

## Using Wheelchair Sports to Complement Disability Awareness Curriculum Among College Students

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### Abstract

The purpose of this study was to examine the effects of a campus-wide intramural wheelchair sports program on attitudes toward people with disabilities. The sample consisted of 126 participants at a large, western university. A quasi-experimental pre-post design was used. Results indicated that there was a significant decrease in discomfort in interaction with people with disabilities after participation in the program. Additional findings indicated that recreation majors who were required to have some disability awareness training in their coursework had statistically lower pre- and post-test scores than other majors and demonstrated the greatest change in attitude toward people with disabilities. Implications and recommendations are discussed.

**KEYWORDS:** Attitude change, recreation, wheelchair sport, intramurals, disability awareness curriculum

According to the US Census Bureau, there are nearly 50 million people in the United States who experience living with a disability and the demand for recreation services by individuals with disabilities continues to increase (Center for an Accessible Society, n.d.). Educators in the fields of parks, recreation, tourism and

leisure studies are attempting to address this increasing demand by providing students with a variety of disability related topics and disability awareness programs and activities. Disability awareness content seeks to inform students regarding disability related issues and to help them understand necessary modifications—if any are needed—to better serve individuals with disabilities. Disability awareness curriculum also seeks to facilitate positive attitudes towards individuals with disabilities in an effort to promote quality services for all individuals regardless of ability level. Smith, Austin, Kennedy, Lee, and Hutchinson (2005) have suggested that having the right attitude towards serving individuals with disabilities is a key competency for new recreation professionals working in the community. They also suggested communication and exposure as two important facilitators of attitude change.

A variety of educational efforts have been made in an attempt to facilitate disability awareness and more positive attitudes among future professionals including educational classes, video presentations, resource manuals, and disability simulations. While many of these programs are promoted with good intention, research regarding their effectiveness has reported mixed results and inconclusive evidence (Flower, Burns, & Bottsford-Miller, 2007; French, 1992; Tripp, French, & Sherrill, 1995).

Showing sensational video accounts of people with various disabilities achieving seemingly awe inspiring conquests, such as climbing El Capitan or the world's "Seven Summits" is typically used as an educational technique for teaching disability awareness. While these videos are extraordinary and may change people's attitudes regarding what a person with a disability can accomplish (Smith, Austin, & Kennedy, 2001), people with disabilities have suggested that these extreme stories are far from reality and diminish the accomplishments of those forging ahead in advanced degrees, being parents, or maintaining full time employment.

A relatively new approach for teaching disability awareness has been the use of virtual reality (VR) computer simulation to teach children about accessibility and attitudinal barriers that peers with mobility impairment encounter. Pivik, McComas, MacFarlane, and Laflamme (2002) designed and tested a program that would take a child through an experience in a virtual wheelchair. The program had 24 different barriers the children could locate. The findings of their study indicated that the children who participated in the experimental group gained an increase in their knowledge of barriers. However, both the experimental and control groups showed little change in their attitude scores. While the authors argued several reasons why they did not find a significant attitudinal change in their experimental group, such as ceiling effect and previous exposure, this method of influencing attitudinal change remains questionable.

Traditionally, the most frequently used approach in teaching disability awareness was to have individuals without disabilities participate in an activity or exercise where they simulate having a disability. Disability simulations have been frequently used in a wide variety of educational settings across the United States including many college campuses. Disability simulations typically assign a student

to use a wheelchair for a day, have a simulated amputation or arthritis, or be given a hypothetical sight or hearing impairment. Unfortunately, there is little evidence to support the use of disability simulations. In a recent meta-analysis of disability simulations, Flower, Burns, & Bottsford-Miller (2007) indicated that research on disability simulations represents a "relatively small body of literature" (p. 77) relying heavily on unpublished works. The authors further stated that "the effect size data call the effectiveness of the practice into question," but that "the current data do not support any suggested harmful effects (p.76) of disability simulations." Clearly more research is needed in this area to further inform the topic.

