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The National Sports Education Camps Project: Introducing Sports Skills to Students with Visual Impairments through Short-term Specialized Instruction

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Abstract: The National Sports Education Camps Project (NSEC), a joint partnership between Western Michigan University and the United States Association of Blind Athletes, provides short-term interventions to teach sports to children with visual impairments. A study comparing 321 students with visual impairments, ranging in age from 8 to 19 years, before and after they participated in the camp found that they knew more about sports, were able to jump and throw farther, held more positive attitudes, and were more likely to become involved in local sports activities. Benefits of short-term specialized programming and implications for practice were also examined.

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In recent years, we have come to know that regular involvement in physical activity, sports, and recreation has a positive effect on physical and emotional well-being (Martinsen & Stephens, 1994; U.S. Department of Health and Human Services, 1996). Unfortunately, we also know that children who have visual impairments often have limited access to such activities (Lieberman & Houston-Wilson, 1999; Ponchillia, 1995), with consequences that include poor levels of physical fitness and motor skill development (Kobberling, Jankowski, & Leger, 1991; Short & Winnick, 1986).

Barriers to access to sports are widespread and varied. Those stemming from the public school system include lack of attention to individual students in large classes (Trippe, 1996; Goldfine & Nahas, 1993) and lack of time allocated for physical education in the special education curriculum (Lieberman & Houston-Wilson, 1999). Barriers related to teachers include failure to train physical education instructors in adaptive techniques (Lieberman & Houston-Wilson, 1999). At the student level, lack of knowledge can result in fear and lack of confidence, which can lead to a self-imposed barrier in the form of an unwillingness to attempt athletic activities (Ponchillia, 1995).

Elimination of barriers to sports access, as well as engagement in regular physical activities, can improve physical fitness and motor skills in individuals with visual impairments (Ponchillia, Powell, Felski, & Nicklawski, 1992; Williams, Armstrong, Eves, & Faulkner, 1996). Students with visual impairments who have been introduced to physical activities through participation in physical education programs in school are more likely to compete in public sports events than are those who have not had such exposure (Ponchillia, Strause, & Ponchillia, 2002). Thus, short-term sports education camps and statewide advocacy networks have been implemented to facilitate physical fitness and self-advocacy through basic body mechanics and development of athletic skills.

Access to sports movement

Michigan Sports Education Camp for Students with Visual Impairments

Western Michigan University's Department of Blindness and Low Vision Studies and the Michigan Blind Athletic Association (MBAA) hosted the first Sports education camp in 1988. The goals of the Michigan Sports Education Camp (MSEC) initially included empowering visually impaired students by teaching them basic sports skills and activities; increasing the knowledge of families, teachers, and the community regarding adaptations required for participation; facilitating the athletic potential of students with visual impairments; and increasing their access to physical education, sports, and recreation by building a network of

advocates. These goals were addressed by the development of a one-week sports education camp consisting of introductory and advanced sports-training clinics, a residential setting where participants could interact with other students with visual impairments, and a final day of spectator-supported competition followed by an awards ceremony. A graduate-level course for teachers, family members, and other supporters was developed to aid in advocating for reductions in barriers to sports access. The course was developed after the first camp was held in 1988; it was conducted several weeks prior to the beginning of the second camp. Finally, a statewide management team was formed to oversee the project and to build an access network consisting of teachers, other professionals, and family members.

During the introductory clinics, the 10- to 12-year-old students were instructed in body mechanics used for running, jumping, and throwing while learning sport-specific skills in wrestling, track and field, bowling, goalball, and gymnastics. The 13- to 18-year-old students were taught sport-specific skills in sports activities. Each student received approximately 30 hours of instruction in clinics or competitions during the camp.

A great deal of effort was made to foster the image of students with visual impairments as athletes. Positive outcomes from MSEC led to the procurement of an outreach grant from the U.S. Department of Education, Office of Special Education in 2000 to create the National Sports Education Camp (NSEC) project. The NSEC is a cooperative program between Western Michigan University and the U.S. Association of Blind Athletes (USABA) that provides funding, training, and sports technical assistance to schools and agencies in 11 states to facilitate the provision of physical and sports skills training to children with visual impairments, aged 8 to 19 years.

