

EFFECTS OF WHEELCHAIR SPORT
INVOLVEMENT ON THE COMMUNITY REINTEGRATION
OF THE SPINAL CORD POPULATION

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I am submitting herewith a thesis written by Diane R. Alfino entitled "Effects of Wheelchair Sport Involvement on the Community Reintegration of the Spinal Cord Population". 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 M.A., with a major in Occupational Therapy.

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DEDICATION

To my Mother

Who was always there
to support my goals and achievements

and

To my family and friends

Who consistently encouraged me
throughout this endeavor

Effects of Wheelchair Sport Involvement
on the Community Reintegration
of the Spinal Cord Population

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December 1990

Annually, thousands of people suffer traumatic spinal cord injuries. These adults were studied to determine what impact wheelchair sports have on the community reintegration following a prolonged rehabilitation stay.

A questionnaire was administered to each participant to determine demographic information, vocational status, leisure interests, self-care skill independence, and the importance of wheelchair sports.

Several original hypotheses showed significant results. Camaraderie among athletes is an instrumental force for the spinal cord injured individual to rejoin the mainstream of life. The less neurologically involved individuals are more involved in wheelchair sports. SCI individuals who are encouraged are more likely to participate in wheelchair sports. These factors may influence the time required for the injured to return to their premorbid lifestyle.

The results will benefit all members of the rehabilitation team in enabling the SCI individual to pursue their leisure interests as an essential part of successful

community reintegration.

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CHAPTER I

INTRODUCTION TO THE STUDY

Spinal cord injury (SCI) is a neurologic impairment to the spinal cord resulting in complete or partial paralysis with decreased sensation below the level of the injury and associated loss of function. According to Shepherd, "0.1% of the total population in a developed nation are wheelchair confined" (Shepherd, 1988, p. 227). There are presently 12,000-13,000 newly spinal cord injured people annually (Collins, 1986, p. 317). Spinal cord injuries affect primarily men (98%) and 80% are white (Trieschmann, 1988, p. 7). The injuries occur mainly to young men (61.1%) between the ages of 16 and 30. Average age of onset is 25 years (Trieschmann, 1988, p. 7).

As a result of the injury, tremendous adjustments are needed on the part of the individual, his/her friends, and family. All aspects of one's life must suddenly be altered as the recovery process occurs. Career, educational and personal goals must be put "on hold" during this rehabilitation phase. Psychological adjustment is critical to the success and ease with which one adjusts to the disability. Returning to the daily routine of a home life,

work or school, and previous recreational and leisure activities, are all components of the current buzzword, "community reintegration". More and more rehabilitation programs have been geared toward easing the transition between the hospital/rehabilitation environment and the home/work environment. With the many adaptations possible, sport is considered a successful method to bridge the gap between rehabilitation and full community reintegration.

Statement of the Problem

The disabled have long had difficulty adjusting to their disabilities, returning to the work force, returning to previous leisure pursuits or, generally, to joining the mainstream of the community. Sport is one method through which community reintegration can occur. Does participation in wheelchair sports enhance a person's return to work or to an academic setting? Is the camaraderie common in sports helpful to accept one's disability and move on with his/her life? What other factors are critical in enhancing full community reintegration? These factors were studied by questioning a group of handicapped students/athletes at the Southwest Wheelchair Athletic Association (SWAA) Track and Field Games.

Purpose of the Study

Rehabilitation has long aimed at providing skills, training, educational information, and emotional support to return the severely disabled individual to his/her home or to the community. Wheelchair sport has evolved from a purely recreational interest to a serious sport. The purpose of this study was to determine what impact wheelchair sport has had on the community reintegration of SCI individuals. This study was conducted to benefit rehabilitation professionals, the medical and academic communities and, ultimately, to benefit present and future SCI individuals.

Hypotheses

1. Participation in wheelchair sports enhances an individual's return to work or to an academic setting.
2. Spinal cord injury individuals who had dependents are more likely to return to a work/academic setting.
3. The camaraderie associated with wheelchair sports is an instrumental force in the community reintegration process.
4. Spinal cord injured individuals with less neurological impairment are more inclined to participate in wheelchair sports than those with more neurological impairment.

5. Spinal cord injured individuals who have participated in sports as children are more likely to participate in wheelchair sports as adults.

6. Spinal cord injured individuals who have encouragement from others are more likely to participate in sports or return to previous activities more quickly than those without encouragement.

Definitions of Terms

Community Reintegration -- the ability of a disabled person to return to premorbid community related daily activities (i.e., going shopping, eating out, banking, going to the post office, etc.)

Leisure -- (a) "Freedom from time-consuming work or duties. (b) Free time" (American Heritage, 1970, p. 404).

Paraplegic -- Paralysis or paresis from T₂ and below, with resulting lower extremity dysfunction.

Quadriplegic -- Paralysis or paresis originating at the cervical neurological level, which includes upper extremity dysfunction and impairments below the level of the injury.