Potentially more important than inconclusive research data, individuals with disabilities—and organizations representing individuals with disabilities—have spoken out against the use of disability simulations as potentially harmful and counterproductive. French (1992, 1996) has criticized these efforts stating that disability simulations miss the broader social picture of disability by focusing individualistically on the challenges associated with impairment, which in many cases is inaccurate because of the temporary nature of the exercise or activity. French and other disability advocates have suggested that this type of narrow focus may do more to perpetuate negative stereotypes and ignorance by promoting an "individual tragedy model of disability" (1996, p. 122).

To avoid an "individual tragedy model" of disability, French (1996) encouraged education and experiences which focus on equality. Others have recommended that attitudes towards individuals with disabilities will be positively changed in environments where a) equal status is promoted, b) positive attitudes and attitude change is institutionally supported, c) cooperation and involvement in meaningful activities are promoted, and d) associations between individuals with disabilities and individuals without disabilities are not superficial, but genuine (Slininger, Sherrill, & Jankowski, 2000).

Slininger, Sherrill, and Jankowski (2000) and Smith, Austin, and Kennedy (2005) have suggested that attitude change will most significantly be changed as individuals with disabilities and those without disabilities have opportunities to interact. Others have also suggested that reducing prejudice and discrimination will be facilitated through positive interaction between individuals with disabilities and individuals without disabilities (Hutzler, 2003; Stewart, 1988; Tripp, French, & Sherrill, 1995). Considering the lack of efficacy research related to disability awareness as well as the potential harmful effects of disability simulations, a new approach for disability education and awareness is warranted.

Based on the recommendations of French (1996) and Slininger, Sherrill, and Jankowski (2000), it was hypothesized that providing opportunities for individuals with disabilities and without disabilities to interact in an environment which emphasized equality would effectively facilitate positive attitude change. To accomplish this within the university setting, an intramural wheelchair sports program (quad-rugby & basketball) was developed and made available for both students with physical disabilities as well as students without disabilities. The intramural wheelchair sports program was designed to create a) a relatively equal playing field

although differences still existed due to functional ability, b) an environment of support for individuals with physical disabilities within the intramural system the and university student body who participate in intramural sports, c) an activity which establishes a common purpose, sense of teamwork, and avoids hypothetical simulations, and d) an opportunity to create relationships through mutual participation (French, 1996; Slininger, Sherrill, & Jankowski (2000)

The concept of a wheelchair intramural program started as students in the recreation and leisure department on campus were exposed to wheelchair sports through a class on accessible recreation and other therapeutic recreation activities utilizing wheelchair sports. As students voiced their enjoyment with various wheelchair sports, the idea of developing an intramural wheelchair sports program was proposed. The central feature of the proposed program was to create an intramural environment where all students could participate together, regardless of whether they had a disability or did not have a disability. In many ways this follows an inclusive recreation philosophy, only differing because the activity requires all participants to use a wheelchair as the predominant equalizing factor and as the rules of quad rugby and wheelchair basketball specify.

Marketing of the wheelchair intramural activity was directed towards both individuals with disabilities as well as individuals without disabilities. Students registered for intramural competition following the same procedures used for other co-ed intramural sports. On some teams, there were members who used wheelchairs on a permanent basis and on the other teams individuals used wheelchair minimally or not at all. The intention of the intramural program was to simply create an environment where individuals with and without disabilities would feel comfortable participating together. There was no intention from the coordinators of the program that individuals without a disability should somehow simulate having a disability, but would simply play an established sport such as quad-rugby and wheelchair basketball using a wheelchair as indicated in the rules of the game. In this setting, it was hoped that exposure to wheelchairs, and the individuals who use them, would be seen as a natural and enjoyable part of the established recreation activity. Teams involved in the wheelchair intramural program played in "round robin" fashion, met all the participants in the setting of the intramural competition, and played for approximately six weeks.

