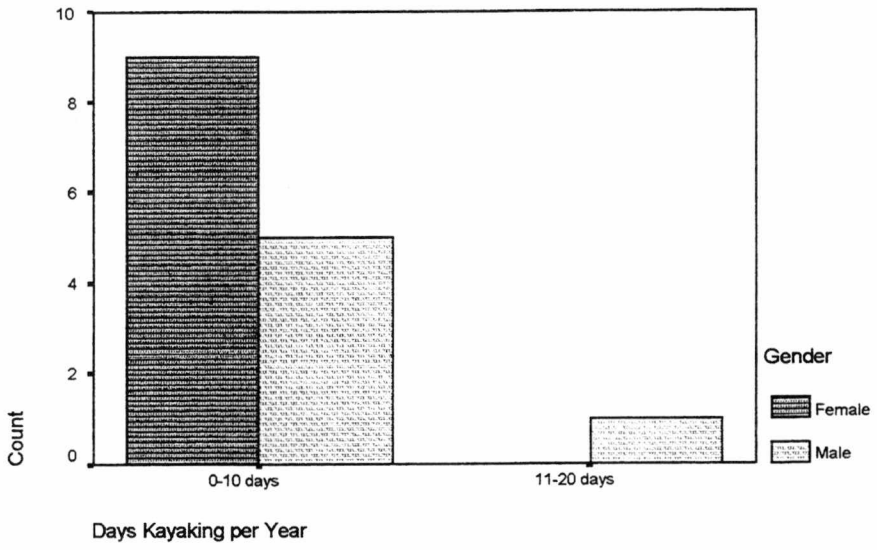


Figure 8 Days Kayaking per Year by Gender

Discussion

According to Table 7, the majority of respondents seem to be relatively new to the sport of kayaking with 80% (12) reporting that they participated for five years or less. Of this 80%, females outnumbered males two to one (Figure 7). Table 8 shows that flatwater kayaking is the most popular form of kayaking with almost three-fourths (11) of the respondents reporting participation. Sea kayaking is also popular with almost half (7) having participated. These percentages indicate that 20% have engaged in both flatwater kayaking and sea kayaking. No one reported participation in whitewater kayaking. Table 9 shows flatwater kayaking is more popular with the females than sea kayaking. Sea kayaking is almost equally popular among females with four females and three males reporting participation. The

majority (93%) of respondents spends ten days or less kayaking per year (Table 10). Figure 8 shows that of the majority who kayak ten days or less per year, females outnumber males 9:5.

Reasons for Participation

Data which reveal reasons for participation in kayaking were obtained from survey questions 4 and 11. These questions revealed multiple reasons for participation and the level of importance of kayaking to the participant. Other reasons for participation may be found in Appendix F.

Results

According to Table 11, 87% (13) of the respondents participated in kayaking because they enjoy water sports and 60% (9) report participating for adventure. Over half (8) participated to integrate themselves with non-disabled peers. Twenty-seven percent (4) participated for socialization and 20% (3) participated for independence. No one indicated participating because they saw it in a magazine or on television.

In Table 12, over three-fourths (7) of the females indicated participation because they enjoyed water sports, 67% (6) participated for adventure, and 44% (4) participated for integration with non-disabled peers. Thirty-three percent (3) participated in kayaking for interaction with friends and 22% (2)

participated for socialization. None of the females reported participating for independence or because they saw it in a magazine or on television.

Among the males, all (6) reported participating in kayaking because they enjoyed water sports. Sixty-seven percent (4) reported participating for integration with non-disabled peers and half (3) participate for adventure. Independence and interaction with friends were both reported by 50% (3) of the males. Thirty-three percent (2) reported socialization as another reason for participating in kayaking. None of the males reported participation because they saw it in a magazine or on television.

