

## Research Paper

## Leisure-Time Physical Activity in adults with Cerebral Palsy

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## Abstract

**Background:** Cerebral Palsy (CP) is becoming more prevalent in the adult population, but there is limited information available regarding their Leisure-Time Physical Activity (LTPA).

**Objective:** To investigate the self-reported frequency and LTPA participation patterns in adults with CP, compared to the Canadian general population (CGP).

**Methods:** This was a cross-sectional, follow-up-survey of a cohort of 145 persons with CP. The primary outcome was the level of participation in LTPA. Questions were also posed about the motivations and self-reported barriers to LTPA participation. The survey results were compared to CGP estimates from the Canadian Community Health Survey (CCHS).

**Results:** Fifty-four participants completed the survey, and 90% reported participation in at least one LTPA per week. On average, they reported participating in LTPA  $7.3 \pm 5.7$  times/week. They also reported participating in an average of  $4.1 \pm 2.4$  different types of LTPA. Walking, home-exercise, and swimming were the most frequently reported as a primary LTPA in the CP sample.

These findings were comparable to those from the CGP. However, adults with CP were more likely to participate in home-exercise than the CGP ( $p < 0.05$ ). More than 40% reported that the purpose of their LTPA was fitness or body maintenance and 56% indicated an interest in starting new activities. Various barriers were also reported.

**Conclusions:** Adults with CP frequently participated in LTPA. However, the majority of them are not achieving recommended daily physical activity levels. Also their LTPA habitually focuses on rehabilitative exercises and the diversity of LTPA is limited by several barriers. © 2015 Elsevier Inc. All rights reserved.

**Keywords:** Cerebral palsy; Adults; Leisure-time physical activity; General population

The concept of leisure is associated with recreation and placed in contrast to the obligatory activities of work.<sup>1</sup> Accordingly, Leisure Time Physical Activity (LTPA) is defined as those intentional physical activities that people choose to do during their free time,<sup>2</sup> while Physical Activity (PA) is defined as any bodily movement produced by the skeletal muscles, resulting in increased energy expenditure.<sup>3</sup> The American College of Sports Medicine<sup>4</sup> recommends that adults should perform moderate-intensity aerobic activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum 20 min on three days each week. When activity meets this standard people derive physical benefits, such

as favorable alterations in body composition, skeletal health, cardiorespiratory fitness, as well as psychological benefits, potentially including alleviation of symptoms of depression, anxiety, and improved self-concept.<sup>5</sup> LTPA is a key component that is central to achieving this level.<sup>6</sup>

There is evidence that adequate activity level is associated with similar benefits for people with disabilities. In the context of the International Classification of Functioning (ICF),<sup>7</sup> researchers have identified main categories of factors that are associated with participation in PAs. Functioning and disability (types and degrees of functioning and disability), Environmental Factors (e.g. costs, accessibility, built environment, information and social support) and Personal Factors (e.g. age, self-efficacy, depression and mental health), all of which are significantly correlated with participation in PA in adults with disabilities.<sup>8</sup> Specifically, studies have reported that, in people with disabilities, LTPA was related with life satisfaction, muscle strength, ability to perform everyday activities, and a reduction in secondary conditions.<sup>9–12</sup>

Conflict of interest statement: The authors stated that they had no interest which might be perceived as posing a conflict or bias.

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One of the largest populations of people with disability are those with Cerebral Palsy (CP). CP has been described as “a group of permanent disorders of the development of movement and posture causing activity limitation, that occurred in the developing fetal or infant brain.”<sup>13</sup> Although CP is often seen as a childhood disorder, the number of adults with CP is increasing, as a result of the increased survival rates among low birth weight infants and increased longevity among persons with CP.<sup>14</sup> Therefore, CP is no longer solely a condition of childhood and it is important to understand the health of this growing population in adulthood. Attention to the adults with CP has been increased and problems for adults with CP have been published, such as functional deterioration, secondary condition, and pain.<sup>15–18</sup> In Quebec, Canada, Boucher and colleagues examined the influence of personal and environmental factors on leisure participation in adults with CP,<sup>19</sup> which could be directly applied in the ICF model. They suggested that level of severity, physical accessibility, external attendant services, adapted transportation service, attitude from others are influential for leisure participation.

