Sports Medicine and the Wheelchair Athlete

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Summary

International competitions for the wheelchair-confined are now a major feature of the world of sport. They are helpful in improving both mood state and physiological function, while improving long term prognosis. Immediate medical problems are much as in other types of competition, but there are also specific problems (bladder infections, pressure sores, intolerance of environmental extremes, and injuries related to wheelchair use). Disability classification, based on the anatomical or functional level of a lesion, provides a reasonably fair basis for competition. Most of the functional data to date relate to strength (isometric and isokinetic) and aerobic power (measured in a wheelchair or on an arm ergometer). While the inactive patient is often severely limited, wheelchair athletes may have a greater functional capacity than sedentary normals. The principles of training for the wheelchair-confined are much as in the able-bodied, although because the arm muscles are small, much of the training response may be peripheral rather than central. The margin between an effective stimulus and overtraining is also reduced. Involvement in a training programme not only increases physiological function, but also counters depression, increasing the subject's sense of self-efficacy. Biomechanicians are now contributing increasingly to wheelchair sport, improving the design of competitive wheelchairs, improving the mechanical efficiency of participants, and helping to reduce the risks of injury. The benefits of wheelchair sport are now clearly established, and family physicians should do more to encourage the involvement of the wheelchair-confined.

1. Medical Considerations

1.1 Nature of Disability

The wheelchair-confined account for about 0.1% of the total population in a developed nation such as the US (Young et al. 1982). The 16 wheelchair contestants at the first Stoke Mandeville Games, all from the armed services, were undergoing rehabilitation at the Stoke Mandeville Centre following traumatic spinal injuries. However, international competitions for the wheelchair-disabled have grown rapidly to contests attracting 3000 or more participants, with up to 100,000 paying spectators (Jackson & Fredrickson 1979; Scruton 1979). In the US, the National Wheelchair Basketball Association now includes more than 130 teams, organised into 22 conferences (Clark 1980). Moreover, there has been a striking development of competitive performance over the past 3 decades. For instance, George Murray (with a time of 2:26:52) beat all able-bodied runners in the Boston marathon of 1978. The wheelchair record for this distance has now decreased to 1:47:10 (Corcoran et al. 1980; Glaser 1985).

This review examines some of the medical considerations which have fostered the growth of both competition and performance for the wheelchair disabled, and it explores the basis of disability classification. Methods of evaluation, current physiological status and responses to training are discussed. Final sections look at the psychosocial dividends of enhanced activity and biomechanical methods of maximising function.