Table 11 Reasons for Participation

	Count	%
Adventure	9	60.0%
Enjoy Water Sports	13	86.7%
Independence	3	20.0%
Integration with non-disabled	8	53.3%
Interaction with Friends	6	40.0%
Saw in a magazine	0	.0%
Saw on television	0	.0%
Socialization	4	26.7%

Table 12 Reasons for Participation by Gender

			Count	%
Gender	Female	Adventure	6	66.7%
		Enjoy Water Sports	7	77.8%
		Independence	0	.0%
		Integration with non-disabled	4	44.4%
		Interaction with Friends	3	33.3%
		Saw in a magazine	0	.0%
		Saw on television	0	.0%
		Socialization	2	22.2%
	Male	Adventure	3	50.0%
		Enjoy Water Sports	6	100.0%
		Independence	3	50.0%
		Integration with non-disabled	4	66.7%
		Interaction with Friends	3	50.0%
		Saw in a magazine	0	.0%
		Saw on television	0	.0%
		Socialization	2	33.3%

Table 13 shows that the largest group of respondents (33%) was neutral about the importance of kayaking in their lives. One respondent (7%) indicated that kayaking was not important. Four respondents (27%) indicated a little importance and one respondent (7%) indicated that kayaking is very important.

Table 14 shows that females had a mean of 4.33 and males had a mean of 5.00 when rating the importance of kayaking (on a scale of 1-7) in their lives. The standard deviation was 1.50 for females and 1.41 for males.

Table 13 Importance of Kayaking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	6.7	6.7	6.7
	3	1	6.7	6.7	13.3
	4	5	33.3	33.3	46.7
	5	4	26.7	26.7	73.3
	6	3	20.0	20.0	93.3
	7	1	6.7	6.7	100.0
	Total	15	100.0	100.0	
Total		15	100.0		

1=Not Important, 4=Neutral, 7=Very Important

Table 14 Importance of Kayaking by Gender

Gender		N	Minimum	Maximum	Mean	Std. Deviation
Female	Kayaking Importance	9	1	6	4.33	1.50
	Valid N (listwise)	9				
Male	Kayaking Importance	6	3	7	5.00	1.41
	Valid N (listwise)	6				

Discussion

The most often indicated reasons for participating in kayaking were because they enjoy water sports, for adventure, and to integrate themselves with non-disabled peers (Table 11). In addition, half of the males cited independence and interaction with friends as reasons for participation (Table 12). Table 13 shows that the largest category of respondents was neutral about the importance of kayaking in their lives. Table 14 shows that the males had a higher mean than the females when asked about the importance of

kayaking in their lives. Both males and females means were above neutral, which indicated that kayaking was somewhat important in their lives.

Barriers to Participation

Survey questions 5 and 6 were used to identify barriers to participation in kayaking for persons with physical disabilities.

Results

Table 15 shows that 40% (6) of the respondents reported the following as barriers to their participation in kayaking: access to the lake, river or ocean, financial reasons, limited facilities, and transportation difficulties. Thirty-three percent (5) of the respondents indicated the degree of their disability and equipment problems were barriers. Twenty-seven percent (4) reported the attitude of recreation providers as being a barrier. Twenty percent (3) reported skills and knowledge as a barrier and thirteen percent (2) noted the attitude of family and friends as a barrier. Other barriers to participation as reported by the respondents may be found in Appendix G.

Table 16 shows that 44% (4) of the females reported equipment problems, limited facilities and transportation difficulties as barriers. Thirty-three percent (3) indicated their degree of disability, financial reasons, and skills and knowledge as being barriers. Twenty-two percent (2) noted barriers

of access and the attitude of family and friends. Only one of the females reported the attitude of recreation providers as being a barrier.

Among the males, 67% (4) reported access as a barrier. Fifty percent (3) noted the attitude of recreation providers and financial reasons as barriers. Thirty-three percent (2) reported the degree of their disability, limited facilities, and transportation difficulties as barriers. Only 17% (1) reported equipment problems as a barrier. No males reported barriers in the form of attitude of family and friends and skills and knowledge.

