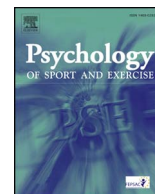




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Physical activity self-management interventions for adults with spinal cord injury: Part 2 – Exploring the generalizability of findings from research to practice[☆]

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ABSTRACT

Despite the benefits associated with regular participation in physical activity, individuals with spinal cord injury (SCI) remain insufficiently active. The ability to self-manage participation may increase physical activity levels, but only if self-management interventions can be implemented in the 'real world'. The purpose of this review was to examine the degree to which authors of published studies of LTPA self-management interventions for individuals with SCI have reported on factors that could increase the likelihood of translating this research into practice. A systematic search of five databases was conducted, yielding 33 eligible studies representing 31 interventions. Each intervention was assessed using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) Framework and the PRECIS-2 (PRagmatic-EXplanatory Continuum Indicator Summary) tool. The most commonly reported RE-AIM dimensions were Effectiveness (51.0% of interventions) and Reach (18.5%), followed by Implementation (14.2%), Maintenance (13.8%), and Adoption (4.0%). Overall, interventions were scored as primarily explanatory in five of the nine PRECIS-2 domains (*recruitment, primary analysis, organization, flexibility [delivery], follow-up*) and primarily pragmatic in one domain (*setting*). These findings suggest that while some LTPA self-management interventions for individuals with SCI are intended to be translated to real world settings, limited information is available to understand the degree to which this has been accomplished. Enhanced reporting of factors that could increase the likelihood of translating these interventions into practice is recommended.

A spinal cord injury (SCI) results from trauma or disease that damages the spinal cord, leading to partial or complete paralysis (Rick Hansen Institute, 2017). Research has shown that participation in leisure time physical activity (LTPA) among persons with SCI is associated with numerous benefits including improvements in physical health (Fernhall, Heffernan, Jae, & Hedrick, 2008), psychological well-being (Martin Ginis, Jetha, Mack, & Hetz, 2010), and quality of life (Tomasone, Wesch, Martin Ginis, & Noreau, 2013). Despite these benefits, and given the pervasive and ongoing barriers that can impede regular LTPA participation in this population (Martin Ginis, Ma, Latimer-Cheung, & Rimmer, 2016), individuals with SCI remain largely inactive (Martin Ginis et al., 2010).

To improve physical activity rates in this population, researchers have integrated *self-management skills* into LTPA interventions delivered to persons with SCI (e.g., Arbour-Nicitopoulos, Tomasone, Latimer-Cheung, & Martin Ginis, 2014; Brawley, Arbour-Nicitopoulos, & Martin Ginis, 2013). Self-management has been defined as "... the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition" (Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002, p. 178). Effective self-management, which ideally encompasses five critical skills (i.e., decision-making, appropriate resource utilization, forming a partnership with a health-care provider, taking necessary actions, and problem solving; Lorig & Holman, 2003), is an important

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consideration in—and arguably an essential component of—any intervention targeting behavior change among persons with long-term diseases (Taylor et al., 2014) including those with SCI (Wolfe et al., in preparation).

In an effort to shed light on the potential theoretical mechanisms by which LTPA self-management interventions can foster behavior change among adults living with SCI, our research team (Tomasone, Flood, et al., 2018) conducted a comprehensive systematic review of 26 studies using the Behavior Change Technique Taxonomy version 1 (BCTTv1; Michie et al., 2013). Results revealed that the most commonly used BCTs reported in the studies corresponded to the core components of self-management, and the use of these BCTs appeared to be positively related to LTPA outcomes.

To date, and based on the studies reviewed by our team (Tomasone, Flood, et al., 2018), it appears that minimal consideration has been given to intervention transferability, or the generalizability of findings from LTPA self-management intervention research conducted with adults with SCI, into regular practice settings. For example, of the 31 interventions included in the systematic review, the authors of only one (Arbour-Nicitopoulos et al., 2014) reported extensively on external validity factors such as sample representativeness of the target population and intervention effectiveness across sample sub-groups. In other instances in which researchers reported on external validity or generalizability factors (e.g., Brawley et al., 2013; Latimer, Martin Ginis, & Arbour, 2006), they were typically noted briefly and framed as study limitations. This poses challenges for both researchers and practitioners; in order for research to inform and support the implementation of effective ‘real life’ interventions, it is important that it is conducted in representative settings with representative samples (Glasgow, Bull, Gillette, Klesges, & Dziewaltowski, 2002) and that such information is reported in the literature. In short, there seems to be a gap in our understanding of the degree to which variables associated with the translation of this body of research into regular practice have been considered and/or reported on.