Recreation -- "Refreshment of one's mind or body after labor through diverting activity; play" (American Heritage, 1970, p. 591).

Wheelchair Sports -- Organized competitive sports

adapted for participation by the physically challenged.

Assumptions

1. It was assumed that each participant was honest on his/her completed questionnaire.

2. It was assumed that each participant had some exposure to wheelchair sports during or shortly after his/her rehabilitation program.

3. It was assumed that each participant had adequate transportation to attend wheelchair sports training and competitive events.

CHAPTER II

REVIEW OF RELATED LITERATURE

Perhaps the most distinguished advocate to promote the psychological and physiological benefits of wheelchair sports was Sir Ludwig Guttman of England (Jackson & Fredrickson, 1979, p. 293). Following the influx of newly injured veterans from World War II, Guttman organized the first competitive games for the disabled. This began on a small scale at one rehabilitation center and has gradually enlarged to include international representation and now participation in the Olympic Games. He was a pioneer in the area of sports as a vital component of a physically and emotionally healthy lifestyle.

Trieschmann (1988) studied the SCI population for many years and authored several classic reference books. She has professional experience in many aspects of the trauma and its consequences. "People with SCI are a fairly heterogeneous group, but they have one thing in common: disability paralyzes them and reduces their freedom. They must learn new types of recreation and leisure time activities, and perhaps, a new vocation" (Trieschmann, 1988, p. 5). She also found that previous education and employment are indicative of post-injury employment but are

not the only factors in judging an individual's productivity and their return-to-work (Trieschmann, 1988). Productivity, in her opinion, included other areas besides vocational. It encompassed education, avocational pursuits and volunteer activities. Other key factors were a persons' level of creativity and their ability to set goals.

Shepherd (1988) studied the physical, psychological, and emotional effects of sports and the disabled population. He found that physical activity had much value in the early phases of treatment in countering depression and assisting the patient with developing a sense of self-efficacy. "Subsequent participation in wheelchair sports offers prospects of social respect and prestige" (Shepherd, 1988, p. 239). He also felt that the positive outlook "engendered by vigorous competition makes a significant contribution to the recovery process" (Shepherd, 1988, p. 242). Not only was there an immediate contribution seen in recovering, but the vigorous activity also improved the paraplegic's medical prognosis (Shepherd, 1988).

Vocational development has received much specialized attention through the work of Goldberg and Freed (1982). Not only was employment studied but also some of the motivating factors in returning to gainful employment. They

established that the vocational development prior to an injury was predictive of post-injury return-to-work plans. In addition to this, educational plans made prior to injury, philosophy of work and the number of dependents were all instrumental in one's return-to-work (Goldberg & Freed, 1982). Goldberg and Freed studied a group of SCI individuals at 2, 4, and 8 years post-disability to track return-to-work status. They found that the study conducted at 8 years "was consistent in its findings with the study completed at four years. Employment did not rise with increasing longevity after discharge. Severity of neurologic impairment still was not a factor in vocational adjustment" (Goldberg & Freed, 1982, p. 210).

Jackson and Fredrickson (1979) strongly believed that the need for wheelchair sports is more important for the disabled person than the able-bodied person. Not only is sports important as a leisure activity, but it has the physiological benefits of increasing mobility, balance, endurance, and decreasing weight gain. "The most important benefit is that sports eliminates or helps to diminish the sense of depression that so often accompanies a serious and permanent physical disability" (Jackson & Fredrickson, 1979, p. 296). In addition to the physical benefit, sports can

aid in community reintegration. "Sports have been instrumental in promoting integration and providing a means for seriously disabled people to reenter the main stream of life" (Jackson & Fredrickson, 1979, p. 296).

Botrim (1983) studied the introduction of competitive wheelchair sports in an acute care setting. He found that competitive wheelchair racing could be a valuable tool in the physical and emotional rehabilitation and the community reintegration of paraplegics (Botrim, 1983). Botrim was involved in coaching physically challenged athletes to participate in marathon racing.

Another advocate for the use of sports to promote integration of the seriously disabled was Jack (1987). He noted that with disabled athletes there was increasing evidence to support the theory that sports participation improved the physical lifestyle, mental outlook, and promoted a better acceptance of the disability as compared to the non-active disabled. In addition, he found that psychological testing showed higher levels of self-satisfaction, greater self-image, fewer suicidal tendencies, and a more independent attitude than found among those who are inactive and more dependent (Jack, 1987).

Mackelprang and Hepworth (1987) investigated factors

affecting the adjustment of rural vs. urban physically disabled individuals. They found the majority of disabled chose urban living areas with greater than 500,000 people living there. They believed that superior educational, vocational, rehabilitation, and comprehensive medical care available in the urban areas benefitted the disabled individual. Recreational and social opportunities were more plentiful in the urban area. These opportunities helped to improve the overall quality of life. "People who are productive and economically independent tend to have a higher sense of self-worth than those who are not" (Mackelprang & Hepworth, 1987, p. 34).