Table 15 Barriers to Participation

	Count	%
Access	6	40.0%
Attitude of Family & Friends	2	13.3%
Attitude of Recreation Providers	4	26.7%
Degree of Disability	5	33.3%
Equipment Problems	5	33.3%
Financial Reasons	6	40.0%
Limited Facilities	6	40.0%
Skills and Knowledge	3	20.0%
Transportation Difficulty	6	40.0%

Table 16 Barriers to Participation by Gender

			Count	%
Gender	Female	Access	2	22.2%
		Attitude of Family & Friends	2	22.2%
		Attitude of Recreation Providers	1	11.1%
		Degree of Disability	3	33.3%
		Equipment Problems	4	44.4%
		Financial Reasons	3	33.3%
		Limited Facilities	4	44.4%
		Skills and Knowledge	3	33.3%
		Transportation Difficulty	4	44.4%
	Male	Access	4	66.7%
		Attitude of Family & Friends		
		Attitude of Recreation Providers	3	50.0%
		Degree of Disability	2	33.3%
		Equipment Problems	1	16.7%
		Financial Reasons	3	50.0%
		Limited Facilities	2	33.3%
		Skills and Knowledge		
		Transportation Difficulty	2	33.3%

Discussion

According to Table 15, access, financial reasons, limited facilities, and transportation difficulties were the four main barriers to participation for the respondents. It was interesting to note the different barriers as reported by males and females. Over half of the males (4) and less than one fourth (2) of the females reported access as a barrier (Table 16). Half of the males and one-third of the females reported financial reasons as a barrier to participation. Forty-four percent (4) of the females and 33% (2) of the males indicated limited facilities and transportation difficulties as barriers. Three of the males (50%) and only one female (11%) reported that the attitude of recreation providers was a barrier. Also, more females (4) than males (1) reported equipment problems as barriers. Other barriers to participation are listed in Appendix F.

Instructional Issues

Survey questions 7, 13, 14, and 15 addressed satisfaction of instruction, effective instructional methods, suggestions for improvement in kayaking instruction, and suggestions for equipment and kayak modification.

Results

According to Table 17, three of the females were very satisfied with their kayaking instruction. One female (11%) was somewhat satisfied, two

were satisfied (22%), one (11%) was somewhat unsatisfied and one (11%) was very unsatisfied with their kayaking instruction received. Among the males, 67% (4) were satisfied with their instruction and other 33% (2) were very satisfied with their kayaking instruction received.

Table 18 shows that the majority (8) of flatwater paddlers rated themselves as novices. Twenty-one percent (3) rated themselves at the intermediate level. Of the ocean (sea) paddlers, 67% (6) are rated as novices. One person (11%) reported that they are an intermediate ocean paddler. In the category of whitewater, 3 rated themselves as a Class I paddler and 1 was rated at the Class III level.

Discussion

The majority of the males (67%) and 33% of the females were satisfied with their kayaking instruction received. Only one female was very unsatisfied and no males were unsatisfied. Appendix H lists effective methods of instruction as reported by the respondents. Some of the effective methods are: kayaking with able bodied participants, demonstrating techniques, and having one on one instructors. Appendix I is a list of suggestions for improvement of instruction by the respondents. Some suggestions included are: using repetition to teach skills, using imagery to teach skills, and having the instructor bring an FM system for hearing impaired paddlers. Appendix J lists suggestions for equipment and kayak modification, including: find a way

to keep the kayak steady, a lifter to get the kayak on the car, supplying a beach wheelchair or all terrain wheelchair when a dock is not available and having different sized seats.

