

## Motivations and effects of practicing Nordic Walking by elderly people

### Authors' Contribution:

A – Study Design  
 B – Data Collection  
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### Abstract

**Background:** *As a result of numerous advantages of Nordic Walking such as the movement simplicity, its affordability and availability for people of various ages and with different levels of fitness, this relatively young physical activity has been developing remarkably for several years. It has the potential of increasing physical activity among elderly people. Defining to what extent practicing Nordic Walking (NW) influences the general level of physical activity and the quality of life of elderly people.*

**Material/Methods:** *161 people were examined (93 women and 68 men) at the age of 60 or above. In this group 48 practised NW: 33 women and 15 men. Health self-assessment was determined using the SF-36 questionnaire, whereas the level of physical activity using the SEWL questionnaire.*

**Results:** *Statistically significant differences were noted ( $p < 0.05$ ) between respondents practising NW and the control group at the level of both physical activity and health self-assessment.*

**Conclusions:** *Practising NW positively influences the increase of elderly people's physical activity, translating to the level of health self-assessment.*

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## Introduction

The history of Nordic Walking (NW), a specialized form of physical activity, is quite short - in its current form it dates back only a dozen years. Its sources must be found in the form of summer training, cross-country skiers, called "ski walk" [1]. The many advantages of "march with sticks," resulted in unprecedented development in a relatively short period of time, not only in Finland – where it originated, or the Scandinavian Peninsula, but throughout Europe [2]. There are unquestionable advantages of NW, such as: the simplicity of the movement structure, based on the most natural form of human movement - running, accessibility for people of all ages and different fitness levels, relatively low costs, and safety during practice. These qualities make it an increasingly popular form of physical activity undertaken by elderly people [1].

The relatively short history of this form of activity is the cause of relatively little specialized literature on the effects of practicing NW. Research of Saulicz et al. indicate the effectiveness of practicing NW in general physical fitness [3]. The results of Figard-Fabre et al. discuss the possibilities of reducing body fat and increasing aerobic capacity by the SW program used in obese middle-aged women [4]. These authors write about better mental adaptation to this kind of effort - compared to a typical march [5]. Similar observations were presented by Church et al., who wrote about better exercise tolerance during a march with sticks, increased energy expenditure as well as oxygen consumption and a more efficient heart rate in young men and women - comparing it to marching without sticks [6].

There are also studies undertaken on the use of NW in rehabilitation, for example: in cardiac patients [7], those with Parkinson's disease [8], fibromyalgia [9, 10], or during the treatment of depression [11]. This brief review of studies indicates a growing interest in this form of activity – both in the therapeutic and the preventive aspect. Beside many advantages of NW mentioned before, its acceptability by the elderly in the psychosocial aspect was the reason for undertaking the presented research.

The aim of this study was to assess the extent to which practicing NW affects the quality of life associated with health in old age. Such variables as gender, age, selected morphological parameters, education, morbidity, the level of physical activity and self-assessment of health, both physical and mental, were analysed. The main reasons for practicing Nordic walking by the elderly were also defined.

## Material and Methods

The study was performed according to the Helsinki Convention. In consistence with the Polish law, the ethical approval was not required. Respondents expressed written consent to the study.

161 persons were examined: 93 women and 68 men (age:  $x = 67.2$  years,  $SD = 6.6$  years). There were 48 people practicing Nordic Walking in this group: 33 women and 15 men forming a research group (NW). Others were the control group (C). The selection of the study group was purposeful. The following selection criteria were adopted for all respondents:

1. Age – 60 years and more.
2. Full motor independence of movement and self-service.
3. Lack of professional activity: being in retirement.

In the case of persons practicing NW – training for at least 2 months and marching with sticks at least once a week for one hour.

Sociometric techniques such as the questionnaire of physical activity SEWL (subjective experience of work load) and the quality of life related to health SF-36 were used in the study. In the Polish language versions they were completed independently by respondents supplemented by questions about sex, age, weight, body height and education. Data on height and body mass were used to calculate BMI. Education was categorized by levels: 1 – basic, 2 – vocational, 3 – secondary, 4 – higher. Due to the fact that many diseases occur most commonly in elderly people [12], the respondents were also asked if they had chronic illnesses in one of the following categories: the movement system, the circulatory system, the respiratory system, metabolic diseases, neurological diseases, and other. The sum of diseases occurring in test conditions was used for statistical analysis.