Sports, with the physiological benefits of improving aerobic capacity, mobility, balance, endurance, decreasing obesity, improving life satisfaction, and diminishing depression were a portion of the study of Curtis, McClanahan, Hall, Dillon, and Brown (1986). Sports have also been utilized as a compliment to a rehabilitation program to restore mental activity and self-confidence. They studied the physical benefits of sport, and the contribution of sports to the community reintegration of the physically disabled (Curtis et al., 1986). Avocational pursuits were also discussed. "Another consideration is the

value of avocational, leisure pursuits as a desired outcome of the SCI rehab process. Even nonathletes in this study showed interest in and accessibility to sports as a leisure activity" (Curtis et al., 1986, p. 864).

Alfred, Furhrer, and Rossi (1987) investigated the vocational development following the rehabilitation and the process of reentering the community. They found that educational attainment and educational plans made before injury were the best predictors in vocational plans after the SCI (Alfred et al., 1987). Vocational development following the injury "is markedly depressed during inpatient rehabilitation and for 6 months after discharge" (Alfred et al., 1987, p. 856).

Additional sources, which provided demographic and background information, included Collins, Peipmeier, and Ogle (1986); Gass and Camp (1979); and Noble (1981). Powell and Dysinger studied organized sports among able-bodied children and adults.

CHAPTER III

METHOD

In order to gather all the necessary data, a questionnaire was chosen as the data collection tool. It was presented at a nationally sanctioned track meet where the possibility of a large subject pool would be available. Specific criteria regarding the subjects, special limitations, the questionnaire, data collection procedures, and analysis of data are addressed in this chapter.

Subjects

Subjects were 22 athletes/participants or spectators at the SWAA Track and Field Games held April 26-29, 1990. The event was held at the University of Texas at Arlington. Each subject had suffered a traumatic SCI, a spinal tumor, or a related spinal disease. Male and female subjects were surveyed. There were no restrictions on neurological level of impairment. Age range was restricted to those between 15 and 45 years of age.

Instrument

A specially designed questionnaire was prepared by the investigator to acquire the necessary data (See Appendix). Twenty-five questions included name, age, sex, onset of injury, neurological level and etiology of injury,

marital status, and work or school status. Additional questions concerned leisure interests, reasons for participating in wheelchair sports, the length of time until they returned to school or work, independence in self-care skills, the importance of wheelchair sports, and their level of competition. The question format used included checking a response, short answers, open ended questions and rank ordering of items.

Procedure

Subjects were asked to complete the questionnaire at the registration table of the SWAA Games. Subjects who met the criteria received a copy of the questionnaire and completed it independently. If assistance was needed to interpret the questions or to write the responses, it was available. Questionnaires were completed at the registration table and returned to the registration table or to volunteers assisting with the research project.

Analysis of Data

Completed questionnaires were tabulated and analyzed using descriptive statistics. The Chi-Square Goodness of Fit one-way and two-way tests were also utilized. The level of significance used to test the hypotheses was .01. A Spearman rank-order correlation analyzed the ranking survey question.

Summary

All participants were asked on an individual basis to participate in the survey. Several athletes refused due to time constraints and/or lack of interest. The majority of athletes showed a genuine interest in participating in the research project. Twenty-two subjects completed the questionnaire.

CHAPTER IV

RESULTS

The survey was administered at the track and field meet, April 26-29, 1990, at the University of Texas at Arlington. Description statistics, Chi-Square, and Spearman rank order correlation tests were used to analyze the data. Of the 22 respondents, 19 (86.4%) were male and 3 (13.6%) were female. Average age of the respondents was 29.95 years. Age of the subjects ranged from 19 to 43 years.

All participants fell into the married, single, or divorced categories, with 26.3% married, 54.5% single, and 18.2% divorced. No widows or widowers were involved in the study. Five of the participants had dependents. This varied from 1-3 children. Mean number of children was 2.0. Having dependents did not appear to be a significant factor in track and field competition.

Question number 4, which asked about college major, showed much variability among the respondents. Among the 15 responses were telecommunications, electronics, journalism, computer programming, history, drafting, agricultural engineering, aerospace engineering, accounting, biology, geology, graphics communications, law, architecture, business and communications. Obviously, the respondents

were quite diverse in their interests, and there were no duplications. Degree desired also showed diversity. Forty percent were preparing for Bachelor of Science Degrees. Other degrees sought were Associate, Bachelor of Arts, Master's, Juris Doctorate, and Doctor of Philosophy. Seven respondents did not answer this question.

Career goals also showed much variety. Some respondents listed several goals rather than the expected occupational goals. Twenty-three percent were studying to be attorneys. The remainder of the responses were as follows: "make money", self-improvement, communications, self-employed, engineer, special education teacher, design, physical education, acting, computer software, enjoy life and my kids, and "be the best wheelchair athlete; win an academy award".