The wheelchair intramural program included both quad rugby and wheelchair basketball. Due to low participation in the wheelchair basketball program, only data from the quad rugby program were used in the current study. Quad rugby is a team sport comprised of two teams with four players on each team. In accordance with the university rules regarding co-ed intramural programs, the quad rugby program required each team to have one female member. Individuals of any ability level were encouraged to participate. Games were played on an indoor basketball court. The objective of the game is to advance the ball into the opposing team's goal.

A pilot study of the wheelchair intramurals program was conducted in an effort to examine its influence on participant's attitudes toward people with disabili-

ties. Findings from the preliminary study (Barney & Zabriskie, 2004) supported the hypothesis by indicating that participants had significantly less discomfort in social interactions with people with disabilities after participation. Results also found that in written open-ended responses 95% of participants found participation very enjoyable and 100% were eager to encourage others to participate in the future. Further findings indicated that participants who had course material covering disability related topics had significantly lower post scores than those that did not. The pilot study concluded that "perhaps a combination of disability awareness training and regular involvement in an inclusive sport is the best approach to influence attitudes towards people with disabilities" (p. 19).

Due to the promising results of the pilot study, further research was recommended. Perhaps the greatest limitation to the pilot study was the lack of sufficient matched pre-post responses. While the sample size was sufficient ( $n = 147$ ) there were only 43 cases that were clearly matched with both pre and posttests. Therefore, the purpose of this study was to further examine the effects of a campus-wide intramural wheelchair sports program on participants' attitudes toward people with disabilities utilizing a pre-post design.

### Methods

Students attending a large, Western university were recruited to participate in a 6 week intramural wheelchair sports program during the fall semester of 2004. After all university approvals were received, participants in the intramural wheelchair sports program were given a questionnaire immediately prior to the beginning of their first game. The questionnaire requested an email address, so that the post-season questionnaire could be collected via email. Participants in the study received a t-shirt after they had completed both questionnaires as an incentive for their participation.

*Instrumentation.* The 31-item research questionnaire consisted of: (a) the twenty-item Interaction with Disabled Persons Scale (IDP) (Gething & Wheeler, 1992), (b) five socio-demographic items, (c) four descriptive questions about exposure to people with disabilities and wheelchair sport participation, and (d) a one-item evaluation of program enjoyment. The IDP scale assesses personal attitudes toward people with disabilities by measuring an individual's level of discomfort in social interaction with people with disabilities. It uses a six point Likert-type scale with responses ranging from "strongly disagree" to "strongly agree." Scores range from twenty to 120 and are calculated according to prescribed scoring procedures that accounted for reverse coded items. Higher scores indicated more discomfort interacting with people with disabilities. Gething & Wheeler (1992) reported test-retest reliability from  $\alpha = .64$  to  $\alpha = .82$ , with intervals that ranged from one week to six months. Internal consistency for the current study was found acceptable for both the pre-test ( $\alpha = .78$ ) and post-test ( $\alpha = .84$ ). Socio-demographic questions included age, gender, ethnicity, year in school, and major. Descriptive questions included the following items: if they had a disability, if they were related to someone with a disability, if they had a personal relationship with a person with a disability, and

if they had participated previously in wheelchair sports. The final enjoyment item was measured on a ten-point scale ranging from "hated it" on the lower end to "loved it" on the upper end.

*Analysis.* Descriptive statistics were computed for socio-demographic information in order to examine the characteristics of the study sample. Bivariate correlations were also computed to determine the relationship of variables included in the study. A pre-post quasi-experimental design using standard multiple regression analysis was utilized to predict factors influencing the change in scores on the Interaction with Disabled Persons Scale (IDP) following participation in the intramural wheelchair program. Changes in the IDP—the dependent variable—were measured by subtracting post-test scores from pre-test scores, thereby creating a change score variable.