U.S. Association of Blind Athletes

USABA was established in 1976 and comprises athletes with visual impairments, coaches, officials, and sports advocates (Sherrill, Pope, & Arnhold, 1986). USABA's early focus was to promote training of elite athletes, international and national competition, dissemination of

educational and referral information, and integration of athletes with visual impairments into community sports programs. As a result of the Ted Stevens Olympic and Amateur Sports Act of 2003, the U.S. Olympic Committee amended its constitution and bylaws (USOC, n.d.). This led to transfer of the USABA's elite athlete-training function to the United States Paralympic Corporation. The USABA's role subsequently shifted to one of offering life-enriching sports opportunities to people with visual impairments. This change coincided with MSEC's desire to expand nationally, which made it an ideal partner for the NSEC project.

NSEC project

Empowerment, education, and advocacy are vital components in both MSEC and NSEC. Objectives unique to NSEC are serving more children nationally, conducting site-specific focus groups to address local physical education needs of children with visual impairments, and developing statewide and regional USABA chapters. The educational objectives of MSEC were extended by NSEC to include the development of an online version of its graduate-level course and a web site for dissemination of informational and instructional materials.

The role of Western Michigan University in this partnership with USABA is to manage the overall NSEC project, supervise the full-time project manager, select and coordinate expansion sites, train and support expansion site personnel, develop and distribute the operations manual and all educational materials, and manage fiscal matters. The role of USABA is to increase membership, foster state chapter affiliates, promote national participation, and provide the 10% financial match that the Office of Special Education requires for the grant.

By the summer of 2003, there were 11 new NSEC states, hosting a total of 22 camps. Camps were located at North Carolina Central University in Raleigh, NC; Marshall University in Huntington, WV; Cardinal Stritch University in Milwaukee, WI; University of Arizona in Tucson, AZ; Sports Vision in Pittsburgh, PA; Washington School for the Blind in Vancouver, WA; Inter-Actions in Concord, NH; Blaze Sports International in Atlanta, GA; Texas School for the Blind in Austin; the Association of Blind Athletes of Colorado in Colorado Springs; and

Alpine Alternatives in Anchorage, AK.

Each NSEC site was supported by the project for two years. Support consisted of a $10,000 grant each year for operating funds; personnel training through conference calls and training at MSEC; assistance to local staff at expansion sites; distance learning through Western Michigan University's graduate-level course, Teaching Sports and Recreation to Children and Adults with Visual Impairments; moderation of focus groups for promoting and developing advocacy networks; and formation of USABA chapters.

Expansion site personnel included a site director, who managed the camp, and a site consultant, who provided technical assistance. These personnel were also responsible for developing a statewide advocacy network and procuring funds to continue the camp beyond the period in which support was provided.

Activities offered at each site were patterned after those of the MSEC model, but most offered additional events tailored to the specific needs of the geographic area. For example, the Arizona camp offered salsa dancing and tandem cycling before breakfast, when temperatures were cooler.

Method

The evaluation study consisted of measures to test the immediate effect of camp attendance on participants, the effect of attendance on the children when they returned to camp one year later, and the effect of degree of vision on success at camp. In addition, performance of children at new campsites was compared to that of those served by the longstanding Michigan site. The students' pre- and postcamp perceptions and knowledge were collected through interviews, and performance data were gathered through actual measurements of throws and jumps. Precamp measures of perceptions, knowledge, and skill performance were used to differentiate between first-time and returning athletes, while the expansion campsites were compared to the Michigan site using perception and sports participation measures.

Participants

Participants consisted of 144 athletes in 2001 and 177 in 2002, with a mean age of 12.8 and 13 years, respectively. The overall age range was from 8 to 19 years. Girls and female adolescents constituted 42.3% of the 2001 sample and 47.4% of the 2002 sample. Traditionally underserved minority participants were not recorded in 2001 but represented 30.4% of the 2002 sample. No useful vision was reported by 13.3% and 20.7% of participants in the 2001 and 2002 samples, respectively. However, the sample with severely limited vision was larger if the acuity measurement was defined functionally. Thus, the group with no useful vision was combined with participants who answered "no" to the question, "Do you have enough vision to run fast safely without a guide?" The reconstituted sample was termed the *run-unsafe* group and the remaining sample, the *run-safe* group. The run-unsafe sample comprised 32.2% of participants in 2001 and 31% in 2002.