The number of years since onset of the spinal cord injury varied from 1 to 23 years. The mean number of years since onset was 12.14 years. Seventy percent of the respondents had been injured 10 or more years.

As with other spinal cord injured individuals, the cause of injury also differed and included motor vehicle accidents (45.5%), diving accidents (22.7%), and motorcycle accidents (9.1%) as the most frequent responses. There was one response each which included a gunshot wound, mobile

home fall, water skiing, and explosion.

There was no pattern among the respondents concerning the level of spinal cord injury. The level ranged from C5 to L5 with C7 being the most frequent response. This was followed by T12 and L1. See Figure 1.

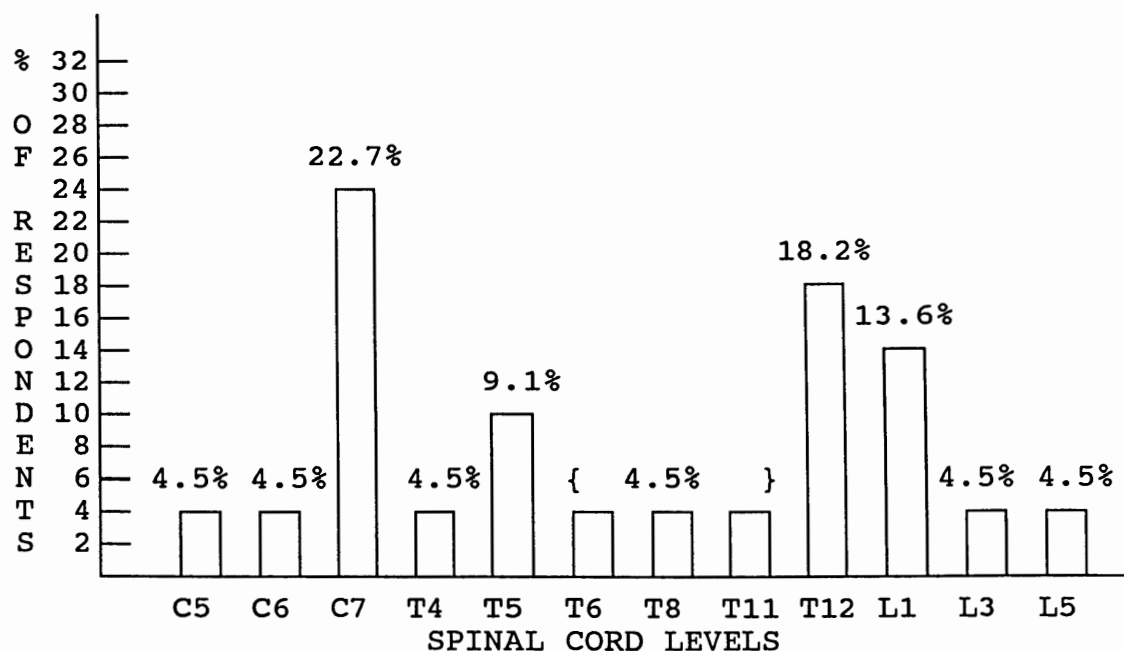


Figure 1. Spinal levels of injury of each participant.

Of the group of participants, 68.2% were in school at the time of the injury. This ranged from junior high school to college. The current status results were quite diverse. Slightly less than half of the respondents were working (45.5%) and 22.7% were attending school. See Figure 2.