## Results

Socio-demographic data indicated that the sample consisted of 126 participants, 55 males (43.7%) and 71 females (56.3%). Ages ranged from 18 to 45, with a mean age of 21.87 (SD = 3.364). One hundred twenty participants were White (95.2%), four Hispanic (3.2%), one Native American (0.8%), and one Asian (0.8%). All participants were college students with 23 freshman (18.3%), 28 sophomores (22.2%), 19 juniors (15.1%), 42 seniors (33.3%), and 14 graduate students (11.1%). Twenty-six of the participants (20.6%) were recreation majors; seventy-one of the participants (56.3%) had a personal or family relationship with a person with a disability prior to participation in the program. Twenty-two (17.5%) of the respondents had participated in a wheelchair sport before. While it was hoped that a large number of students on campus with disabilities would participate, only two of the 126 respondents (1.6%) had a physical disability themselves (Spina Bifida and Becker's Muscular Dystrophy) and were daily wheelchair users.

The correlation analysis indicated that both gender ( $r = .189$ ) and the pre-test IDP ( $r = .247$ ) were related to the IDP change score. Results also indicated that major ( $r = -.118$ ) and having a personal or family relationship ( $r = .172$ ) were not significantly related to the IDP change score. For additional information on relationships of variables please see Table 1.

TABLE 1  
*Zero Order Correlations Among Study Variables*

Variable	1	2	3	4	5
1. IDP Change Score	1	.247**	.172	.189*	-.118
2. IDP Pre-Test		1	.135	-.088	.337**
3. Relationship with Person with Disability			1	.033	.014
4. Gender				1	-.291
5. Major					1

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Variables including pre-test IDP, gender, major, and relationship with a person with a disability, were entered into a standard multiple regression analysis to determine significant influences in predicting changes on the IDP. The results of the regression analysis indicated an overall significant prediction  $F(4, 121) = 5.258$ ,  $p < .001$  explaining 12% of the variance in changes of the IDP (see table 2). The only significant predictor in the model was the IDP pre-test ( $\beta = .303$ ,  $t = 3.367$ ,  $p < .001$ ).

TABLE 2  
*Summary of Standard Regression Analysis for Variables Predicting Change in IDP*

Variable	<i>b</i>	<i>SE b</i>	$\beta$	<i>t</i>	<i>p</i>
IDP Pre-Test	.235	.070	.303	3.367	.001
Relationship with Person with Disability	1.788	1.181	.128	1.514	.133
Gender	2.244	1.222	.161	1.836	.069
Major	-2.982	1.584	-.175	-1.883	.062

$R^2 = .148$ ,  $adjR^2 = .120$

$n = 125$

In order to further understand the data, post hoc analysis using independent samples t-tests were performed to check for differences based on gender, major, having a relationship with an individual with a disability, and having played wheelchair sports before. A Bonferroni adjustment of the alpha level based on eight additional comparisons ( $p < .006$ ) was used for analysis. Those who had played a wheelchair sport before were significantly lower on both pre- and post-test scores (pre:  $p = .003$ ,  $t = 3.079$ ; post:  $p = .006$ ,  $t = 2.953$ ) than those who had not. Those participants who had a personal or family relationship with someone with a disability did not have significantly different pre- and post-test scores (pre:  $p = .121$ ,  $t = -1.559$ ; post:  $p = .989$ ,  $t = -.014$ ) than those who did not. Recreation majors had significantly lower pre- and post-test scores (pre:  $p < .001$ ,  $t = -4.303$ ; post:  $p < .001$ ,  $t = -4.438$ ) than a combination of all other majors. Females did not have significantly lower pre-test score than males ( $p = .012$ ,  $t = 2.540$ ), but did have a significantly lower post-test score ( $p = .003$ ,  $t = 3.079$ ). For illustration purposes, means and change scores are also provided (see tables 3 and 4).