Instrument

The Sports Camp Evaluation Instrument (SCEI) measures attitudes, sports knowledge, skills, and degree of participation in sports activities in participants' local communities. Precamp administration of the SCEI required approximately 20 to 30 minutes, and postcamp administration took approximately 10 to 15 minutes. (The latter form did not repeat items regarding vision, personal characteristics, or sports activities in participants' local communities.)

Attitudinal items required Likert-type responses, such as, "never," "sometimes," "most times," and "always." Examples included statements such as "I love sports," "I feel I am better at sports than most kids my age," and "I consider myself a good athlete." Sports-knowledge items consisted of 10 true-false statements, such as "Goalball games are played in two five-minute halves," and "A shot put is thrown the same way as a baseball." Sports skills were evaluated by measuring distances of the underhand and overhand softball throws and the standing long jump. Examples of items designed to measure students' degree of participation in local sports were, "I take gym class with the sighted kids in my school," "I play sports in places other than sports camp," and "I exercise

at least 20 minutes 3 or more times a week." These items were assessed with use of Likert-type responses, as described above. The postcamp form contained identical attitudinal and sports-knowledge items as well as several items designed to determine participants' satisfaction with the camp.

Procedures

Parents returned consent and assent forms approved by the Human Subjects Institutional Review Board two weeks prior to all camps. The precamp SCEI was administered during registration on the first night of camp. Trained interviewers explained the instrument, read the items, and marked participants' choices on the form. The postcamp SCEI was administered during rest periods, lunchtimes, or other breaks on the last day of camp.

Data on sports-skill performance for the underhand and overhand softball throws and the standing long jump were recorded as the better of two trials on both the precamp and postcamp evaluations. Participants were divided into groups and rotated through three stations (underhand throw, overhand throw, and standing long jump). Evaluators at each station instructed participants with regard to which skill to perform, where to stand, and how to begin the standing long jump from both feet. If participants requested additional assistance, such as an explanation of how to do an overhand throw, evaluators encouraged them to "try your best." Incorrect executions of a skill were recorded as zero.

Data analysis

Descriptive statistics were calculated for all variables, but only those demonstrating noteworthy results will be reported. There were four analyses corresponding to the four types of evaluations conducted. The immediate impact of the NSEC experience on participant outcomes at the completion of camp were evaluated using the Wilcoxon statistic (Glass & Hopkins, 1996) to compare pre- and postcamp attitudes, sports knowledge, and skill performance of all participants for all sites. A second analysis compared precamp scores of participants who were returning to a second camp one year after receiving skills training at the

previous year's camp (treatment group) to those participants who had never attended a previous year's camp (control group). The Mann-Whitney *U* test (Glass & Hopkins, 1996) was used for 2001 data, and the *t*-test was used for data in 2002.

A third analysis compared the impact of degree of functional vision on success at camp and in local physical education or sports programs. Outcomes for the run-unsafe group were compared to those for the run-safe group by using the Mann-Whitney *U* test.

A fourth analysis used the Mann-Whitney *U* statistic to compare the performance of the children served by the longstanding Michigan model site to those attending the new sites. Although there were other uncontrolled variables involved in the comparison, it was felt that this analysis could give some indication of the importance of the 15-year-old Michigan sports advocacy network.

Results

Descriptive statistics

Results of items illustrating precamp levels of participation in physical education and local community sports activities are presented in Figure 1. More than two-thirds of participants reported full inclusion at the "most times" and "always" levels with regard to physical education. In addition, 67.8% of participants stated that students without visual impairments treated them fairly "most times" or "always," and 41.1% reported that they knew how to change a game so that they could play "most times" or "always." Support from family members with regard to visually impaired students' efforts to participate in sports was reported by 83.2% at the "most times" and "always" levels. However, more than two-thirds (68.3%) said they "never" or only "sometimes" played games with other students with visual impairments. Participants' attitudes about sports were overwhelmingly positive; nearly all responded to items such as "I love sports" at the "most times" or "always" level.

Comparisons

Pre- versus postNSEC

Participants showed significant growth ($p < .05$) in attitudes, knowledge, and skills between the times of the precamp and postcamp evaluations (Table 1). After attending camp, they were more likely to view themselves as good athletes, and their scores on the sports-knowledge quiz, the underhand softball throw, the standing long jump, and (in 2002) the overhand softball throw increased significantly ($p < .05$), compared with precamp measures.