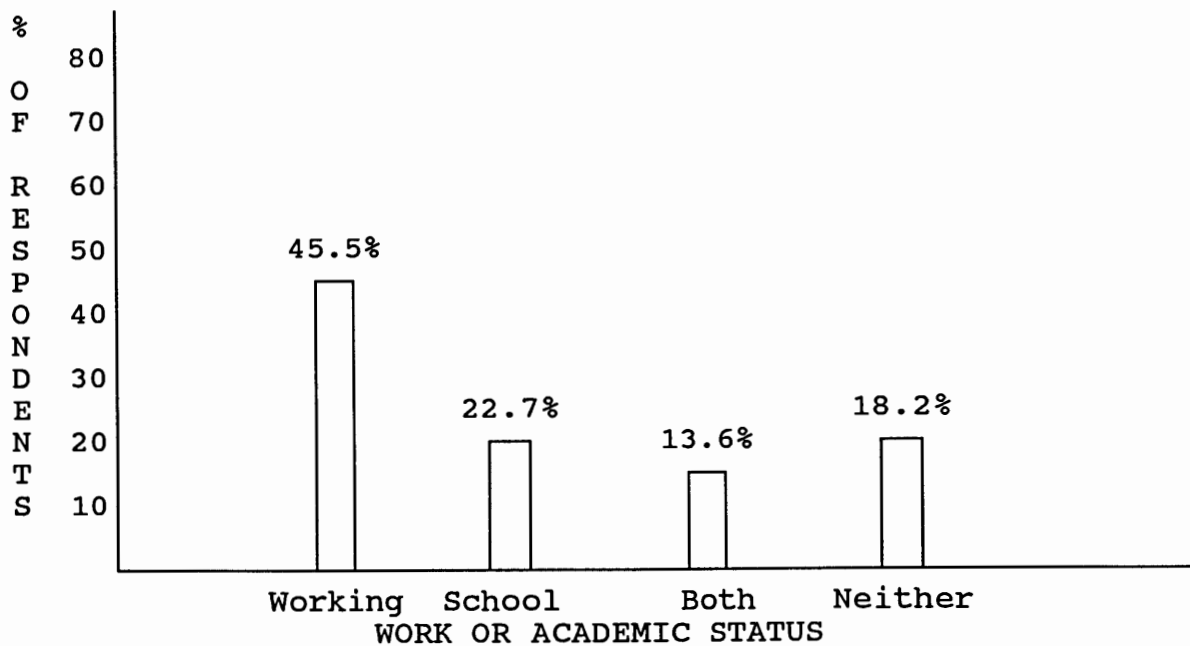


Figure 2. Current work and school status of each participant.

Question #13 examined the motivation of the SCI individual to return to a work or school environment. This was an open-ended question and the responses fell into three main categories. Self-improvement topped the list with 18.2% of the responses. Also, "necessary for career goals" was a frequent response (13.6%). Other responses mentioned were need for self-improvement (self-fulfillment), money to maintain standard of living; or necessary for a career goal. Other responses included: "desire to lead a normal life", "not sure what else to do", or "gotta do something".

The "significant other" who may have encouraged the

SCI individual was queried. The majority of responses included self (44%), parents (38.9%), nurse (5.6%), friend (5.6%), or other (5.6%). The return to work or school primarily occurred within months for 35% of the respondents. Thirty percent returned in 1 to 2 years following discharge, 25% within days and 10% within weeks of the discharge date.

The level of independence in self-care skills was asked of the participants. The respondents who stated they were independent in self-care skills was much larger than the respondents who were dependent in self-care skills respondents 86.3% and 13.6%, respectively. Of the 3 who required assistance, the needed help varied from 3 hours for toileting only, to 16 hours each week for all aspects of self-care and homemaking activities.

The choice of recreational interests was addressed in an open-ended question. Thirty-nine different leisure activities were mentioned. Responses included wheelchair track, basketball, and tennis; computing; partying; shooting; music; museums; and fishing. A broad spectrum of activities were included. The amount of time involved in recreational activity also varied. The time spent ranged from 1 hour to 20 hours a week. See Figure 3 for complete results.

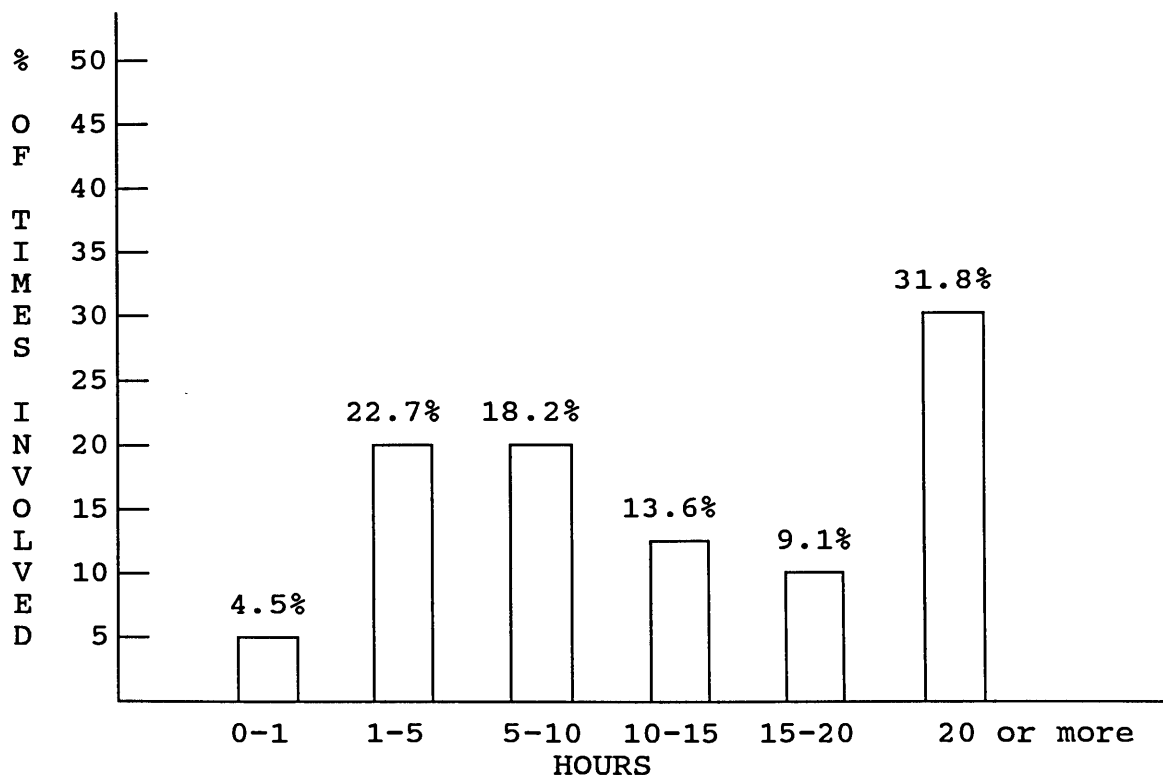


Figure 3. Number of hours spent weekly in leisure participation.