Despite a growing body of literature about adults with CP, information especially regarding their patterns of LTPA, remains limited. Three studies have described participation in LTPA in adults with CP.<sup>20–22</sup> These studies report that although the level of PA can be limited by the severity of CP, many of adults with CP participated in regular LTPA and PA at levels that in most life areas were comparable to the healthy population.<sup>20,21</sup> However, adults with CP tended to spend time on non-intensive activities. Gaskin and Morris<sup>22</sup> also reported that 70.6% of adults with CP in their Australian sample were involved in exercise and 39.2% undertook LTPAs, but intensity of the activities were not sufficient enough to meet the general recommendation from the US Department of Health and Human Services.<sup>22</sup> Therefore, it appears that there is a need to increase the level of participation in LTPA among adults with CP if they are to realize the benefits associated with PA. However, with the exception of the study conducted by Gaskin and Morris,<sup>22</sup> the samples in these studies did not include many adults with severe disability, those who use wheeled mobility in most or all settings. There is a general lack of information regarding adults with CP. In Canada, adults with CP are not easily identified, especially the older individuals due to the absence of a central registration at the time of this study. Specifically, the dearth of information regarding LTPA in adults with severe CP may result in an inaccurate description of LTPA because it is evident that severe disabilities are strongly associated with physical inactiveness.<sup>8,12,23–25</sup> Thus, it is important to gain a more detailed understanding of level of participation in LTPA among adults with CP in a Canadian context.

The primary purpose of this study was to describe the level of participation in LTPAs in adults with CP in terms of frequency and intensity. This study was unique in its inclusion of the full spectrum of severity and in that the

data were collected in a way that permitted direct comparison to findings to those from the Canadian general population (CGP). A secondary purpose was to provide an exploratory analysis of the variations in LTPA in adults with CP attributable to ambulatory status.

## Methods

### *Sample of adults with Cerebral Palsy*

We contacted adults with CP who participated in a previous study in 2003/04 ( $n = 199$ ; age 13–32.9 years of age in 2003).<sup>26</sup> The purpose of the previous study was to present a comprehensive picture of the health and life outcomes of youth and young adults with CP. Participants in this previous study were identified from six children’s rehabilitation centers across Ontario, which were selected to represent both rural and urban regions as well as northern and southern regions of the province. In 2012, in this sample 4 were known to be deceased, one participant had previously asked not to be contacted for future studies, and one was no longer living in Canada. Thus, 193 participants were available for follow-up. The range of ages in the cohort at the time of recruitment for the present study was 22.0–42.9 years; thus all potential participants were adults. Letters of invitation were sent to all participants whose home addresses were believed to be accurate, based on an internet search using [www.canada411.com](http://www.canada411.com). Reminder postcards were sent at 3 and 6 weeks after the initial mailing. Participants were encouraged to self-report if possible, but were permitted to have assistance in completing the questionnaires, or to have the questionnaires completed by their primary caregivers if necessary. This approach was essential to enable those with extensive disabilities to participate (fully inclusive). The data in the present survey was mainly collected in late summer (August and September). Approval for this study was obtained from the Research Ethics Board at the author’s institution. All participants provided written informed consent.

Of the 193 previous participants, 19 were not included in the mailing due to errors in their addresses. Letters of invitation were sent to the remaining 174 previous participants. Responses indicated an additional five were deceased, and 24 invitations were returned to the sender due to the addresses no longer being current. This left a possible sample of 145 potential participants.

### *Questionnaire*

The questionnaire was developed by the investigators to explore their utilization of LTPA. The questionnaire package consisted of following three groups of items: LTPA questions, the self-report version of the Gross Motor Function Classification System (GMFCS), and a series of questions to capture key characteristics of participants.

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