Research on Sport for Athletes With Disabilities

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Over the past 30 years, the focus of sport for individuals with disabilities has changed from rehabilitation to competition (DePauw, 1985a; Huber, 1984; Lindstrom, 1984). Today there are many opportunities through which athletes with disabilities can demonstrate their athletic abilities (Clarke, 1986). As the sport movement for individuals with disabilities continues to evolve, one can only envision a future which lies in the hands of research and technology, youth sport programs for the disabled, effective governance, and increased public awareness and acceptance (DePauw & Clarke, 1985; Steadward & Walsh, 1985).

Research has not only provided preliminary knowledge and understanding of sport for individuals with disabilities, but has also facilitated much of the change (Steadward & Walsh, 1985). Sport for individuals with disabilities has been described in terms of history (Ammons, 1985; DePauw & Clarke, 1985; Guttmann, 1976; Huber, 1984; Jackson & Frederickson, 1979; Lindstrom, 1984; Lipton, 1970; Songster, 1985; Steadward & Walsh, 1985; Stein, 1985), sport classification (Lindstrom, 1985; McCann, 1980, 1981; Sherrill, Adams-Mushett, & Jones, 1985; Steadward & Walsh, 1985; Weiss & Curtis, 1985), biomechanics (Gorton & Gavron, 1984; Higgs, 1985; Steadward, 1980), exercise physiology (Coutts, Rhodes, & McKenzie, 1983; Davis, Shephard, & Jackson, 1981; Dreisinger & Londeree, 1982; Gass & Camp, 1979; Wicks, Oldridge, Cameron, & Jones, 1983; Zwiren & Bar-Or, 1975), sport sociology/psychology (Brandmeyer & McBee, 1985; Cooper, Sherrill, & Marshall, 1986; Henschen, Horvat, & French, 1984; Labanowich, 1978; Roeder & Aufsesser, 1986; Sherrill, Rainbolt, Montelione, & Pope, 1985) and philosophy (Lindstrom, 1984; Morris, 1984).

Despite research cited above and others not mentioned, sport for athletes with disabilities remains a fertile area for research studies. Current descriptions and research findings have provided initial knowledge and understanding of sport participation for individuals with disabilities.

Commitment to Sport Research

Although a few investigators studied the disabled athlete in the past two decades, it was not until the late 1970s and early 1980s that attention was focused upon

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sports for individuals with disabilities, thus fostering a new interest in research into the phenomena of sport for those with disabilities. Because of increased association of disabled athletes with the United States Olympic Committee (USOC), the sport movement for athletes with disabilities in general and sport research in particular has turned a page in history. The USOC’s Committee on Sports for the Disabled (COSD) is now committed to research on athletes with disabilities (DePauw, 1985b).

The Committee on Sports for the Disabled is designated as a standing committee of the USOC and serves as the coordinating body for amateur sport for the disabled in the United States. Membership of the COSD consists of two representatives, each from the Group E member organizations, and five members-at-large. All are appointed by the president of the USOC and serve for the quadrennium. Group E membership is open to national amateur sport organizations that serve the disabled population and sponsor national athletic competitions in two or more sports included on the program of the Olympic or Pan American Games (DePauw & Clarke, 1985).

In 1985, the Committee on Sports for the Disabled established a Subcommittee on Research. This committee is chaired by Karen P. DePauw of Washington State University and members include Sue Gavron of Bowling Green State University, Claudine Sherrill of Texas Woman’s University, and Julian Stein of George Mason University. Initial purposes of this subcommittee were to (a) determine current status of research on athletes with disabilities, (b) develop a directory of those conducting and/or interested in sport research, (c) identify areas and priorities for research, and (d) establish a clearinghouse for storage and retrieval of sport research information.

Areas and Priorities for Sport Research for Disabled Athletes

Seven areas of research on sport for the disabled were identified by this Subcommittee on Research as instrumental to knowledge and understanding of sport for athletes with disabilities. Initially these seven areas were verified by members of the disabled sport groups in attendance at a COSD meeting. Verification was obtained from other disabled sport groups through a questionnaire mailed to each. Although various sports and disabilities present some unique aspects to be studied, these seven research areas were determined to be common to all athletes with disabilities.

