

## Sports Participation and Re-integration of Persons with Spinal Cord Injury

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### Summary of Research Findings

The diagnosis of a spinal cord injury (SCI) can bring changes to all areas of life, disrupting one's lifestyle in many ways (Anneken et al., 2010). How to assist individuals with SCI to resume their previous social roles and activities is the key goal for all health professionals. Community integration is defined by researchers as the degree to which persons with SCI are involved with social engagement, productive activities, and activities in the home and community (McVeigh et al., 2009; Urbanski, Bauerfeind & Pokaczajlo, 2013). Higher levels of community integration are associated with higher life satisfaction and quality of life among individuals with spinal cord injury (SCI) (Anneken et al., 2010; McVeigh et al., 2009; Urbanski et al., 2013). Participation in sports has been reported to assist individuals with SCI in re-establishing contact with the world by supporting community integration, the development of relationships, and the ability to continue many pre-injury activities (Anneken et al., 2010; Hanson, Nabavi, & Yuen, 2001; McVeigh, Hitzig, & Craven, 2009). Therefore, engagement in adaptive sports is a practical option for individuals with SCI to participate in opportunities to connect with the community and resume their former leisure interests. Changes in the health care delivery system over the last fifty years, however, have led to nearly a 50% decrease in the amount of time individuals with SCI spend within the inpatient rehabilitation setting after diagnosis, with an average length of stay of 55 days (Whitneck et al., 2011). The substantial reduction in time within the inpatient rehabilitation setting can lead to individuals being unprepared in how to reintegrate back into the community and engage in sport opportunities, as the majority of their rehabilitation training is focused on performing activities of daily living (Whitneck et al., 2011). Given the decrease in length of stay, therapists need to consider alternative ways to support continued community integration within this population post inpatient rehabilitation. Sports participation is one such intervention and this review seeks to evaluate the impact it can have on community integration.

This summary includes six quantitative studies (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; Kennedy, Taylor, & Hindson, 2006; McVeigh et al., 2009; Urbanski et al., 2013) to explore the benefits of sports participation on community integration among individuals with SCI. Kennedy and colleagues (2009) conducted a repeated measure study to examine how sports activity courses can benefit individuals with SCI pre- and post-participation, while the remainder of the studies surveyed their participants once (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; McVeigh et al., 2009; Urbanski et al., 2013) to understand their views about sports participation and its impact on community re-integration post-injury. In five of the studies, participants were diagnosed with either paraplegia (71.7%) or tetraplegia (28.3%) and varied from less than one year to over 10 years post injury (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; Kennedy et al., 2006; McVeigh et al., 2009; Urbanski et al., 2013). Fiorilli and colleagues (2013) included individuals who have mobility impairments due to a variety of causes, including SCI, in their study. The ages of participants varied from 16 to over 50, with 81.6% of participants being male (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; Kennedy et al., 2006; McVeigh et al., 2009; Urbanski et al., 2013).

Of the six reviewed studies, five separated their participants into comparison groups based on levels of sports involvement to examine the relationships between levels of sports participation and community integration. Participants were divided based on their athletic ability—athletes vs. non-athletes (Hanson et al., 2001), sport and non-sport participants (Anneken et al. 2010; Fiorilli et al., 2013; McVeigh et al. 2009), and type of sport—team or individual (Urbanski et al. 2013). The remaining study focused on understanding how a sport-based activity program can affect individuals' perception of sport participation and their ability to re-integrate into the community (Kennedy et al., 2006).

Compared to non-sport participants, individuals who participate in sport activities reported having significantly higher levels of community integration, along with higher levels of physical independence and social competence (McVeigh et al., 2009), better mental health (Anneken et al., 2010; Fiorilli et al., 2013), as well as participation in more productive activities (Anneken et al., 2010; Hanson et al., 2001). Individuals also reported significant increases in self-efficacy and perceived manageability and leisure satisfaction after participation in a sport-based program, all of which can lead to increased community re-integration (Kennedy et al., 2006). The Hanson et al. (2001) study found sports participants, compared to non-sports participants, scored significantly higher in the physical independence, occupation, mobility and social integration domains of the Craig Handicap Assessment and Reporting Technique (CHART), which indicated higher levels of community integration. Sports participants also fulfilled social roles in the home and community more frequently, such as having a job, going to school, and supporting a family, compared to non-sports participants (Anneken et al., 2010; Hanson et al., 2001). Finally, Fiorilli et al. (2013) reported that wheelchair basketball players experienced less participation restriction compared to the non-sport participant group.

When comparing participants in level of sport involvement, it was found that participants involved in sports at the elite level reported higher levels of re-integration, compared to those involved in recreational or less competitive sports (McVeigh et al., 2009). While individuals with paraplegia were more represented in the studies, participants' level of injury did not affect their degree of community integration due to the variety of sports available as well as accessible adaptive equipment (Hanson et al., 2001; McVeigh et al., 2009). It is important to note that while McVeigh et al. (2009) found that individuals with SCI who played individual sports both pre- and post-injury reported a statistically higher level of community integration, Urbanski et al. (2013) reported that individuals with SCI who participated in team sports experienced similar degrees of re-integration as those who participated in individual sports. The varying research results may be due to the characteristics of the participants in the two studies, as Urbanski et al. (2013) included only athletes with SCI who devoted a significant amount of time to sport participation per week, an average of 9.1 hours, regardless of the type of sport. Finally, Anneken et al. (2010) found that participants who had a familiarity with sports pre-injury had a significantly higher likelihood of sport participation post-injury. The increased probability of post-injury sports participation is also supported by the findings in the McVeigh et al. (2009) study.