### Discussion

The purpose of this study was to further examine the effects of a campus-wide intramural wheelchair sports program on participants' attitudes toward people with physical disabilities as represented in the Interaction with Disabled Persons (IDP) Scale (Gething & Wheeler, 1992). It was theorized that students who played wheelchair sports would exhibit changes in their attitude towards people with

TABLE 3  
Means and Difference in Scores for All Groups

	Mean	SD	Mean	SD	Difference
	Played Before (N = 22)		Never Before (N = 104)		
Pre-test	62.95*	8.40	69.07	8.73	6.11
Post-test	59.64*	9.54	66.25	9.59	6.61
	Relationship (N = 71)		No Relationship (N = 55)		
Pre-test	66.94	9.74	69.36	7.68	2.42
Post-test	65.08	9.88	65.11	9.95	.03
	Recreation Major (N = 26)		Other Major (N = 100)		
Pre-test	62.12*	7.60	69.53	8.66	7.42
Post-test	57.62*	9.82	67.04	8.95	9.45
	Male (N = 55)		Female (N = 71)		
Pre-test	68.90	8.71	67.31	9.13	1.58
Post-test	67.47	7.56	63.25*	11.05	4.22

\* $p < .006$  based on Bonferroni adjustment

TABLE 4  
Change Scores

Sample	Pre-/Post-test Change*
All (N = 126)	2.90
Played Before (N = 22)	3.31
Not Played Before (N = 104)	2.82
Relationship w/person w/disability (N = 71)	1.86
No Relationship (N = 55)	4.25
Recreation Major (N = 26)	4.50
Other Majors (N = 100)	2.49
Male (N = 55)	1.43
Female (N = 71)	4.06

\* Post-test subtracted from pre-test (positive number reflects positive change).



disabilities. The sample included 126 matched pre- and posttest responses which yielded a significant difference ( $p = .006$ ) in participants' discomfort in social interaction with people with disabilities. Interestingly, findings indicated that there was a significant decrease in discomfort in interaction with people with disabilities after participation in the wheelchair sport intramural program, even though there were limited opportunities to interact with individuals with disabilities. More specifically, the results of the regression analysis indicated that participants with higher IDP pretest scores (more discomfort in interactions with those with a disability) had a greater changes in there pre-test to post-test scores. This finding suggests that participants with higher initial discomfort were more highly influenced by the wheelchair sports program. These finding raises a variety of interesting questions for further discussion and investigation.

First, while the use of hypothetical situations as a method for teaching disability related issues has been criticized (French, 1992, 1996), it appears that in this instance such a method was successful. It is quite probable that the students did not see this activity as a hypothetical situation in which they were being educated on disability related issues, but instead, according to there own responses, viewed it as an enjoyable recreation opportunity using wheelchairs where they had some interaction with individuals with physical disabilities. Although the intramural wheelchair program offered limited opportunities for interaction between individuals with disabilities and individuals without disabilities, the round-robin style play ensured that all players had some limited interaction with all other players over the course of the program. Additionally, there was no formal process for players to identify which opponents had a disability and which did not. While it would be obvious when some players were getting in and out of wheelchairs, it is also possible that opposing teams were unaware of who had a physical disability and who did not.

Slininger, Sherrill, Jankowski (2000) and French (1996) recommended that attitude change will be facilitated when an atmosphere of equality is promoted. The intramural wheelchair sports program accomplished this in the following ways: a) individuals with and without disabilities used wheelchairs to participate in the program, creating an equal playing field or a type of equal status among players, b) the university was clearly supportive of the program as they were the principle provider of facilities, equipment, and personnel, c) teams were engaged in an intrinsically motivated and meaningful activity, not a hypothetical simulation, and d) team membership typically required genuine not superficial association between individuals. It should be noted that none of these four conditions were specifically measured, only conceptually apparent through sports participation.

