

Evidence Based Practice Day
Department of Rehabilitation Sciences, Recreation Therapy Program
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Therapeutic Benefits of Sport Participation for Individuals with Combat-Related Lower Extremity Amputations

Search terms: amputation OR amputee AND sport; amputation OR amputee AND recreation; amputation OR amputee AND physical activity; military AND lower limb AND physical activity; service member AND disability AND recreation; wounded warrior AND rehabilitation AND sport; soldier AND amputation AND sport; combat AND injured AND recreation; VA AND limb loss AND physical activity; veteran AND blast injury AND recreation; armed forces AND returning AND sport; war AND disarticulation AND physical activity

Years: 2001 – 2013

Databases: Academic File One; CINAHL; EbscoHost; ERIC; Hospitality & Tourism Complete; MEDLINE

Number of articles: 9

Summary of Research Findings

The survival rates in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) have significantly improved in comparison to any other conflicts of the past (Yancosek & Cancio, 2008). With more lives being saved, there has consequently been a substantial number of surviving service members with traumatic lower extremity amputations (Yancosek & Cancio, 2008). When compared to the general population, service members with trauma-related lower extremity amputations are at a higher risk for developing secondary health complications (Pepper & Willick, 2009). Eighty-five percent (85%) of military service members who sustained a major limb loss from OIF and OEF were under the age of thirty-five, an age group that typically desires returning to a more active lifestyle than older adults (Pasquina, Scoville, Belnap, & Cooper, 2010). A literature review table was compiled for purposes of synthesizing the most up-to-date research and sharing this educational information with recreational therapy students to incorporate into future clinical practice. Through the literature review, five benefit categories emerged: physical, psychological, social, cognitive, and healthcare advancement. Each is reviewed below.

Physical Benefits – Researchers have agreed that participation in sports and physical activity can improve strength, cardiopulmonary endurance, muscle coordination, and balance (Krieger et al., 2010; Pepper & Willick, 2009; Webster et al., 2001). Bragaru et al. (2011) add that muscle force and body mass can also be positively influenced by sport participation. By actively participating in sports, a service member with a conflict sustained lower extremity amputation has the potential to improve motor skills and techniques that enhance performance (Bragaru et al., 2011); can improve proprioception in limbs (Wetterhahn et al., 2002); and can improve mobility skills (Bragaru et al., 2011; Pepper & Willick, 2009), especially with respect to proficiency in using prosthetic devices (Wetterhahn et al., 2002). Sports that incorporate physical activity can increase speed and walking distances, which contribute to weight control, physical health (Bragaru et al., 2011) and potentially reduced cholesterol levels (Krieger et al., 2010), thus reducing the risk for heart disease. Sports often incorporate running; and accelerating proficiently can be a lifesaving skill in emergency situations (Webster et al., 2001).

Psychological Benefits – Service members returning from war with an acquired lower extremity amputation may be negatively impacted psychologically, such as experiencing decreased mood states, low professed competence, and poor perceived quality of life (Lundberg et al., 2011). Researchers across the board are in consensus with acknowledging improvements in self-esteem, coping behavior, stress relief, and mood as a result of sport participation and physical activities (Deans et al., 2012; Bragaru et al., 2011; Couture et al., 2010; Hawkins et al., 2011; Krieger et al., 2010; Pepper & Willick, 2009; Wetterhahn et al., 2002; Webster et al., 2001). Sports can buffer the major change in a soldier's life by improving their perceived quality of life through acceptance of their disability (Deans et al., 2012; Bragaru et al., 2011; Krieger et al., 2010; Pepper & Willick, 2009; Webster et al., 2001). Often times, disability sports utilize classification systems based on the extent of impairments, which level the playing field and contribute to this notion of normalization (Krieger et al., 2010). This can also lead to other psychological benefits, such as feelings of empowerment (Batts & Andrews, 2011; Pepper & Willick, 2009), perception of mastery (Deans et al., 2012; Wetterhahn et al., 2002), motivation for continued involvement (Deans et al., 2012; Pepper & Willick, 2009), and internal locus of control (Bragaru et al., 2011). A positive relationship has been reported between regular sport participation and restoration of body image (Deans et al., 2012; Bragaru et al., 2011; Krieger et al., 2010; Wetterhahn et al., 2002). Participation in sports can enable any athlete to realize their true potential that otherwise may not have been discovered, through the various levels of competitiveness, progressing from community level sports to international level of competition (Deans et al., 2012). Individuals, who have never participated in sports prior to acquired injury, can benefit from new experiences (Bragaru et al., 2011; Couture et al., 2010).