Returning versus first-time participants

In both the 2001 and the 2002 group, returning participants scored higher on the precamp knowledge quiz (U = 1,278 [2001], t = 2.8 [2002]; $p < .05$ for both comparisons) than did those who had never attended a sports education camp. They also scored higher on the items, "I know how to change a sport so I can play" (U = 1,145 [2001], t = 2.2 [2002]) and "Do you play sports with other visually impaired athletes in your local area?" (U = 1,504 [2001], t = 2.1 [2002]) ($p < .05$ for all comparisons).

Run-unsafe versus run-safe group

Outcomes of participants who needed a guide runner (run-unsafe group) and those who did not (run-safe group) were compared only for the 2002 cohort. In the precamp evaluation, the run-safe group performed better on the overhand and underhand softball throws than the run-unsafe group did (see Figure 2). In addition, the run-safe group jumped significantly ($p < .05$) farther than the run-unsafe group. The same trend was found in the postcamp evaluation; that is, the run-safe group performed better than the run-unsafe group. The run-safe group demonstrated higher overall increases in score and distance on the overhand and underhand softball throws. The run-safe group was also more likely to participate in gymnastics class with students without visual impairments (t = 4.1), to play the same games in class as students without visual impairments (t = 4.8), and to be able to instruct others about how to adapt sports (t = 2.4) ($p < .05$ for all comparisons).

Michigan model versus new sites

Outcomes of the 15-year MSEC were compared with those of the shorter-term (two years or less) NSEC for 2002. MSEC participants had more positive outcomes with regard to the items "Do you take gym classes with sighted students?" (U = 2,522), "I consider myself a good athlete" (U = 2,570), "I love sports" (U = 2,522), and "Do you play sports with other visually impaired students?" (U = 2,907) ($p < .05$ for all comparisons).

Discussion

Our findings provide cause for both concern and optimism. The concern stems from the fact that nearly 19% of participants reported not receiving physical education classes at all. If the 23% who responded that they received such classes "most times" or "sometimes" are added, it can be concluded that 42% of students had no or only limited access to physical education and athletic opportunities. These findings are consistent with those of earlier investigators (Lieberman & Houston-Wilson, 1999; Ponchillia, 1995). Therefore, it is clear that limited access to sports activities for visually impaired students still exists in the 21st century.

The inability to fully access sports activities was exacerbated by participants' lack of knowledge about sports adaptations. Most participants (58.9%) reported that they lacked adequate opportunities to be involved in sports locally with other visually impaired students. Thus, the door to sports access does not appear to be open very wide.

On a more encouraging note, most participants stated that students without visual impairments treated them fairly in gymnastics class. It was also heartening to discover that a strong majority of participants felt supported in their athletic endeavors by their families. Participants had favorable views of themselves as athletes and responded extremely positively to the item "I love sports."

The precamp and postcamp data indicate that the short-term model used in the NSEC project had a positive and lasting impact on attitudes, knowledge, skill, and participation in community sports activities.

Another benefit, which is surely operative, but difficult to measure, is the peer support provided by the other athletes at the camps. It should be noted that a strong majority of participants attended local schools, even though some camps were held at state schools for children with visual impairments. When asked what they liked most about their camp experience, many participants placed being with their peers at the top of the list.

Data comparing the outcomes of returning participants with those of first-time participants indicate an ongoing positive impact on attitudes, knowledge, skills, and local community involvement in sports. In the precamp evaluation, returning participants reported feeling more confident in their ability to explain modifications to sports than did first-time participants. Furthermore, many returning participants demonstrated retention of sports knowledge from previous camps, as evidenced by their scoring higher than first-time participants on precamp tests. Returning participants were also more likely to be playing a sport in their local community and to perceive themselves as good athletes. These outcomes provide strong evidence that the sports education camps empowered participants with the confidence to utilize sports knowledge and skills in their local communities. Many participated with other visually impaired students in self-established programs or programs that were developed as a result of their requests.

