

Research Paper

# An internet survey of the characteristics and physical activity of community-dwelling Australian adults with acquired brain injury: Exploring interest in an internet-delivered self-management program focused on physical activity

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## Abstract

**Background:** Individuals with acquired brain injury (ABI) are more likely to be physically inactive and experience barriers to accessing services to address inactivity. This study was designed to guide the development of an internet-delivered self-management program to increase physical activity after ABI.

**Objective:** The aims of this study were to examine the current physical activity status of community-dwelling Australian adults with ABI, the barriers to physical activity they experience and to explore interest in an internet-delivered self-management program aimed at increasing physical activity.

**Methods:** An online survey of Australian adults with ABI was used to collect information about demographic characteristics; general health; emotional well-being; mobility and physical activity status, and satisfaction; barriers to physical activity; confidence in overcoming barriers, and; interest in an internet self-management program. Data were analyzed descriptively and correlational analyses examined relationships between variables.

**Results:** Data were analyzed from 59 respondents. Over half were not satisfied with their current physical activity status. The most frequently reported barriers were pain/discomfort, fatigue and fear, and confidence to overcome these barriers was very low. Interest in an internet-delivered self-management program was high (74%) and not related to the amount of physical activity, satisfaction with physical activity and mobility status or total number of barriers.

**Conclusion:** Australian adults with ABI are not satisfied with their activity levels and experience barriers in maintaining their physical activity levels. Participants were interested in accessing an internet-delivered self-management program aimed at improving physical activity levels. Therefore such a program warrants development and evaluation. © 2016 Elsevier Inc. All rights reserved.

**Keywords:** Self-management; Physical activity; Barriers; Stroke; Internet

Acquired brain injury (ABI) refers to any damage to the brain that occurred after birth, with common causes being stroke and trauma.<sup>1</sup> ABI is a significant cause of disability

globally. Stroke alone causes a loss of 49 million disability-adjusted life years (DALYs) worldwide annually<sup>2</sup> while traumatic brain injury (TBI) is the leading cause of

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Previous publications: A small subgroup analysis of the stroke participants of this survey was conducted for a poster presentation at the 25th

Annual Scientific Meeting of the Stroke Society of Australasia, held on Hamilton Island, Queensland, Australia on 30 July – 1 August 2014. The abstract was published in International Journal of Stroke (9: S1, p35).

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disability in those under the age of 40.<sup>2</sup> Individuals with ABI often have more complex disability than other disability groups.<sup>1</sup> Australians with disability experience significantly poorer health than those without disability,<sup>3</sup> leading to higher likelihood of individuals with ABI not reaching adequate physical activity levels recommended for optimal health.<sup>4</sup>

Improving physical activity levels is an important part of improving the overall health and well-being of those with ABI. However, those with ABI often face numerous barriers to physical activity. A systematic review by Nicholson and colleagues included examination of barriers following stroke from four studies, and found a lack of motivation, environmental factors (e.g. transport), health concerns, and stroke impairments were the most commonly reported barriers.<sup>5</sup> Following TBI, Driver and colleagues found a lack of endurance, feelings of self-consciousness, a lack of transportation and a lack of time to be the most common barriers to physical activity.<sup>6</sup> However, these studies primarily focused on barriers to participating in exercise programs specifically and/or accessing community exercise facilities<sup>6–8</sup> whilst others focused on barriers to community participation of which physical activity is only one aspect.<sup>9,10</sup> Given that barriers can vary for different individuals in different situations it is important in the development of a self-management program to identify the barriers to physical activity that are specific to potential users.

There is growing evidence to support the use of self-management programs in many populations, including those with ABI.<sup>11–14</sup> A review by de Silva examining over 550 high quality publications suggests that it is worthwhile to support self-management focused on behavior change and improving self-efficacy.<sup>15</sup> Achieving sustained changes in physical activity behavior over the long term is difficult.<sup>16</sup> However, a systematic review we recently completed examined found favorable physical activity outcomes following self-management interventions for stroke, although risk of bias in these studies was high and overall efficacy remains unclear.<sup>17</sup>

Self-management programs for those with ABI are widely heterogeneous with respect to program content, delivery characteristics, and outcomes, with physical activity typically just one component of a multifaceted intervention.<sup>17</sup> This makes it difficult to establish the depth to which physical activity specific content is covered, and the extent to which skills are taught and practiced. Hence a program that focuses solely on physical activity may potentially be a valuable option for those requiring more support to achieve changes in this area. However, to be effective, self-management programs must be focused on the concerns and barriers of the target population, thus a detailed needs analysis for the specific population is fundamental to the development of a targeted program.<sup>15,18</sup>

The mode of delivery is an important consideration when developing an effective self-management program. Delivery of self-management programs remotely, such as

via the Internet or telephone, can be cost-effective and easily accessible, particularly for those who face multiple barriers to accessing optimal health care.<sup>19</sup> Remote delivery methods have been used with success in the delivery of self-management programs in a number of different populations, including chronic pain,<sup>20</sup> anxiety and depression,<sup>21–23</sup> post-traumatic stress disorder (PTSD),<sup>24</sup> arthritis,<sup>25</sup> cerebral palsy,<sup>26</sup> and generic chronic disease populations.<sup>19</sup> A systematic review of remote and web-based interventions for promoting physical activity found consistent evidence to support their effectiveness in supporting healthy, community-dwelling adults to become more physically active.<sup>27</sup> Evidence to support remote delivery of self-management programs for physical activity after ABI is beginning to emerge. Delivery of a self-management program predominantly via telephone has shown evidence to support its use in improving physical activity for individuals following stroke.<sup>28,29</sup> There are also promising results from a number of non-randomized studies showing improved health behaviors and self-efficacy following telehealth interventions for individuals following stroke.<sup>30–33</sup> However, there is a lack of availability of remote-based programs that specifically focus on increasing physical activity after ABI. Before starting to design and develop such programs, however, it is important to assess the level of interest of such a program to individuals in this population.

Therefore, a specific needs analysis of potential users of an internet-delivered self-management program to increase physical activity after ABI was conducted. The aims of this study were:

1. To examine the current physical activity status of community-dwelling adults with ABI and level of satisfaction with this status;
2. To establish the main barriers to physical activity experienced by community-dwelling adults with ABI and the level of confidence in overcoming these barriers;
3. To establish the level of interest in an internet-based self-management program focused specifically on increasing physical activity for adults with ABI.

## Methods

### *Survey design and ethics*

The survey was designed using *Qualtrics* software, Version 44426. The survey consisted of 65 items delivered to all participants in the same order. Participants were able to change their responses before submitting the survey. The survey was pilot tested by lay individuals with and without ABI, and questions were subsequently modified to improve comprehension. No formal analyses of internal consistency or validity were conducted.

This study was approved by the Macquarie University Human Research Ethics Committee (Medical Sciences) (Reference number 5201300495). No incentives were

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