In addition, people practicing NW indicated experience in training and motives for engaging in NW. There were four possibilities presented: encouragement by family and friends, an internal need for physical activity, recommendation due to illness, and the prevailing fashion. Respondents could choose more than one motive for practicing NW.

Physical activity questionnaire SEWL contains 16 closed questions in its original version concerning the level of physical activity associated with work, sport, leisure activity and locomotion (walking, cycling) [13, 14]. Due to the criterion: inactivity/retirement, questions about this sphere of activity were ignored. So the version used in these studies consisted of eight questions. Closed answers to these questions allowed calculating the indicators of sport, leisure activities and the total activity index - SEWL.

The SF-36 questionnaire is a widely used sociometric tool to evaluate the quality of life associated with health - in its physical (four factors of health) and mental (also four factors) component [15, 16].

Statistical analysis included calculation of descriptive statistics: mean and standard deviations (SD). The level of inter-group differences were determined using Student's T-test for independent variables, and the dependencies were examined using Pearson correlations. The level of significance was  $p \leq 0.05$ .

## Results

First, descriptive statistics were calculated ( $\bar{x}$ , SD) on the parameters contained in the personal data and indicators of activity SEWL. Data disaggregated by people practicing Nordic walking (NW) and a control group (C) and the level of differentiation ( $p$ ) between these groups are presented in Table 1.

Tab. 1. Personal data obtained and activity

| Parameter                      | Group | Women |      |         | Men   |      |         |
|--------------------------------|-------|-------|------|---------|-------|------|---------|
|                                |       | mean  | SD   | p       | mean  | SD   | p       |
| age<br>[years]                 | NW    | 69.39 | 6.11 | 0.0208* | 70.00 | 6.10 | 0.1691  |
|                                | C     | 66.83 | 5.40 |         | 67.68 | 6.70 |         |
| BMI<br>[kg/m <sup>2</sup> ]    | NW    | 26.38 | 3.51 | 0.0734  | 27.19 | 5.12 | 0.5619  |
|                                | C     | 28.01 | 4.60 |         | 27.83 | 3.99 |         |
| education<br>[n]               | NW    | 2.82  | 0.61 | 0.9123  | 2.60  | 0.51 | 0.5420  |
|                                | C     | 2.80  | 0.68 |         | 2.74  | 0.71 |         |
| the sum of the diseases<br>[n] | NW    | 1.61  | 0.95 | 0.1425  | 1.80  | 1.37 | 0.9757  |
|                                | C     | 1.88  | 0.88 |         | 1.79  | 0.84 |         |
| activity<br>[points]           | NW    | 6.32  | 1.00 | 0.0000* | 5.60  | 0.99 | 0.0062* |
|                                | C     | 4.79  | 1.26 |         | 4.90  | 1.41 |         |

\* difference statistically significant:  $p \leq 0.05$

Then the relationship between the activity level and health components was examined. Correlation coefficients between the indicator of activity SEWL and health components for women were: SEWL – Physical health component:  $r = 0.55$ ; SEWL – Mental health component:  $r = 0.54$ . For men: SEWL – Physical health component:  $r = 0.39$ ; SEWL – Mental health component:  $r = 0.39$  ( $p \leq 0.05$ ).

The next step was the statistical analysis (mean, SD and the level of differentiation) for the components of health and their factors (Table 2).

Self-assessment of health of people practicing NW was compared with individuals with the highest level of activity (indicator SEWL) in the control group. The upper quartile boundary for women was the rate of: SEWL = 5.75 (lower than the mean in the NW group), for men SEWL = 5.58 (almost identical to the mean in the NW group). The mean for the most active, but not

practicing NW and the level of differentiation with a group of people practicing Nordic walking were as follows (Table 3).