Table 17 Instruction Satisfaction by Gender

Gender			Frequency	Percent	Valid Percent	Cumulative Percent
Female	Valid	Very Unsatisfied	1	11.1	12.5	12.5
		Somewhat Unsatisfied	1	11.1	12.5	25.0
		Satisfied	2	22.2	25.0	50.0
		Somewhat Satisfied	1	11.1	12.5	62.5
		Very Satisifed	3	33.3	37.5	100.0
		Total	8	88.9	100.0	
	Missing	System Missing	1	11.1		
		Total	1	11.1		
	Total		9	100.0		
Male	Valid	Satisfied	4	66.7	66.7	66.7
		Very Satisifed	2	33.3	33.3	100.0
		Total	6	100.0	100.0	
	Total		6	100.0		

Table 18 Paddling Skill Level

	1		2		3		4	
	Count	%	Count	%	Count	%	Count	%
Flatwater Skill Level	8	57.1%	1	7.1%	2	14.3%	3	21.4%
Ocean Skill Level	6	66.7%	1	11.1%	1	11.1%	1	11.1%
Whitewater Skill Level	3	75.0%			1	25.0%		

a. 1=Novice, 4=Intermediate, 7=Expert

b. Number indicates Class of river

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was about the sport of kayaking for people with physical disabilities. The following five problems were found:

1. To identify demographic traits of persons with a physical disability who have participated in the sport of kayaking.
2. To identify current level of use by persons with a physical disability.
3. To identify reasons participants with a physical disability selected kayaking as a leisure pursuit.
4. To identify barriers to participation in kayaking encountered by persons with a physical disability.
5. To identify effective facilitative methods and improvements to instruction delivery and equipment modification.

To research these problems the researcher developed a Kayaking Interests Survey (Appendix A). Thirty-eight survey packets were mailed to three agencies known to conduct instruction in kayaking for people with physical disabilities. The three agencies then mailed the survey packets to adult participants who took a kayaking instruction course within the past five

years. Forty percent of the surveys were returned to the researcher for inclusion in this study. Data from these surveys were statistically calculated in the form of percentages and totals. These results were presented in Chapter IV.

Conclusion

As a result of the data collected in this study, the following conclusions were found by the researcher. The majority of the participants have had their respective disabilities for 25 years or less. Females outnumbered males in a ratio of nine to six. The largest age group responding was 36 to 45 years old. All but one respondent had attended college or held a college degree. Almost half had attained a graduate degree. The largest group of respondents reported an annual income of less than $10,000, one-fifth had an annual income level of over $50,000. The majority of respondents indicated they drive their own vehicles. The respondents were all from the Western United States; specifically, California, Nevada, Oregon, and Washington.

The majority of participants in the study have been paddling for five years or less. Flatwater paddling was the most popular, with 73% indicating past participation. Sea Kayaking was also popular with almost half having participated. It is interesting to note that while no one reported participation in whitewater kayaking, when asked about skill levels, four respondents indicated a novice or higher skill level. All but one respondent

reported spending ten days or less kayaking per year, almost one excursion a month.

Almost 90% of the respondents reported enjoying water sports as one reason they participated in kayaking. All of the males indicated enjoying water sports and 78% of the females indicated this. As a primary reason for participation for males integration with non-disabled peers was also important, while adventure was indicated as a reason for participation for females. The majority of the respondents ranged from neutral to very important in the category of importance of kayaking in their lives.

Overall, access to the lake, river, or ocean, financial reasons, and transportation difficulties topped the list as barriers to participation. Respondents also listed time availability, motivation to participate and difficulty getting the kayak to and from the car as barriers.

The majority of males and females were satisfied with the kayaking instruction they received. The majority of respondents reported themselves as novice paddlers in flatwater and ocean (sea) kayaking.

Based on the above results, people with a physical disability appear to be participating in and enjoying the sport of kayaking despite reporting several barriers. The barrier of financial difficulties could be indicative of the majority having an annual income of less than $10,001. The attitude of family and friends as well as recreation providers seems to be leaning toward the philosophy of inclusion.

Recommendations

As a result of researching this thesis, the following recommendations were found.