Findings also indicated that recreation majors had statistically lower IDP pre- and post-test scores than other majors. While both scores were lower after participation, the recreation majors appeared to have a greater change after participation in the program (see Tables 3 & 4). All recreation majors are required to take coursework that includes modules of disability related education, including social perceptions, person-first terminology, related legislation, and understanding of ac-

cessibility issues. While such topics are not common in general education requirements or in most other majors, recreation majors at most universities are already receiving this training. Findings suggest that the combination of this type of curriculum as represented in the recreation majors, and participation in the intramural wheelchair sports program, had a greater effect on attitude change. Findings also indicated that those who had a higher pre-test IDP Scale score (more discomfort in social interaction with people with disabilities) showed greater improvement after participation in the inclusive wheelchair sports program. It seems logical that participation in a wheelchair sports program would have a greater effect on those who have more discomfort with people with disabilities than those who have less. Further analysis, however, indicated that those who had participated previously in an inclusive wheelchair sports program not only started with less discomfort in social interaction with people with disabilities, as would be expected, but they also reported significant lower post-tests scores. Furthermore, their change in discomfort was similar, or slightly higher, than those who had never participated before. In other words, continued involvement in this type of program appears to have a continued positive effect on reducing discomfort towards people with physical disabilities.

It is interesting to note that participants who had a personal or family relationship with a person with a disability did not have significantly different pre or post-test IDP scores when compared with those who did not have a previous relationship. While those who had a relationship appeared to have slightly lower pre-test scores, as would be expected, they had almost identical post-test scores as those who did not have a previous relationship. Perhaps those who had previous relationships with people with disabilities had a more developed sense of awareness due to extended contact and therefore were less influenced by their involvement in the program. Nonetheless, it is interesting that individuals without a previous relationship achieved the same level on the post-test, presumably due to their participation in the program. Finally, findings were clear that participation in this program was enjoyable and that participants were eager to encourage others to be involved. This finding confirms previous research which suggests that experiences which facilitate positive interaction between individuals with disabilities and individuals without disabilities is a highly effective form of reducing prejudice and discrimination (Hutzler, 2003; Slininger, Sherrill, & Jankowski, 2000; Stewart, 1988; Tripp, French, & Sherrill, 1995). In this case, participants voluntarily registered for an intramural sport in which the primary purpose was fun, enjoyment, social interaction, and friendly competition. Although influencing attitudes towards people with disabilities was a primary goal for program developers, the attitude change appeared to be an experiential outcome for participants that they may not have expected. This approach to changing attitudes towards individuals with disabilities, an approach which is considered enjoyable, self-promoting, and has empirical evidence of success, has considerable implications for professionals in the fields of parks, recreation, tourism, leisure studies, as well as societal attitudes in general.

### Implications and Recommendations

Findings from this study have important implications at both the individual and societal levels, primarily focusing on recreation programs as a complimentary or even alternate approach to promoting attitude change. As medical care continues to improve, there are an ever increasing number of individuals living with disabilities. The need to create environments which emphasize equality in all dimensions of community life is critical. Murphy (1987), in his book, *The Body Silent* wrote, "The greatest impediment to a person's taking full part in his society are not his physical flaws, but rather the issue of myths, fears, and misunderstandings that society attaches to them" (p. 113). While Congress passed the Americans with Disabilities Act in 1990 in order to mandate levels of access in the USA, this law cannot change societal attitudes. If uniformed or negative attitudes continue to be a significant barrier faced by people with disabilities, then this type of program designed for college students—our future professionals and community members—may be an effective approach for addressing the issue.

Educators should be aware of the potential impact of recreation programs on attitude change. Findings from this study indicate that attitudes were changed among college students regarding their level of comfort with individuals with disabilities. It is possible that colleges and universities are the most appropriate and logical location to implement disability awareness in an effort to facilitate a broad change in social attitudes. College attendance rates for high school graduates increased from 44% in 1971 to 62% in 1995 (U.S. Department of Health and Human Services, 2001). Considering this trend and the fact that the purpose for higher education is to teach new knowledge, understanding, and attitudes that will prepare individuals to succeed in and contribute to society, colleges and universities appear to be some of the most viable contexts in which to address the lack of disability awareness.