Various tools and frameworks have been developed and used by researchers which reflect a growing shift in perspective from intervention efficacy to intervention generalizability and dissemination (Lewis, Napolitano, Buman, Williams, & Nigg, 2017). One tool that focuses on both internal and external validity factors is the RE-AIM Framework (Gaglio & Glasgow, 2012; Glasgow, Vogt, & Boles, 1999; Klesges, Estabrooks, Dziewaltowski, Bull, & Glasgow, 2005). RE-AIM was developed by Glasgow et al. (1999) to measure the public health impact of an intervention via the assessment of five dimensions (Reach, Effectiveness, Adoption, Implementation, Maintenance). Since its inception, RE-AIM has evolved to include distinct sets of criteria, typically referred to as “items”, that are grouped together to represent each of the five dimensions (e.g., Gaglio & Glasgow, 2012; Glasgow, Nelson, Strycker, & King, 2006; Kessler et al., 2013). Thus, RE-AIM can be used as an evaluation tool to assess and promote the reporting of each of these dimensions and to understand the extent to which interventions contain elements of external validity (Glasgow et al., 1999; Harden, Burke, Haile, & Estabrooks, 2015). Researchers can also use RE-AIM during study planning and design phases to enhance an intervention's potential for research to practice translation (Klesges et al., 2005).

Another tool, the PRagmatic–EXplanatory Continuum Indicator Summary (PRECIS), was developed by Thorpe et al. (2009) to assist researchers with matching study design decisions with the intended use of trial results (Loudon et al., 2015). An improved and validated version of the tool (PRECIS-2) was published by Loudon et al. (2015). The general purpose of PRECIS-2, which serves as both a study design and evaluation tool, is to assess the *applicability* of an intervention which, according to Loudon et al., “... affect [s] the ease with which the trial results can be applied to and by the usual community of users of the intervention in the settings in which the trial designers envision it being used” (2015, p. 2). Using PRECIS-2, the position of intervention characteristics is evaluated in nine domains (i.e., eligibility, recruitment,

setting, organization, flexibility [delivery], flexibility [adherence], follow-up, primary outcome, and primary analysis) on a pragmatic-explanatory continuum whereby pragmatic refers to the question, “Does this work under usual conditions?” and explanatory denotes, “Can this work under ideal conditions?” (Loudon et al., 2015).

Researchers have reviewed bodies of literature in a variety of areas to identify the extent to which different fields have considered the components of both RE-AIM and PRECIS-2 (e.g., Craike, Hill, Gaskin, & Skouteris, 2017; Harden, Burke, et al., 2015; McGoey, Root, Bruner, & Law, 2015). The focus on and publication of this research in reputable academic journals represents notable progress towards translating knowledge from research into practice as these studies can provide information about the external validity of interventions, draw attention to the need for enhanced reporting and the domains that ought to be focused on/improved, and establish recommendations for future intervention studies. As such, and given the findings reported in the abovementioned review conducted by our research team (Tomasone, Flood, et al., 2018), using this methodology in the field of LTPA self-management interventions for adults with SCI will serve to address important knowledge gaps in this area of research.

The purpose of this review was to examine the degree to which authors of published studies of LTPA self-management interventions for individuals with SCI have reported on factors that could increase the likelihood of translating this research into practice. Specifically, we conducted a secondary analysis of the studies included in a recent systematic review (Tomasone et al., 2018) to examine: a) the level of reporting on the five RE-AIM dimensions; and b) the position of these interventions on each of the PRECIS-2 domains across the pragmatic-explanatory continuum.

1. Methods

Full details regarding the literature search strategy and selection, inclusion/exclusion criteria, and screening process are reported in Tomasone et al. (2018). The following sections contain a brief overview of the methods used for both reviews, as well as those that are unique to this study.

1.1. Literature search strategy and selection

A comprehensive search strategy, developed in consultation with a university health sciences librarian, combined controlled vocabulary and keywords relevant to SCI, physical activity, self-management, and interventions. The systematic search strategy was executed in five electronic databases: MEDLINE, EMBASE, PsycINFO, CINAHL, and the Cochrane Central Register of Controlled Trials. Hand-searching methods (e.g., scanning the table of contents of relevant journals) were also employed, and limits related to language (English), date of publication (1980–September 2017) and subjects (human) were applied.

1.2. Inclusion/exclusion criteria

To be included in the systematic review, studies had to: a) be published in a peer-reviewed journal; b) contain an intervention or utilize strategies that had a behavioral component targeting LTPA behavior and/or LTPA self-management skills in any setting (e.g., health care, community, home); c) include adults (18 years or older) with traumatic or non-traumatic SCI; and d) report quantitative data related to LTPA and/or its antecedents (e.g., self-efficacy, goal setting, action planning, etc.; Tomasone et al., 2018). Studies were excluded if they: a) reported qualitative analyses/data only; b) used retrospective or case study designs; c) were an editorial, commentary, abstract, conference abstracts/proceedings, or dissertation; d) included ≤ 3 participants with SCI; and e) did not report the results for participants with SCI separately from those of other participants.

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