Through a written survey, input was sought from disabled athletes, professionals, and coaches on specific topics for each identified area of research. What resulted was a listing of suggested topics by research area. Because research is an ongoing process, the list of topics reported here should not be considered complete. Suggestions for research should be forwarded to the Research Subcommittee (address appears at the end of the article). Because priorities for research vary across disability groups and among individuals who conduct research, the following areas are not presented in order of priority.

Effects of Training and/or Competition

Performances of athletes with disabilities have changed over the years (Stead-
ward & Walsh, 1985). Much of this is thought to be attributed to effects of training or competition upon the athletes with disabilities. The following include some of the suggested topics to be addressed:

1. Changes in range of motion (ROM), strength, oxygen consumption, heart rate, percent body fat, body composition, and flexibility of athletes with disabilities during competition or after training;
2. Effects of training upon spinal cord-injured quadriplegics;
3. Advantages/disadvantages of weight-training regimens for competition;
4. Comparisons of levels of independence before/after or while participating in sport;
5. Long-term effects of over-compensation evidenced in sport training;
6. Effects of segregated versus integrated competition upon performance;
7. Effects of training upon daily living activities of disabled athletes;
8. Behavioral changes after training and/or competition;
9. Changes in performance after training and/or competition;
10. Changes in classifications as a result of training.

Selection and Training of Coaches, Volunteers, Officials

Although volunteers (i.e., coaches or officials) have provided the backbone and stability for sport for individuals with disabilities, not much is really known about their training, selection, effectiveness, evaluation, or the advisability of volunteer versus paid staff. Specific topics for research were suggested:

1. Comparison of athletic performances among athletes coached by sport technical individuals and those coached by individuals from the professional health related fields;
2. Development of sport terminology in sign language for coaches and competition officials;
3. Effectiveness of coaches' training programs;
4. Feasibility of supplemental disabled sport certification for National Governing Body (NGB) certified officials;
5. Development of certification standards for coaches and officials for disabled sport;
6. Development of valid approaches to selecting coaches;
7. Advisability of volunteer training for officiating purposes;
8. Effects of lay and certified coaches and officials upon quality of competition;
9. Background and training of coaches of sport for the disabled;

Technological Advances

Most technological research on sport for the disabled has been conducted in the areas of wheelchair design and adaptations for winter sports. Technological advances not only have improved sport performances but also have been applied to daily living activities. It was suggested that research be conducted on the following topics:
1. Wheelchair design for efficiency of movement;
2. Sport equipment design (i.e., ball size, color) and competitive performance;
3. Application of improvements in sport equipment to independent function in activities of daily living;
4. Appropriate design and utilization of wheelchair treadmills;
5. Effective weight-training equipment;
6. Equipment design improvements for racing (tricycles), archery, riflery, and so forth for physically impaired athletes;
7. Improvements in track chairs for cerebral palsey individuals (i.e., foot pushers, hemichairs);
8. Efficiency modification of lower limb prosthesis to enhance balance, stability, stride, and skiing;
9. Appropriate and valid means for evaluating proper prosthetic design for individual sport needs;
10. Crutch or cane design for maximum sport participation.

Sociological/Psychological Aspects of Sport

It has long been said that sport participation improves self-esteem or self-concept of participants, especially disabled individuals (Guttmann, 1976; Lipton, 1970). Sport psychology and sport sociology are established aspects in sport and are just now beginning to be applied to sport for the disabled. Specific topics have been suggested for study in this area:

1. Intrinsic motivation for sport participation; effect of sport participation upon intrinsic motivation;
2. Long-term psychological effects of competition upon athletes with disabilities;
3. Analyses of successes in competition with able-bodied athletes;
4. Improvements in self-esteem after sport participation and its effects upon daily lives;
5. Impacts of sport upon athlete, family, and society;
6. Effects of sport participation upon self-concept;
7. Sport role models for young disabled individuals;
8. Influences of age, gender, ethnicity, and disability upon sport participation;
9. Society's perceptions and awareness of sport for individuals with disabilities;
10. Influence of onset of disability upon sport participation.