Recreation educators have a unique opportunity to lead this important endeavor. Recreation majors at most colleges and universities are required to take disability-related coursework. Considering the potential of higher education to address the need for disability awareness, recreation faculty and students should promote the need for a disability awareness curriculum and subsequently seize the opportunity to provide this service to colleges, schools, and universities as a whole. Recreation educators have the potential to use their already existing disability awareness curriculum to offer general education components to other departments within an institution in a way that may have broad societal impact on people with disabilities.

More specifically, recreation educators should consider this type of program (wheelchair sports) as a potentially powerful experiential learning opportunity. Williams and Datillo (2005) have discussed the value of using wheelchairs in teaching students about inclusion. They suggested using wheelchairs to assist students in understanding the needs of individuals with disabilities, the need for inclusion programming, and the ways in which to facilitate such inclusion. Providing

a wheelchair sports experience has the potential to accomplish the same results, with some significant additions. First, a recreation or sports experience facilitates interaction with individuals with disabilities, thus transforming the experience from an exercise about using wheelchairs into an experience of participating on more of an equal "playing field" with individuals of varying ability levels. Second, providing a wheelchair sports program assists students in developing a working knowledge of wheelchairs and other adaptive devices. This level of participation provides the student with the opportunity not only to use a wheelchair in both daily life and for recreational purposes, but assists them in becoming aware of possible concerns from a participant standpoint such as: appropriate fit and comfortable use, stability in the chair based on ability level, differences between sport and daily use chairs, and appropriate adjustments to facilitate maximum involvement and enjoyment. Finally and most importantly, the experience is designed to be fun and therefore has the potential to be intrinsically motivating, improving the likelihood that student will participate in similar activities in the future and/or use such activities as interventions with future clientele.

Another advantage of a wheelchair sports program is that it uses a system of delivery that most universities already have in place, campus intramurals. These and other recreational opportunities are found at most colleges and universities and play a significant role in campus life and the overall college education experience. New programs and activities are regularly introduced into the intramural system. Acknowledging that wheelchair purchase may incur considerable expense, adding a wheelchair sports program may be a feasible option for intramural sports programs. In addition, the positive feedback received from participants suggests that this type of intramural activity has the potential to be a popular and involve large numbers of students, both with and without disabilities. Perhaps the initial step in this process is to educate intramural sports directors regarding the potential benefit of including wheelchair sports in campus intramurals as well as the variety of funding sources available.

Similar to the potential opportunities for recreation educators to promote disability awareness in higher education, recreation providers and Certified Therapeutic Recreation Specialists (CTRS) have a similar opportunity at the community level. Within parks and recreation services various programs are being developed for and delivered to individuals with disabilities. Wheelchair sports should be included in these offerings. While the focus of parks and recreation programs is appropriately on providing opportunities for individuals with disabilities in the community, an additional purpose can be to address attitude change among individuals who participate in parks and recreation service who do not have a disability. Promoting opportunities for individuals with disabilities and individuals without disabilities to participate in a recreation activity, which creates a somewhat equal playing field, may assist parks and recreation professionals in accomplishing attitude change on a community level. As the focus of this research project was on college students, additional research is needed to determine the potential for attitude change in community members via participation in a wheelchair sports program.

There are several limitations and recommendations stemming from this study that deserve to be mentioned. First, using a pre-posttest design allowed researchers to identify the effects of participating in the program; however, adding an additional group who did not participate in the wheelchair program would have assisted researchers in controlling possible learning effects based on using the same instrument for pre- and posttests. It should be noted that the pre and posttests were conducted six weeks apart from one another, and that this time frame significantly reduced opportunities for learning effects. Second, including more recreation majors in the study may have added further insight into the difference between them and participants from other majors. Third, collecting more information on individuals' previous participation in disability awareness training and previous relationships with people with disabilities will improve future research. Fourth, obtaining a more diverse sample with a larger number of individuals with physical and other disabilities will provide explore the influence of this type of program on attitude change among college students. Finally, longitudinal data should also be collected at various time intervals to better determine the lasting effect of program involvement on attitude change.

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