Social Benefits – Support programs that embrace the military philosophy of camaraderie are available to wounded service members to facilitate the rehabilitation process. A service member with a recently acquired lower extremity amputation may view social activities as a means to get out of the house (Couture et al., 2010). Therefore, social activities such as sporting events offer the opportunity for reintegration into the community (Bragaru et al., 2011; Pepper & Willick, 2009; Webster et al., 2001). Participation in sports and recreational activities can have a positive effect on social relationships by increasing fellowship (Wetterhahn et al., 2002) and the total number of social contacts (Bragaru et al., 2011). Sporting activities can also inspire healthier perspectives on employment and independent living for the soldier transitioning to civilian life (Pepper & Willick, 2009). Engaging in sports can potentially improve communication skills (Pepper & Willick, 2009) by reducing anxiety (Krieger et al., 2010) that is associated with stigma or initiating conversations.

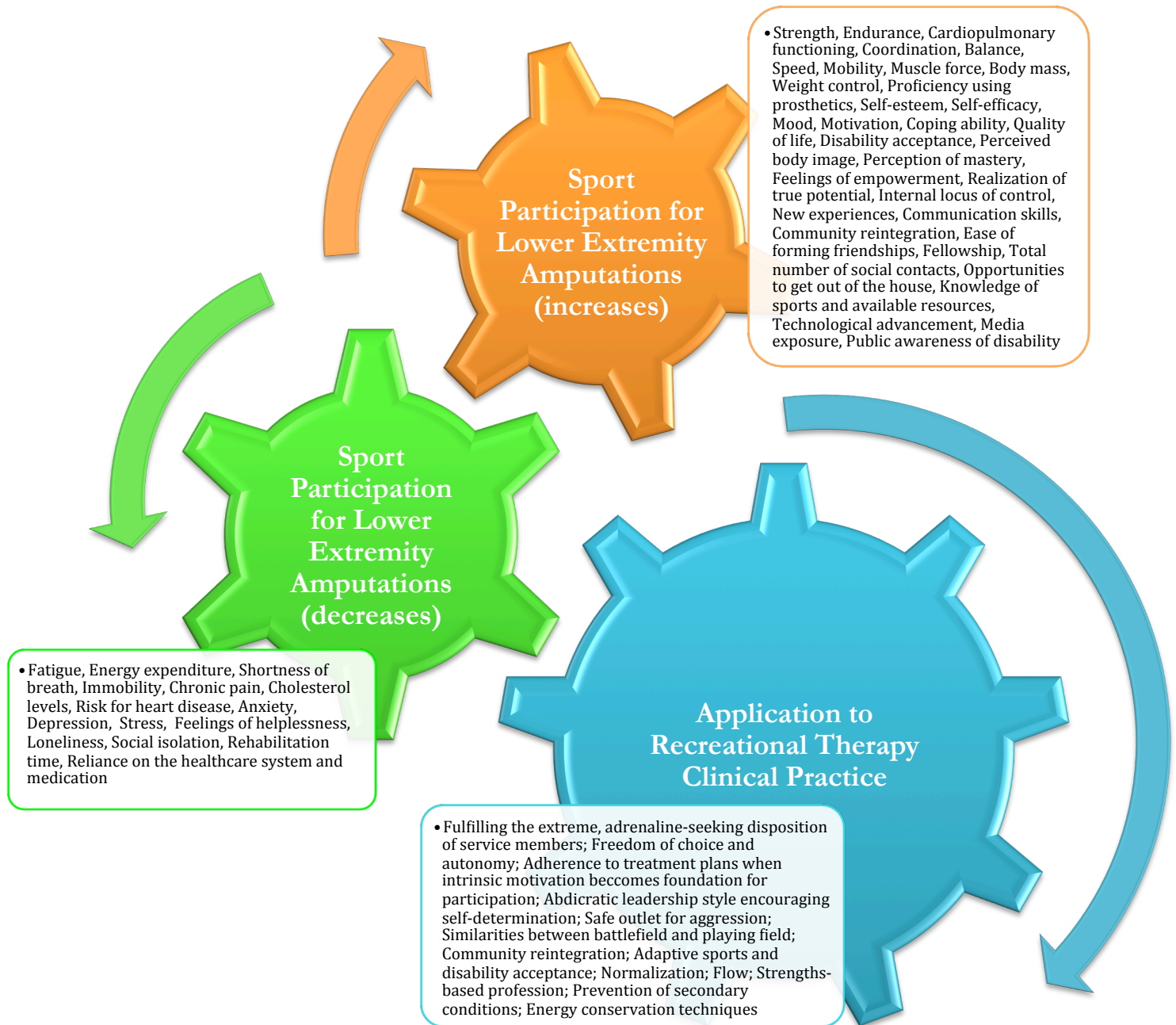
Cognitive Benefits – Recent research states that participating in sports can generally enhance the cognitive abilities of service members (Pepper & Willick, 2009; Webster et al., 2001). This is especially valuable to the amputee who has suffered a co-morbid brain injury as a result of combat-related trauma. Over 50% of service members who acquired amputations from OIF/OEF have a documented traumatic brain injury (Pasquina et al. 2010).

