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Research Paper

Participation in physical activity in persons with spinal cord injury: A comprehensive perspective and insights into gender differences

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Abstract

Background: To prevent secondary conditions and to improve and maintain health, regular physical activity is recommended as an important component of a health-promoting lifestyle for persons with spinal cord injury (SCI). However, participation in physical activity is low in persons with SCI, especially in women.

Objective: The objective of this study is to identify (1) categories of functioning, the environment and personal factors that influence participation in physical activity in persons with SCI and (2) gender differences within identified factors.

Methods: An explorative qualitative study design using both focus groups and individual interviews based on a semi-structured interview guide was used. Statements were linked to categories or chapters of the four components of functioning (body structures, body functions, activities and participation) and of the environment included in the International Classification of Functioning, Disability and Health (ICF) and a recently developed list of personal factors. An in-depth analysis of the statements was performed to identify relevant associations and gender differences.

Results: Twenty-six persons (13 female, 13 male) participated in the study. Sixty-seven categories and four chapters from all components of functioning and environmental factors included in the ICF and 33 subdivisions of personal factors were found to be associated with physical activity in persons with SCI. Gender differences could be assigned to areas of gender roles, social support, athletic identity, interests, and general behavioral patterns.

Conclusion: This study contributes to a comprehensive understanding of participation in physical activity in persons with SCI and presents a first step toward the identification of gender differences. The results should be validated by further quantitative research.

Keywords: Physical activity; Disability; Spinal cord injury; Gender differences; ICF

Mortality rates within the first two years after the onset of a spinal cord injury (SCI) have decreased significantly over the last decades[1] and life expectancy in this population is increasing.[2] However, persons with chronic SCI suffer from multiple problems in functioning comprising impairments in body functions and body structures, activity limitations and participation restrictions.[3] The impairments related to SCI contribute to an increased risk for the development of secondary conditions such as pressure ulcers, neuropathic and musculoskeletal pain, respiratory and cardiovascular diseases, diabetes, obesity and osteoporosis.[4] Furthermore, persons with SCI more often show psychological disorders such as depression and anxiety[5] and in a broader context lower levels of life satisfaction and further aspects of quality of life[6] in comparison to the general population. Secondary conditions not only reduce aspects of quality of life in persons with SCI, but also increase health care costs due to rehospitalizations.[7,8]

To improve and maintain health, regular physical activity is recommended for persons with disabilities in general[9] and specifically for persons with SCI[10,11]. For those individuals, regular physical activity is associated with lower risks for

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cardiovascular diseases and diabetes mellitus.[12,13] Exercise programs comprising arm or wheelchair ergometry, circuit resistance training, functional electrical stimulation cycling and treadmill training (in incomplete SCI) have shown to improve cardiovascular and respiration functions, muscle strength, and bone and muscle adaptation.[14–16] Participation in regular exercise and sporting activities such as wheelchair basketball, archery, swimming and fencing contributes to better psychological outcomes with lower depression and anxiety scores[17,18] and better life satisfaction and further aspects of quality of life.[18–20] However, despite these well-known health benefits levels of physical activity in persons with SCI are low.[21–23] More specifically, it decreases after the onset of SCI and is significantly lower in women than men after onset of SCI even when no gender differences in activity levels existed before.[24]

In the last decade, in several studies mainly environmental and personal factors have been identified to influence participation in physical activity in persons with SCI.[25] Few associations between levels of functioning and participation in physical activity are reported, although it is very likely that various impairments in body functions, limitations in activities and restrictions in participation are associated with lower physical activity levels. Interestingly, although gender differences in levels of physical activity are well known, evidence on potential causal factors for these differences is to our knowledge still lacking while they are likely to exist in various domains.

The objective of this study is to explore the factors associated with the engagement in physical activity in persons with SCI. The specific aims are to identify (1) categories of functioning (body structures, body functions, activities and participation), the environment and personal factors that persons with SCI describe as influencing their participation in physical activity and (2) gender differences with respect to those influencing factors.

Methods

Study design

An explorative qualitative study design using both focus groups and individual interviews was applied. The individual interviews supplemented the focus groups by also including persons who were not willing or not able (e.g., due to the higher expenses, being bedridden) to participate in a focus group.

Participants

German-speaking adults living for at least two years with SCI (characterized by sudden onset) with any level (tetraplegic and paraplegic) and severity (complete and incomplete) were included in the study. Exclusion criteria comprised the existence of progressive neurological disorders and mental or psychological problems. Heterogeneity should be achieved in the study sample with respect to age, level and severity of injury, time since onset of SCI, and levels of physical activity to cover a wide spectrum of different perspectives regarding physical activity.

A convenience sample of participants was recruited through two different approaches. First, members of wheelchair clubs in German-speaking parts of Switzerland were contacted via e-mail through the Swiss Paraplegic Association (SPA). Secondly, eligible persons were contacted personally as they were admitted to Swiss Paraplegic Center (SPC, a center specialized for SCI rehabilitation) for any kind of treatment. Interested and eligible persons were then personally informed about the study and asked whether they preferred to participate in a focus group or in an individual interview. Only persons who gave written informed consent were included in the study.

Participants were recruited as long as new information was gathered. Saturation of information was achieved when less than five percent of new categories of the International Classification of Functioning, Disability and Health (ICF)[26] or areas of personal factors were identified in two successive interviews (focus groups or individual interviews).

The medical ethics committee of the Canton Lucerne, Switzerland approved the present study.

Data collection

Information on socio-demographic characteristics, diseases and physical activity levels was collected with a standardized questionnaire. The focus groups were performed applying general rules for the implementation of focus groups.[27] For the focus groups and the individual interviews a semi-structured interview guideline was developed that included four key questions that aimed to detect relationships with physical activity from a comprehensive perspective (Table 1). Physical activity was introduced to participants as an intended task that lasts at least 30 min.

The focus groups were performed separately for men and women to facilitate the identification of gender-specific information. All interviews were audio taped and transcribed verbally.

Data analysis

A Microsoft Access database was designed for data analysis. The transcripts were separately analyzed for

Table 1
Key questions of the interview guideline

1. "What are the reasons for you to perform regularly PA, respectively to not perform PA or to perform PA only irregularly? Considers all reasons that directly relate to your SCI but also of the impact of your personal characteristics and the environment in which you are currently living!"
2. "What motivates you, respectively what demotivates you, to perform physical activities on a regular basis?"
3. "Are there any types of physical activities that you would like to perform, but you don't do at the moment. If so, what are the reasons for that?"
4. "Have you ever been an active member of a wheelchair club or participated in any other program/training for physical activities? If so, what is/was good and what is/was bad at it?"