The majority of the respondents (68.2%) indicated that wheelchair sports were very important in their lives. Twenty-seven percent of the sample felt sports were important; 4.5% did not feel sports were important. Of the respondents, 77.3% indicated sports were always important to them.

Question #21 asked about the respondents' participation in sports prior to spinal cord injury. Choice of answers included grade school, high school, junior

college, college, AAU, or other. Seventy-six percent participated in at least 1 level of competition. Results were as follows for their highest level of competition: 5.3% for grade school; 15.8% for junior high; 57.9% for high school; 5.3% for AAU; 5.3% for junior college; and 10.5% for college level.

The percentage of participants who competed in the track and field competition was 66.7%. This figure was distributed among 4 levels. There appeared to be confusion on the part of the SCI individual over the use of the term "novice" and "beginner". In some sports circles, a novice has no experience with the competition and a beginner has minimal exposure with competition. No responses were recorded in the "beginner" category. See Figure 4 for results.

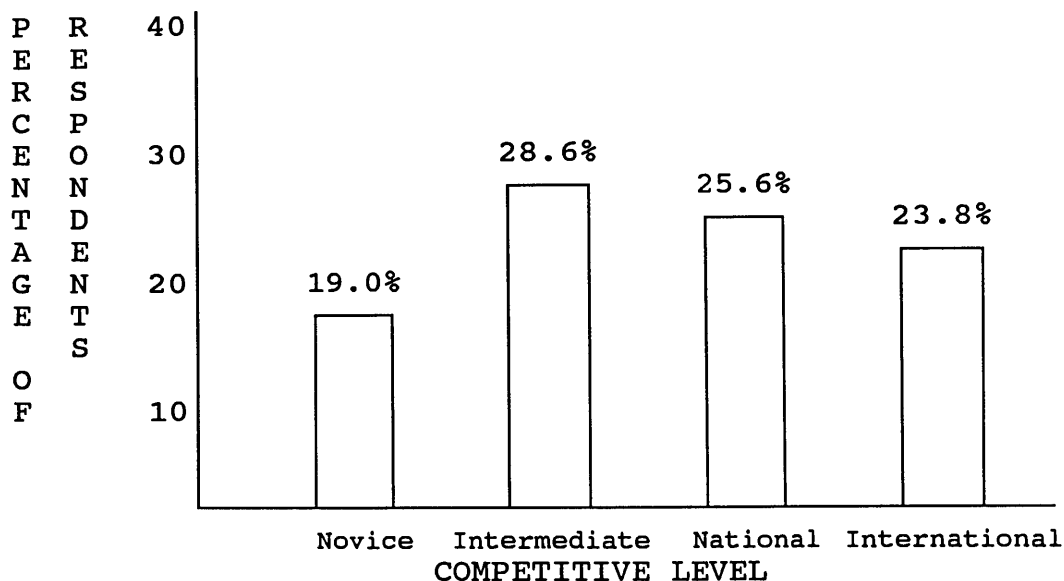


Figure 4. Participants' chosen level of competition.

The participants were asked to identify the reasons they participated in wheelchair sports. Choices included in the question were physical fitness, weight control, competition, travel, meeting members of the opposite sex, sharing information with other physically challenged individuals, socializing and "other". Each participant was asked to rank-order their reason for sports participation. Of those who picked physical fitness, 89.5% chose that response as number 1 or number 2. The remaining 10.6% chose it in the top 4 preferences.

Participating in wheelchair sports to control weight was not selected as a top choice by any respondent. It was selected as the third or fifth choices by 23.5% -- the

largest group of the respondents. Competition was selected by 84.2% of the subjects as as their first or second selection. The choice of travel seemed to be a middle pick with 16.7% choosing it as number 2, 3, or 4, and 27.8% marking it as 5th.

Meeting members of the opposite sex did not appear to be an important factor for wheelchair sports participants. Individuals (41.2%) selected it as number 7, and no one ranked it in their top 3 choices. Sharing information ranged from first choice to seventh choice. Those who ranked it as one of their top 4 choices were 58%. Socializing as a selection ranged from first to seventh choices. Thirty percent of the respondents marked socializing as sixth choice, 25% as fourth choice, and 20% as third choice.

The final question dealt with the present track meet and whether it represented their first competition. Only 22.7% were participating in their first track meet; 77.3% were experienced.