Outcomes related to degree of vision were expected and emphasize the need for intensive study of students with severe visual impairments. The run-unsafe group did not display gains as significant as those of the run-safe group. On the basis of multiple-year observations by MSEC instructors, skill deficits were expected from participants with early-onset severe visual impairments, who often required more intervention in basic body mechanics, such as running, jumping, and throwing. The sports education camps were not initially designed to provide this level of intervention. Thus, it became clear that modifications in programming were required.

Managers at an NSEC camp implemented a program designed to address these concerns in 2002. Specifically, family members were encouraged to attend camp with participants in the 5- to 9-year age range in order to

assist them in basic body mechanics. In addition, families were provided with tools to implement sports access with participants at home. Because the intervention was held simultaneously with the camp for teenagers, it provided an avenue for role modeling through fostered interactions with 13- to 17-year-old athletes with visual impairments (P. Gafney, personal communication, August 5, 2002). This intervention will be integrated into future NSEC projects.

Comparisons between the long-established MSEC model and the NSEC project showed that the MSEC has improved attitudes about sports and sports access in Michigan. Positive responses to the items, "I feel I am a good athlete" and "I love sports" reflect a pro-sports attitude that demonstrates the long-term impact of the MSEC model. Anecdotal evidence also supports this contention. Former MSEC participants have formed an unmatched goalball instruction and competition milieu in Michigan. This sports-access network has generated at least six teams, which hold weekly practices and host many tournaments. Thus, the MSEC has created an avenue for athletes with visual impairments to compete and interact in local communities.

As a result of the MSEC model, access to sports for students with visual impairments is prevalent in Michigan. This was demonstrated by the positive responses to items regarding taking physical education class with students without visual impairments and playing sports locally with other visually impaired students. Similar access in other states with NSEC sites has not yet been documented, due to the short duration of the project, but the Michigan experience provides a basis for hope. Additional programs must be implemented, and their outcomes must be evaluated.

Implications for practice

Under the traditional residential school model, specialized physical education is virtually impossible. In the near future, preparation programs for physical education personnel are not expected to offer specialized skills training for instructing visually impaired students. Providing access to sports can be achieved only through short-term specialized programming that offers a physical education model developed by experts in the education of students who are blind or have low vision.

Barriers must be addressed through the training of physical educators, the development of a system that offers ongoing opportunities for sports access, and the recognition and promotion of students with visual impairments as athletes.

The concepts supporting this theory are student empowerment and self-advocacy, increased advocacy by public school teachers of students with visual impairments, and a change in physical education teachers' knowledge about and perception of students with visual impairments as athletes. Vision teacher volunteers at MSEC have increased student access to sports by forming a network that sponsors three or four annual statewide events, each of which attracts approximately 80 participants. It is anticipated that NSEC sites will increase such opportunities as time progresses.

Limitations

We would be remiss if we did not address the limitations of this study, which resulted primarily from the difficulty associated with controlling for extraneous variables, as the study comprised 12 national sites and utilized numerous research personnel. Standard procedures included the training of interviewers and other personnel who gathered data, the use of explicit protocols, and the exercising of diligent oversight by project personnel. These procedures appeared to be effective, since the outcomes have been consistent for the 2001 and 2002 NSEC camps and for MSEC over the past 10 years.

Qualitative observations by staff and instructors support our findings. These personnel have reported improvement in attitudes, knowledge, and skills among participants throughout the duration of the camps. Many first-time attendees, who previously had little or no access to sports activity and who did not know how to demonstrate certain skills, showed significant improvement. For example, an 11-year-old athlete who had early-onset visual impairment stated, "My gym teacher couldn't believe how far I could throw the ball when I got back from camp, and it was overhand!"

It is our hope that USABA and its partners will continue to promote

sports education and access. We also hope that those in the field of educating students with visual impairments, from faculty members in personnel preparation programs at universities to teacher consultants in local schools, will do their part by advocating for inclusive physical education and access to sports.

Resources

Current information regarding sports education camps, grants, and other funding opportunities to promote access to sports for people with visual impairments can be found on the USABA web site, <www.usaba.org>. The web site also contains information on the adaptation of specific sports. Information pertaining to the online course, Teaching Sports and Recreation to Children and Adults with Visual Impairment, is available on the web sites of the Division of Continuing Education and the Department of Blindness and Low Vision Studies web site by accessing the Western Michigan University web site, <www.wmich.edu>.

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Previous Article | Next Article | Table of Contents

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