1. This study needs to be repeated with a larger population. The researcher's primary problem was locating agencies that teach kayaking for people with physical disabilities. Once these agencies were located, many refused to participate in the study for fear of breaching the confidentiality of the participants with a physical disability.
2. More studies need to be done to focus on adventure based activities for people with physical disabilities.
3. Recreation providers need to promote and raise the level of awareness of the physically disabled population that kayaking is an easily adapted recreation opportunity for them.
4. Recreation providers need to constantly be aware of accessibility issues for persons with a physical disability; specifically how to get a person with physical disabilities to the kayaking launch site.
5. Agencies that provide kayaking instruction should include in their staff training techniques for teaching persons with physical disabilities.
6. Studies are needed to further implement kayak and equipment modifications.
7. Recreation providers need to be educated in modification techniques for kayaks and equipment (see Chapter 2 for existing modifications).

8. The majority of respondents listed both enjoying water sports and integration with non-disabled peers as reasons for participating in kayaking. For these reasons recreation providers need to implement and practice inclusion when planning their instructional classes and excursions.

9. Recreation providers should encourage people with physical disabilities to participate instead of steering them away from risk oriented activities. One reason they should be encouraged is so they can enjoy the benefits of outdoor adventure (i.e.: increased self-concept, sociological benefits, etc.)

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APPENDICES

APPENDIX A

Kayaking Interests Survey

Kayaking Interests Survey

#_____

Directions: Please read the following questions and respond accordingly. Completion of this survey serves as your informed consent.

1. Do you have a disability? (circle one)
   1. No
   2. Yes

2. If yes, please list your disability(ies):

   _____

   _____

3. If yes, how long have you had your disability? (circle one)
   1. 0-5 years
   2. 6-10 years
   3. 11-15 years
   4. 16-20 years
   5. 21-25 years
   6. over 25 years

4. Please check what influenced you to participate in kayaking: (circle all that apply)
   1. Adventure
   2. Enjoy water sports
   3. Independence
   4. Integration with non-disabled persons
   5. Interaction with friends
   6. Saw in a magazine
   7. Saw on television
   8. Socialization
   9. Other (please state)

   _____

   _____

   _____

5. Are any of the following a barrier to your participation in kayaking? (circle response)

1. Access to lake, river or ocean	1. no	2. yes
2. Attitude of family and friends	1. no	2. yes
3. Attitude of recreation providers	1. no	2. yes
4. Degree of your disability	1. no	2. yes
5. Equipment problems	1. no	2. yes
6. Financial reasons	1. no	2. yes
7. Limited facilities	1. no	2. yes
8. Skills and knowledge	1. no	2. yes
9. Transportation difficulty	1. no	2. yes

6. Please state any other barriers to your participation in kayaking:

   _____

   _____

   _____

   _____

7. How satisfied are you with the kayaking instruction you received? (please circle only one)
   1. very unsatisfied
   2. somewhat unsatisfied
   3. unsatisfied
   4. neutral
   5. satisfied
   6. somewhat satisfied
   7. very satisfied

8. How long have you been kayaking? (circle one)
   1. 0 - 5 years
   2. 6 - 10 years
   3. 11 - 15 years
   4. 16 - 20 years
   5. 21 years or more

9. What type(s) of kayaking you participate in: (circle all that apply)
   1. flatwater
   2. sea kayaking
   3. whitewater

10. How many days per year do you participate in kayaking? (circle one)
    1. 0 - 10 days
    2. 11 - 20 days
    3. 21 - 30 days
    4. 31 - 40 days
    5. 41 or more days

11. How important is kayaking to you? (circle one number)

1	2	3	4	5	6	7
Not Important			Neutral			Very Important

12. Please circle a number for your skill level of kayaking:

	novice			intermediate			expert
Flatwater	1	2	3	4	5	6	7
Ocean	1	2	3	4	5	6	7
Whitewater	Class I	Class II	Class III	Class IV	Class V	Class VI	

