

Research Paper

Physical activity in persons with late effects of polio: A descriptive study

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Abstract

Background: To promote a healthy and active lifestyle there is a need to increase our knowledge of the level of physical activity (PA) among people with late effects of polio.

Objectives: To examine PA in people with late effects of polio and to assess the relationship between PA, life satisfaction and various sociodemographic factors.

Methods: PA was assessed in 81 persons with late effects of polio using the Physical Activity and Disability Survey (PADS) and by a pedometer. Life satisfaction was assessed with the Life Satisfaction Questionnaire (LiSat-11).

Results: The amount of PA varied considerably but on average the participants were physically active almost 3 h per day, mostly in household activities. The mean value of the pedometer counts was 6212 steps per day (SD = 3208). Sixty-nine percent of the participants rated themselves as satisfied with life as a whole. The sum of PADS was positively and significantly related to the number of steps ($r = 0.39, p < 0.001$), increasing age ($r = 0.26, p < 0.05$) and to the level of global satisfaction with life ($\rho = 0.23, p < 0.05$). The number of steps was also positively and significantly associated with level of global satisfaction with life ($\rho = 0.37, p < 0.001$).

Conclusion: Despite a progressive physical disability, people with late effects of polio are physically active, but much of the activities are performed as part of their household activities and not as traditional exercise. The relationship between PA, life satisfaction and age further supports the general contention that an active lifestyle is an important factor for perceived well-being among older people. © 2014 Elsevier Inc. All rights reserved.

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Regular physical activity (PA) is a central component in health promotion, prevention and treatment of diseases, maintenance of functional independence, and contribution to general well-being and life satisfaction.^{1,2} PA is defined as any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level.³ Across all ages, PA includes sports or planned

exercise, but also leisure-time activities, transportation, occupational and household chores.⁴ From a practical, clinical and research standpoint, there is a need to accurately assess PA and its many dimensions in disabled populations, because their rates of energy expenditure (i.e., physical activity) are often different compared to the general population. This is due to various impairments and different levels of access to community activities, such as work and leisure.⁵ To capture all aspects of PA, it has been recommended to use a combination of measures and instruments, such as self-report questionnaires and pedometers.⁵

According to the World Health Organization (WHO), PA is recommended to be performed 150 min per week or as moderate to vigorous PA a minimum of 30 min per day most days of the week.⁴ The recommendations for PA comprise able-bodied persons as well as those with disabilities, even though there is limited evidence associated

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with the benefits of PA in certain disability groups.⁶ It has been shown that only 38% of adults with a disability meet the international recommendations for PA compared to 49% in those without disability.⁷ In addition, there is a reduction in the levels of PA with increasing age.⁸ As the aging process itself is associated with a decline in overall functioning, this increases the risk of lower rates of PA in later life.^{9–11} In persons 65 years of age and older, only 15% of those with a disability met the recommendations for PA compared to 26% of those without a disability.¹¹ With an increasing number of people around the world aging with a disability, there is a need to better understand the level of PA among specific groups and diagnoses in order to promote a healthy and active life-style. There is also a need for an understanding of the dynamic nature between the person and his or her environment.¹² Health promotion has proven to be more efficient if individualized,¹³ and personal as well as environmental factors must therefore be addressed to achieve a healthy and active lifestyle.¹²

A neurological condition leading to a life-long disability is late effects of polio, also referred to as post-polio syndrome. It is one of the most common neurological conditions and it is estimated that over 10 million people worldwide will need health care and rehabilitation over the next decades as a result of their acute poliomyelitis infection.¹⁴ Late effects of polio are characterized by new symptoms or impairments, such as muscle weakness, muscle fatigue, general fatigue, cold intolerance, and musculoskeletal pain both at rest and during PA.^{14–17} These impairments can lead to activity limitations, such as reduced walking ability,¹⁸ both indoors and outdoors.¹⁹ This, in turn, can restrict perceived participation²⁰ and may lead to a more sedentary lifestyle, and ultimately impact on life satisfaction.²¹ In addition, persons with late effects of polio have an increased prevalence of coronary heart disease risk factors, which may be partly due to a sedentary lifestyle.²² However, many persons with late effects of polio may have difficulties or are unable to increase the amount of exercise to achieve desired levels of moderate PA because of their impairments and activity limitations associated with their disability.²³ Instead, they have to engage in lower doses of activity in order to maintain an active lifestyle.²⁴ Knowledge of the amount and type of PA in persons with late effects of polio²⁴ is very scarce and no study has described in detail the different dimensions of PA in this population and its association with sociodemographic factors and life satisfaction.

Thus, the aims of this study were: i) to examine the PA levels in people with late effects of polio, and ii) to assess the relationship between PA, various sociodemographic factors (e.g., age, sex, marital status, living condition) and life satisfaction. Our hypotheses were that persons with late effects of polio do not reach the recommendations for PA, that the level of PA decrease with increasing age, and that there is an association between PA and life satisfaction.

Methods

Study population

A convenience sample of community dwelling ambulatory persons with mild to moderate late effects of polio were selected from the database at a post-polio rehabilitation clinic in a university hospital. The database has existed since 2003 and at the time of recruitment (January 2012) included 300 persons (130 men and 170 women; mean age 69 (SD = 7) years) with a confirmed history of acute poliomyelitis meeting the following inclusion criteria: 50–80 years of age; new symptoms after a period of functional stability; an electromyogram in the upper and lower limbs as verification of prior polio; no other conditions such as severe joint problems, cardiovascular or pulmonary diseases that could affect mobility and PA; ambulatory with or without mobility devices and not using a wheelchair as the main mode of transportation; living in ordinary housing; able to understand verbal and written instructions in Swedish. Of the 300 persons, 102 persons were randomly selected and invited to participate in the present study and 81 persons (43 men, 38 women; mean age 67 (SD = 6) years) accepted the invitation. There was no significant difference regarding age between the 81 participants, and the 21 non-participants and the 198 eligible persons, respectively.

Before inclusion, written and oral information about the purpose of the study was provided and each individual gave their written informed consent to participate. The Regional Ethical Review Board in Lund, Sweden approved the study (Dnr 2013/427).

Assessments and measures

Data regarding the participants PA was collected during an interview by use of a self-report questionnaire (Physical Activity and Disability survey [PADS])²⁵ and by a pedometer. Life satisfaction was assessed with the Life Satisfaction Questionnaire (LiSat-11).²⁶ Data on personal and environmental factors, such as age, sex, self-reported height and weight (to calculate their body mass index, BMI), marital status, housing, living condition and vocational situation, were obtained from the PADS and a study-specific questionnaire, and data regarding age at the acute polio infection were retrieved from the database at the rehabilitation clinic.

Physical Activity and Disability Survey (PADS)

PADS is a 31-item self-report questionnaire developed to provide a measure of the day-to-day level of PA in people with disabilities.²⁵ It consists of three parts, the first focusing on demographic data, the second comprising four subscales focusing on exercise, leisure, household activities, work/school, and the third part describing whether they received therapy or used a wheelchair. In the first part the participants

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