Healthcare Advancement – There have been rapid advancements in the field of prosthetics in recent years. Many of these improvements have been spearheaded by elite athletes who have challenged the system by demanding prosthetics that better accommodate their athletic talents (Pepper & Willick, 2009; Webster et al., 2001). Participating in sports and physical training has also been shown to shorten the length of rehabilitation time (Bragaru et al., 2011) and reduce a person's reliance on medication and the healthcare system (Krieger et al., 2010).

Knowledge Translation Plan

The therapeutic benefits of physical activity and its impact on health outcomes support the intervention of participating in sports as a recreational therapy treatment modality for use during the 3-month prosthetic training period of a Physical Medicine & Rehabilitation (PM&R) hospital's outpatient care program. Following a blast injury resulting in a lower extremity amputation, it is common for a physical therapist (PT) to work on mobility, and an occupational therapist (OT) to address activities of daily living; but it is the expertise of a recreational therapist (RT) that can fulfill the extreme, adrenaline-seeking disposition of service members by prescribing treatments that transcend those provided by other disciplines. Recreational therapy incorporates the freedom of choice into treatment, giving wounded warriors not only a sense of autonomy, but a greater chance for compliance with medical recommendations. Sports can be an effective outpatient rehabilitation

treatment approach by providing a safe outlet for aggression in a structured environment, equipped with clearly defined boundaries and acceptance of pre-established rules by the players. Considering participation in sport typically requires active movement from players, the prevention of secondary health conditions becomes possible. By adherence to a weekly sport participation routine and progressing through rehabilitation, a service member with a lower-extremity amputation may also learn techniques associated with energy conservation that becomes essential for use following discharge. A soldier with limb absence who engages in adaptive sports as part of recreational therapy treatment becomes empowered to accept their disability thus improving psychosocial well-being. By forgetting about their impairment and feeling the effects of normalization, participants increase their likelihood of experiencing flow because the skill of the tactical athlete mirrors the challenge of the sport. Recreational therapy, being a strengths-based profession, employs well-qualified therapists capable of steering patients clear of boredom and anxiety.



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