13. What methods of instruction were most effective for you?

_____
_____
_____
_____
_____

14. Please list any suggestions for improvement in kayaking instruction:

_____
_____
_____
_____
_____

15. Please list any suggestions for equipment and kayak modification:

_____
_____
_____
_____
_____

16. What is your gender? (circle one)
    1. female
    2. male

17. What is your age? (circle one)
    1. 18-25 years
    2. 26-35 years
    3. 36-45 years
    4. 46-55 years
    5. 56-65 years
    6. over 65 years

18. What is your level of education? (circle one)
    1. elementary school
    2. middle school
    3. high school degree
    4. some college
    5. college degree
    6. some graduate work
    7. graduate degree

19. What is your income level? (circle one)
    1. 0 - 10,000
    2. 10,001 - 20,000
    3. 20,001 - 30,000
    4. 30,001 - 40,000
    5. 40,001 - 50,000
    6. above 50,000

20. Do you drive your own vehicle? (circle one)
    1. no
    2. yes

21. In what state do you live?

_____

Thank you for completing this survey!

SYOTR (See you on the river!)

APPENDIX B

Example of Letter Sent to Agencies

SUSAN L. MONTGOMERY

May 22, 1998

U.S. Adaptive Recreation Center
Attn: Mr. Tom Peirce
P.O. Box 2897
Big Bear Lake, CA 92315

Dear Mr. Peirce:

My name is Susie Montgomery and I am working on my graduate thesis at the University of Tennessee, Knoxville. I am writing to request the cooperation of your company in researching the relationship of kayaking and persons with a physical disability. The primary focus of my study is:

1. to identify demographic traits of persons with a physical disability who have participated in the sport of kayaking

2. to identify reasons participants with a physical disability selected kayaking as a leisure pursuit

3. to identify barriers to participation in kayaking encountered by persons with a physical disability

4. to identify effective facilitative methods and improvements to instruction delivery and equipment modifications, and

5. to identify current level of use by persons with a physical disability.

I have developed a survey that addresses each of these points. I would like to request your cooperation in distributing these surveys to your past participants. To avoid any breach of confidentiality, I can mail you pre-stamped survey packets. The research findings will be reported for the overall group and not individually, thus ensuring anonymity of research participants. Individual participation in the study will be voluntary and each response will be held in the strictest confidentiality.

In preparation for this study, my literature search turned up very little on the subject. It is my hope that this study will raise the awareness of participants as well as recreation providers that kayaking is a leisure pursuit that can be enjoyed by people of all abilities.

In appreciation of your cooperation on this project, a copy of the statistical results and findings will be provided following the completion of the thesis.

Thank you for your time and consideration. I look forward to hearing from you.

Sincerely,

Susan (Susie) Montgomery

1914 ANDY HOLT AVENUE, #384 • KNOXVILLE, TN • 37996
PHONE: (423) 974-4215 • E-MAIL: SUZKAYAKER@AOL.COM

APPENDIX C

Information Sheet

THE UNIVERSITY OF TENNESSEE
KNOXVILLE

Recreation and Tourism Management
1914 Andy Holt Avenue
Knoxville, Tennessee 37996-2710
(423) 974-5042
FAX: (423) 974-6439

INFORMATION SHEET
FOR
"An Exploration of Kayaking and Its Direct Relationship to Persons with a Physical Disability"

May 29, 1998

Dear Fellow Kayaker:

My name is Susie Montgomery and I am working on my thesis as partial fulfillment of a Master of Science degree at the University of Tennessee, Knoxville. You are invited to participate in an important study concerning the relationship of kayaking and persons with a physical disability. Very little research has been done in this area and it is my hope that this study will raise the awareness of participants, as well as recreation providers, that kayaking is a leisure pursuit that can be enjoyed by everyone.

Individual participation in the study is voluntary. No negative consequences will result if you choose not to participate. Participation in the study, if you choose, involves completing the attached survey and returning it in the enclosed self-addressed stamped envelope **by June 29 (or as soon as possible).** Completing the survey takes about ten minutes. Your opinion will be a valuable contribution to this study and GREATLY appreciated.