Chi-Square Goodness-of-Fit tests were run in addition to the descriptive statistics. The level of significance selected for all tests was .01. This strict level was selected to guard against the inflation of alpha and the possibility of making a type II error when doing repeated

tests on data from the same subjects. No significance was noted with Hypothesis 1, regarding participation in wheelchair sports as a positive influence in returning to work or an academic setting. No conclusive results supported that hypothesis.

No conclusive evidence was determined to support the second hypothesis that the SCI individuals with dependents were more likely to return to work or an academic setting. The small sample size may have been a limiting factor in supporting that specific hypothesis.

The camaraderie associated with sports (Hypothesis 3) showed significance ($\chi^2 = 24.26$, $p < .001$). Of the 37 leisure interests of the participants, 77% revolved around physically challenging sports. Of the respondents, 95.5% indicated that wheelchair sports were important or very important, and 77.3% felt it was always important to them. The majority of these individuals experienced team companionship in their pre-injury days and also following their injuries. Social needs or affiliations were in the top 3 responses in 66.9% of the responses.

The fourth hypothesis of the study was to determine if a relationship existed between level of impairment and participation in wheelchair sports. Using a Spearman rank-order correlation, a value of $r_s = -0.512$ was attained.

There is a moderate negative relationship between level of impairment and participation in wheelchair sports. Less-impaired individuals are more inclined to participate in wheelchair sports.

Hypothesis 5 stated that childhood sports participation could lead to adult wheelchair sports participation. As previously discussed, 77% of the participants' leisure activities pertained to sports and 95.5% stated sports were important or very important to them. A Spearman rank-order correlation of $r_s = -0.073$ indicated that there is little, if any, relationship between sports participation as a child and wheelchair sports participation as an adult.

Hypothesis 6 stated that encouragement from others enables individuals to return to work or school more quickly than those without encouragement. A Spearman rank-order correlation of $r_s = 0.012$ does support that hypothesis. Many participants (38.9%) received encouragement from their parents, and 55.6% received encouragement from other individuals.

CHAPTER V
DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Discussion

Participation in wheelchair sports alone does not enhance the community reintegration of the spinal cord population. The camaraderie among the wheelchair athlete is an instrumental force for the SCI individual to become involved in sports and join the mainstream of life. It is possible to achieve the same camaraderie among active members of other organizations, such as the symphony, opera, PTA, or church organizations (DeVivo, 1989). This, however, did not appear evident among the responses to the questionnaire. In fact, it was felt by rehabilitation experts that the spinal cord injured population generally could be categorized as young men between 19 and 30 years of age with outdoor interests. Many of these stereotyped athletes appeared to be high risk-takers.

Several of the original hypotheses showed significant results. As mentioned previously, the camaraderie among wheelchair athletes is an instrumental force for the SCI individual to become involved in sports and join the mainstream of life. The less neurologically involved individuals are more involved in wheelchair sports.

This response was expected because of the increased innervated musculature and a greater ease in participation in wheelchair sports. Spinal cord injured individuals who have been encouraged are more likely to participate in wheelchair sports. These factors may strongly influence the amount of time required for the injured to return to a daily routine more closely resembling their premorbid lifestyle.

The various factors involved in the SCI individuals' motivation to reintegrate back to their lifestyle was not determined. Each individual's personality affects his response to his injury, the rate of return to the community, and the specific influential factors each person needs to achieve optimum community reintegration. As stated previously, camaraderie in sports can enhance a person's return to the non-hospital environment, and this study provides evidence supporting that hypothesis.

The information gathered in the descriptive statistics was interesting. The diverse group of interests, demographic data and goals supports Trieschmann's (1988) view of the heterogeneity of the SCI population. The average age of the participants was 29.5 years. This value was much higher than anticipated. It was the author's expectation that the mean age would be lower, possibly because of the university setting of the track meet and the

fact that many 29 year olds are often settled in careers and have families. The survey results of marital status were also unexpected in the responses. Many of the participants were single (54.5%), whereas 26.3% were married and 18.2% were divorced. As with the age response, this too was an unexpected outcome. A higher percentage of married participants was anticipated by the investigator.

Other unexpected results included the diversity of the college majors and the varied responses to the respondents' career goals. There truly was a variety of answers provided in these categories. This supports Trieschmann's (1988) view of a varied spinal cord injured population.

Besides being older than anticipated, the athletes were also disabled for an average of 10 years. This result was unexpected to the investigator. It is possible that the expected younger respondent would not have been injured for so many years. The result was a mean score and the score was probably skewed by the participants who had received their injuries 20-25 years previously.

Other unusual results included the responses involving the "significant other" who encouraged the SCI individual. The responses chosen were parent, self, nurse, and friend. Responses not chosen were physician, therapist, and "other". As a health care professional, the investigator did not

expect that response. Maybe it was also wishful thinking to believe that the health care worker has more influence. The idea of participating in wheelchair sports may also be "planted" by the therapist, physician or "other" person and may not be recognized by the SCI individual until they have accepted the idea as their own. That possibility was not assessed, but is a moderately strong possibility.