Differences/Similarities Among Disabled and Able-Bodied Athletes

Often it is assumed there are differences between disabled and able-bodied athletes; investigators have identified some differences, but it is also important to identify similarities as well. Research in sport medicine or athletic injuries (Curtis & Dillon, 1985) and the sport sciences (biomechanics and exercise physiology) has been conducted; however, the following were suggested for further study:
1. Physiological analyses of performances of elite disabled athletes by
gender, age, disability, classification, and event;
2. Determination of physical exhaustion in individuals with disabilities;
3. Biomechanical analyses of performances of elite disabled athletes by
gender, age, disability, classification, and event;
4. Lactic acid retention in muscles of spastic cerebral palsied individuals;
5. Comparisons of motivational factors and peer influence upon per-
formances;
6. Comparisons of weight-training techniques and regimens;
7. Compensatory modifications in technique for nonfunctioning muscles;
8. Nutritional profiles of disabled versus able-bodied athletes;
9. Frequency and treatment of athletic injuries;
10. Thermal regulatory problems found among athletes with disabilities.

Demographics of Sport for the Disabled

The number of athletes with disabilities is increasing rapidly, but exact numbers
by age, gender, disability, ethnicity, classification, and event are only estimates. To
understand the sport movement for athletes with disabilities, it becomes neces-
sary to investigate the demographics. Specific topics include the following:

1. Sport participation by age, gender, ethnicity, and disability;
2. Comparisons of international and national sport programs;
3. Incidence of school-age individuals denied access or limited in choices
of competitive sport programs for disabled individuals;
4. Existence of integrated or separate youth sport programs for indivi-
duals with disabilities;
5. Current program offerings by disability group;
6. Gender differences in elite sport participation;
7. Incidence of female athletes with disability participating in sport;
8. Attitudes toward sport participation before and after injury;
9. Incidence of sport participation due to injury;
10. Incidence and type of equipment used.

Legal, Philosophical, and Historical Bases for Sport

The sport movement for the disabled, like any trend, is shaped by history and
influenced by the philosophical orientation of its leaders and constituents. It can
also be affected by changes in the law. The sport movement for athletes with
disabilities has been influenced by history, changes in philosophy, and enabling
legislation, but has not been systematically studied. The following suggested topics
should be studied:

1. Effects of litigation upon sport for individuals with disabilities;
2. Incidence of discrimination in sport programs;
3. Effects of insurance difficulties upon sport programs for the disabled;
4. Effects of legislation upon sport for individuals with disabilities;
5. Incidence of liability issues in sport for disabled athletes;
6. Future of sport for disabled individuals;
7. Comparisons of trends in sports for the able-bodied and the disabled—recruitment, scholarships, professional sport;
8. Analyses of integrated versus segregated sport competition;
9. Philosophical constructs of sport by ability or disability;
10. Comparisons of the sport movement for disabled athletes with that of female athletes.

**Disabled Sport Directory and Clearinghouse**

As an initial step to enhancing knowledge and understanding of sport for athletes with disabilities, the Disabled Sport Research Directory* and the Clearinghouse for Disabled Sport Research Information* were established under the guidance of the Research Subcommittee. These are currently housed at the U.S. Olympic Committee headquarters at the training center in Colorado Springs.

The Disabled Sport Research Directory includes individuals who have research interests in sport for individuals with disabilities. Entries are coded by name, geographic location, educational background, principle affiliation (role) with sport for the disabled, primary areas of research interests, and association with disabled sport groups.

The Clearinghouse for Disabled Sport Research Information contains bibliographic information on research on sport for individuals with disabilities. This research information was obtained through literature searches, submission of titles and/or abstracts of research, and on-line databases. Entries are coded by author(s), title, subject, journal/reference, and date. Many entries are accompanied by abstracts.

The U.S. Olympic Committee now serves as headquarters for receipt, storage, and retrieval of disabled sport research information. Establishment of a database for disabled sport (i.e., number of athletes, events, national and world records, competitions) is currently in progress under the auspices of the Research Subcommittee. In addition, the USOC will sponsor a Conference on Sports Medicine/Science for the Disabled Athlete* to be held in March 1987. Of special interest is the inclusion of poster sessions for research presentations on sport for the disabled, in addition to a variety of topics such as sports science and training, classification systems, equipment, drug abuse, evaluation, and rehabilitation.

**Concluding Comments**

Questions to be answered by research are many. Although the topics may be as diverse as the athletes themselves, research can play an important role in shaping the future of sport for individuals with disabilities.

Research topics suggested here should be investigated; other questions should be asked. Cooperative research projects should be undertaken. In addition, national training programs for coaches and officials should be developed, sport opportunities for disabled youth should be expanded, and effective training regimens for athletes should be investigated and implemented. With concerted effort, visions for the future of sport for athletes with disabilities can become realities.
References


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