The research findings will be reported for the overall group and not individually, thus ensuring your anonymity. All responses are confidential. If you would like a copy of the statistical results, please mail the enclosed postcard separately from your survey. **Completion and return of the Kayaking Interests and Participation Survey serves as your informed consent.**

If you have any questions, please feel free to contact me at 1914 Andy Holt Avenue, HPER 384, Knoxville, TN 37996-2710 or e-mail: Suzkayaker@aol.com or phone (423) 974-4215. Thank you for your time. I look forward to hearing from you!

Happy paddling,

Susan (Susie) L. Montgomery
Graduate Teaching Assistant, Recreation and Tourism Management
University of Tennessee, Knoxville
(423) 974-4215
Researcher

Dr. Mary Dale Blanton
Associate Professor of Recreation and Tourism Management
University of Tennessee, Knoxville
(423) 974-6045
Thesis Committee Chair

APPENDIX D

Postcard

Susie Montgomery
1914 Andy Holt Avenue, #384
Knoxville, TN 37996-2710

Please send me a copy of the
statistical results of the
Kayaking Interests Survey.

Name:
Address:
City, State, Zip:

APPENDIX E

Types of Disabilities

Types of Disabilities

Brain Stem
Cerebral Palsy (2)
Hearing Impaired (2)
Legally Blind
Paralysis, Right Angle Partial Residual
Paraplegia
Paraplegia, T-10 & 11
Paraplegia, T-10 Incomplete
Polio
Quadriplegic
Reflex & Sensation Sparing
Scoliosis (2)
Seizure Disorder
Severely Impaired Sensation from Waist Down
Spina Bifida (2)
Spinal Cord Injury, C-7
Spinal Cord Injury, Flaccid and Weak Right Leg Due to Stroke-Right Side
Systemic Lupus
Usher Syndrome
Wheelchair-Left Side

APPENDIX F

Other Reasons for Participation

Other Reasons for Participation

Part of Alpine Challenge Program (U.S. Adaptive Recreation Center

A volunteer coach at camp wheelchair camp was extremely supportive

Encouraged by non-disabled work friends

Exercise and Spiritual nourishment of nature

For fun

APPENDIX G

Other Barriers

Other Barriers

Access to assistance and adaptive programs

Availability of Kayak

Help transferring to and from boat

Motivation to participate (2)

Patience and Awareness of non-disabled about disability needs

The Beach

Time Availability (3)

Transportation of kayak to and from car (2)

Use of one arm makes paddling on both sides of kayak difficult

Work demands

APPENDIX H

Effective Methods of Instruction

Effective Methods of Instruction

All Verbal, demonstration & participatory

The only instruction I've had was when an experienced kayaker went out with me in a separate kayak and showed me how to move it.

Somebody has to know how to instruct the disabled and relate to people who want to take lessons.

N/A Boating and small watercraft have always been a part of my life, until my SCI in 1992. I am now finding ways back into the water.

Mimicking the skilled motions of others seated in front of me while the instructor sits behind refining what I'm doing. Being in a K-4 made me feel safe and not so responsible for tipping the craft.

Kayaking with able bodies participants, trial and error, explanation of the body mechanics involved.

Just getting out on the river, not much instruction

Adaptive, with assistance from non-disabled partners, i.e. must used double kayak

Owner of Paddle Sports (Santa Barbara) Mark Olsen, free, no cost. Gave verbal instruction, practice in swimming pool, and the most appropriate equipment, i.e. easy to don wetsuit, light paddle, stable kayak, white water vest, stable back.

Demonstration-then get in the boat and go!

One to one instructors.

APPENDIX I

Suggestions for Improvement of Instruction

Suggestions for Improvement of Instruction

The instruction has to be paced, because I learn in slow motion. If information is given too fast, I can't get it.

Repetition is necessary due to brain/memory injury.

I don't know how it can be improved because I don't do it that often and when I have, I was able to catch on quickly.