Conclusion

Several original hypothesis showed significant results. Camaraderie among athletes is an instrumental factor in enabling the spinal cord injured individual to rejoin the mainstream of life. The less neurologically injured individuals are more involved in wheelchair sports. SCI individuals who are encouraged are more likely to participate in wheelchair sports. These factors may influence the amount of time required for the SCI injured to return to their premorbid lifestyle and achieve community reintegration.

Recommendations

Recommendations for further research would be to refine the research questions in order to make them more specific and easier to analyze. More emphasis would be placed on specific questions related to the premorbid work and leisure habits and on their present work, school, and leisure

interests. Questions would be reworded to elicit more specific answers, (i.e., 6, 13, 14, 15, 24). These specific questions were too broad and provided varied responses, which showed ambiguity in the desired answer. For example, question number 6 would be changed to "career or job goal". A control group of non-athletic SCI individuals would also be recommended. This would provide a comparison control group and would allow greater insight into the individuals' motivations and interests in returning to work.

Although not all of the 6 hypotheses came out as the investigator hoped, significance of sports did prove to have an impact on the community reintegration of the SCI individuals. Whether the camaraderie alone has that much influence, the investigator is not certain but the team aspect does influence and motivate many people regardless of disability. It is hoped that the information contained in this research study can be applied in the rehabilitation, medical, and academic communities, in order to enhance the quality of life of the SCI population.

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APPENDIX
QUESTIONNAIRE

This is the cover letter and the questionnaire which was administered to the wheelchair athletes April 26-29, 1990.

Hi! My name is Diane Alfino. I am doing my Master's thesis studying spinal cord injured individuals and their interest in wheelchair sports. I am a Graduate student at TWU and have been associated with wheelchair sports since 1981.

I would appreciate your assistance in answering this questionnaire. It should take approximately 5-10 minutes to complete. Please return the completed form to the volunteers at the registration table.

Thank you for your assistance!

Questionnaire

1. Male ___ Female ___

2. Age _____

3. Married ___ Single ___

Widowed ___ Divorced ___

Do you have dependents?

Yes ___ No ___

If yes, how many? ___

4. College Major _____

5. Degree Desired _____

6. Career Goal _____

7. When was the onset of your spinal cord injury?

8. What caused your spinal cord injury?

9. What is the level of your spinal cord injury?

10. At the time of your injury were you in school?

Yes ___ No ___

11. At the time of your injury, were you working full-time?

Yes ___ No ___

12. What is your present status?

Working ___ In School ___ Neither ___

If you checked neither, skip to # 16.

13. What prompted you to return to school or work?

Explain.

14. Was there someone significant who encouraged you to return to work or school? Mark only 1 answer.

Physician Therapist

Parent Nurse

Other Family TV, radio, newspaper article

Friend Coach

Other (please explain)

15. After discharge from the hospital or rehabilitation center, how long was it before you returned to work or school? Specify approximate number.

Days Months

Weeks Years

16. Are you Independent in self-care skills? (i.e. bathing, toileting, eating, dressing, grooming, homemaking)?

Yes ___ No ___

If no, how many hours a week do you require assistance?

For what activities?

___ Bathing ___ Dressing
 ___ Toileting ___ Grooming
 ___ Eating ___ Homemaking

17. What are your recreational interests?

18. How many hours a week are you involved in these activities? Please estimate.

___ 0-1 hours ___ 10-15 hours
 ___ 1-5 hours ___ 15-20 hours
 ___ 5-10 hours ___ above 20 hours

19. How important are your wheelchair sports to you?

___ Very Important
 ___ Important
 ___ Not Important

20. Have sports always been important to you?

___ Yes ___ No

21. Were you involved in competitive sports before your injury?

Yes No

If yes, please check all those that apply to you.

Grade School

Junior High

High School

Other _____

22. Are you participating in the track and field competition this weekend?

Yes No

23. What level of competition do you compete against?

Mark 1.

Novice

Beginner

Intermediate

National

International

24. Why do you participate in wheelchair sports? Please rank the following possible benefits with 1 being the most important and 8 being the least important.

Physical Fitness

Control Weight

Competition

___ Travel

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___ Meet members of the opposite sex

___ Sharing information with other physically challenged individuals.

___ Socializing

___ Other _____

25. Is this your first competition?

Yes ___ No ___

Other Comments:

Thank you for your participation in this survey. Would you like to receive the results of this survey?

Yes ___ No ___

If yes, please indicate below where results should be sent.

Name _____

Address _____

City, State, Zip Code _____

_____ Signature (optional)

I UNDERSTAND THAT MY RETURN OF THIS QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT AS A SUBJECT IN THIS RESEARCH. NO MEDICAL SERVICES OR COMPENSATION IS PROVIDED TO SUBJECTS BY THE UNIVERSITY AS A RESULT OF INJURY FROM PARTICIPATION IN RESEARCH.