Overall, findings of these six studies show participation in sports can lead to considerable benefits with community re-integration for persons with SCI. Researchers of these reviewed studies have also suggested including education and training related to adaptive sport in the rehabilitation process (Anneken et al., 2010; Hanson et al., 2001; McVeigh et al., 2009). The findings of the reviewed studies support a positive correlation between participation

in sports and community integration for this population. However, due to the inclusion of participants at varying times post injury, the studies did not provide enough conclusive information to define the best time to implement sports, nor did they support a causal association due to the lack of randomization and a no-treatment group.

### Knowledge Translation Plan

Recreational therapists are in a unique position to educate clients on available resources to enhance community integration in the rehabilitation setting. It is critical for therapists to understand the full scope of the client's interests and abilities when recommending sports-related community leisure opportunities in order to enhance an individual's experience and promote continued participation (McVeigh et al., 2009). Facilitators in boosting the success of community integration include social, emotional, and informational support for individuals with SCI (Anneken et al., 2010; Kennedy et al., 2006; McVeigh et al., 2009; Urbanski et al., 2013); that is, personal motivation to integrate, in addition to the attitudes of friends, family, and community members, has a profound impact on the success of re-integration.

When working with individuals with SCI, it is recommended that recreational therapists include information on the benefits and opportunities available for community involvement through sports involvement to promote a physically active lifestyle post-injury (Hanson et al. 2001; Kennedy et al. 2006; McVeigh et al. 2009). Suggested recreational therapy interventions include educational sessions consisting of varying levels of sports participation as well as both individual and team sport opportunities and information, because both levels of sport participation and type of sport participation showed positive benefits on community re-integration (Urbanski et al., 2013). These findings, along with the wide variety of sport opportunities available, indicate that the

benefits of sports engagement are not solely possessed by elite team athletes and that its benefits can reach a larger audience of interests and varying skill levels within the rehabilitation setting (Hanson et al., 2001; Kennedy et al., 2006; McVeigh et al., 2009; Urbanski et al., 2013). Yet, providing information regarding competitive adaptive sport programs and teams may allow individuals who are interested in being involved in the elite level to experience higher levels of re-integration (McVeigh et al., 2009). The McVeigh et al. (2009) and Anneken et al. (2010) studies found that individuals who were more physically active prior to injury may be more likely to recognize the value and overall benefits of participation in sports; therefore, it is suggested that a leisure interest assessment is completed in the initial recreational therapy assessment to assist in exploring options to engage in sports-based physical activity. Furthermore, researchers have suggested that participation in sports may contribute to the improvement of rehabilitation outcomes and provide valuable skills needed for re-integration, including assistance in maintaining physical and mental health as well as coping with daily stressors (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; McVeigh et al., 2009). Therefore, providing sports education and information on how to re-integrate back into one's pre-injury sport interests is a valuable element of rehabilitation for individuals with SCI. Perhaps, an early introduction and focus on wheelchair mobility training can increase an individual's confidence in participating in sporting activities as well as general physical activity (Anneken et al., 2010). Additionally, discussion about available adaptive equipment and accessible transportation, as well as identification of any additional barriers to sport participation should be reviewed in order to facilitate a positive experience and continued participation in sports after discharge (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al., 2001; Kennedy et al., 2006).

Finally, in preparing individuals for discharge, it is suggested that recreational therapists incorporate community outings to adaptive sports games or practices. A first-hand experience with adaptive sports is an essential part of the rehabilitation process and can possibly improve adherence to an active lifestyle (Anneken et al., 2010). Recreational therapists can also provide an information packet with sports-based community organizations, adaptive equipment distributors, accessible facilities in which to participate in sports, accessible venues in which to engage in spectator sports, and transportation companies as the packet can serve a vital reminder of opportunities and resources for persons who need additional time to realize their abilities and interests post-injury (Hanson et al., 2001; McVeigh et al., 2009). Recreational therapists are also encouraged to link new clients with opportunities to speak with, or reach out to, past clients and peers involved with sports, as the connection could assist in bridging the gap between information provided in the rehabilitation setting and client needs (Anneken et al., 2010; Hanson et al., 2001; McVeigh et al., 2009).

Sport involvement was found to be beneficial in promoting overall community reintegration within this population (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al. 2001; Kennedy et al. 2006; McVeigh et al. 2009; Urbanski et al. 2013). Further research is needed to understand the best time to implement education and training on adaptive sports in order to streamline the process of community integration for individuals with SCI. Due to the lack of detailed demographic information, the predominant majority of male participants, and the use of non-probability sampling, the study samples are not representative of the SCI population. Therefore, generalizability of these studies is limited. (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al. 2001; Kennedy et al. 2006; McVeigh et al. 2009; Urbanski et al. 2013). Future studies are encouraged to look at how education and socioeconomic status may affect re-integration (Hanson et al., 2001). Additionally, the use of a longitudinal or experimental designs could help to determine the most ideal time to disseminate information on sports participation post-injury to best benefit community re-integration (Anneken et al., 2010; Fiorilli et al., 2013; Hanson et al. 2001; McVeigh et al. 2009; Urbanski et al., 2013).

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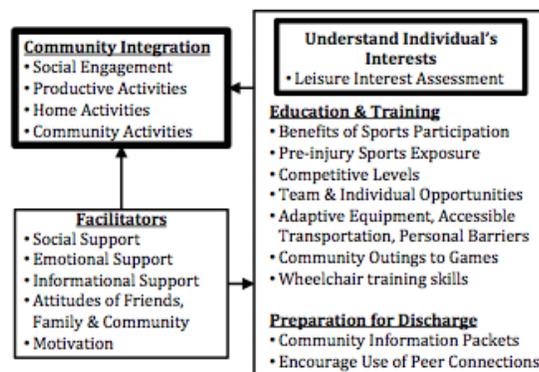


Figure 1: Suggested Community Integration Interventions for Persons with Spinal Cord Injury