Somebody has to know how to instruct the disabled and have able bodied assistants to help disabled persons who want to take lessons. There should be a special kayak available for the person and assistant.

In my one post-injury kayaking experience last summer, I had to be dragged (in my chair) by several people across the sandy beach in order to get to the water's edge where the kayaks were waiting. I allowed this so that I could participate in this activity with my wife and children, who were eagerly waiting next to their kayaks. Next time they'll have to kayak without me.

I was extremely satisfied with the instruction received. I don't know enough even to criticize or suggest. She made it fun, took breaks to monitor my fatigue level and used triggers from other aspects of my life. For instance, she knew I played piano and used rhythmic and musical imagery to generalize into my kayak strokes and rhythm.

It would be important to know the persons level of injury and ability. Also the individuals knowledge of the water. Maybe start off in calm water. See #13 (use double kayak)

None. Never go out with the wind!

Just make it a bit cheaper and have instructors who can bring their own FM system for hard of hearing people.

APPENDIX J

Equipment and Kayak Modification Suggestions

After a short time, my back starts aching. Need more cushioning. Accessing the kayak is difficult and I need more time learning strokes and maneuvering the water independently.

Should be able to keep the kayak steady for wheelchair users.

Different size seats

Lifter for kayak to car. Cheaper to rent, have assistant available to disabled people.

How about remembering to supply a "beach wheelchair" or "all terrain wheelchair" when a dock is not available. Even a large wagon with balloon wheels would be better than being dragged and jerked across the sand in my wheelchair.

I felt very safe in the adaptive kayak and I graduated to a non-adaptive kayak quite quickly—though not yet completely solo. Perhaps adaptive kayaks could include a strap to prevent knees from wobbling in and out.

I have only used an Ocean Kayak (open on top). They are very stable in Class I, II, or III water, maybe a little class IV. The only problem if it goes over, you are in the water and need to get to the side to flip it back over and get back in.

Encouragement, program providers are reluctant to offer water sports programs because what is perceived as increased safety risks/liability providers prefer land (non water sports) but I love water sports and miss them when programs are no longer available or offered.

None. There are many models and new designs all the time.

I'd love to try an ocean kayak with a closed cockpit (dome enclosure) which obviously needs to be openable.

APPENDIX K

Resources for Paddlers with Physical Disabilities

Resources for Paddlers with Physical Disabilities

Nantahala Outdoor Center
13077 Hwy 19 West
Bryson City, NC 28713-9114
(888) 662-1662 ext. 600
http://www.nocweb.com

The American Canoe Association
7432 Alban Station Blvd., Suite B-226
Springfield, VA 22150
(703) 451-0141
E-mail: ACADirect@aol.com

Ski-For-All
1621 – 114st, Suite 132
Bellview, WA 98004-6905
(425) 462-0978

Center for Adaptive Kayaking
P.O. Box 3935
Breckenridge, CO 80424
(970) 513-9104

U.S. Adaptive Recreation Center
P.O. Box 2897
Big Bear Lake, CA 92315
(909) 585-2519, ext. 269

VITA

Susan Louise Montgomery was born on September 15, 1968 in Birmingham, Alabama. She graduated from Montevallo High School in Montevallo, Alabama in May 1986 and entered the University of Montevallo the following September. In 1988, Susan was inducted into the University of Montevallo Xi Chapter of Kappa Pi International Honorary Art Fraternity. She served in the position of Treasurer that same year. In August 1990 Susan received a Bachelor of Science degree with a major in Art.

Upon completion of her degree, Susan was employed in the healthcare field, where she remained until June 1997. In August 1997 she entered graduate school at The University of Tennessee and accepted a Graduate Teaching Assistantship while working to complete a Master of Science degree with a concentration in therapeutic recreation. In 1998 Susan was initiated into the Omicron Alpha Epsilon Chapter of Kappa Omicron Nu National Honor Society. Upon completion of her course work, Susan interned at Woodrow Wilson Rehabilitation Center. Susan received her master's degree in December of 1998.