Tab. 2. Physical and mental component of health (SF-36)

| Components and health factors | Group | Women |      |         | Men  |      |         |
|-------------------------------|-------|-------|------|---------|------|------|---------|
|                               |       | mean  | SD   | p       | mean | SD   | p       |
| Physical health component     | NW    | 74.0  | 10.6 | 0.0000* | 76.1 | 11.8 | 0.0005* |
|                               | C     | 42.5  | 21.7 |         | 52.7 | 23.8 |         |
| physical function             | NW    | 78.6  | 14.6 | 0.0000* | 88.7 | 8.8  | 0.0022* |
|                               | C     | 55.8  | 26.2 |         | 67.4 | 25.3 |         |
| physical role                 | NW    | 87.9  | 20.8 | 0.0000* | 86.7 | 29.7 | 0.0006* |
|                               | C     | 30.8  | 38.3 |         | 45.3 | 41.6 |         |
| bodily pain                   | NW    | 54.0  | 6.9  | 0.0249* | 55.0 | 5.2  | 0.8296  |
|                               | C     | 44.8  | 20.2 |         | 53.5 | 26.6 |         |
| general health                | NW    | 75.4  | 12.9 | 0.0000* | 73.9 | 14.0 | 0.0000* |
|                               | C     | 38.6  | 19.0 |         | 44.4 | 19.5 |         |
| Mental health component       | NW    | 84.9  | 11.1 | 0.0000* | 88.2 | 11.9 | 0.0000* |
|                               | C     | 59.1  | 20.2 |         | 57.5 | 20.9 |         |
| mental health                 | NW    | 92.9  | 20.0 | 0.0000* | 93.3 | 13.8 | 0.0000* |
|                               | C     | 54.2  | 43.1 |         | 42.3 | 43.4 |         |
| vitality                      | NW    | 75.8  | 13.2 | 0.0000* | 86.0 | 12.1 | 0.0000* |
|                               | C     | 54.3  | 17.3 |         | 55.2 | 19.4 |         |
| emotional role                | NW    | 81.8  | 11.1 | 0.0000* | 84.8 | 10.5 | 0.0000* |
|                               | C     | 64.3  | 16.3 |         | 62.5 | 16.1 |         |
| social function               | NW    | 88.9  | 12.8 | 0.0000* | 88.7 | 15.6 | 0.0032* |
|                               | C     | 63.4  | 21.7 |         | 70.1 | 21.9 |         |

\* difference statistically significant:  $p \leq 0.05$

Tab. 3. Self-assessment of health: people practising NW compared to the most active ones in the control group

| Component of health | Women                                   |                      |         | Men                                     |                      |         |
|---------------------|---|----------------------|---------|---|----------------------|---------|
|                     | the control group – SEWL upper quartile | practicing NW (mean) | p       | the control group - SEWL upper quartile | practicing NW (mean) | p       |
| Physical            | 49.64                                   | 73.98                | 0.0000* | 56.85                                   | 76.06                | 0.0132* |
| Mental              | 68.95                                   | 84.86                | 0.0006* | 58.76                                   | 88.20                | 0.0003* |

\* difference statistically significant:  $p \leq 0.05$

Training and the reasons for practicing Nordic walking were also examined as mentioned in the methodology of research. The average length of practicing NW by the respondents was 7.2 months. The reasons for starting this form of activity were successively:

- an inner need for activity – 31 people (64.6%),
- medical recommendations to undertake activity - 28 persons (58.3%),
- encouragement from family or friends - 19 people (39.6%)
- fashion for this form of activity - 4 persons (8.3% of surveyed practicing NW).

19 people gave one reason for starting practicing NW, two reasons – 21 persons, and three – 7 persons.

## Discussion

Current demographic trends clearly indicate the process of aging, which affects not only Polish, but the most developed societies. Demographic forecasts predict the growth of the number of people aged 60 and more by over 50% in the next twenty years in Poland [17]. This is a challenge not only for gerontologists and geriatricians, but for all social policy-makers. In this context, the social importance of the "successful aging" concept is increasing [18, 19]. This term applies to the minimization of disease and infirmity, to the maintenance of optimal physical and mental fitness as well as the maintenance of the general life activity [20, 21]. Most often the following conditions for successful aging are mentioned: a good family situation, a sense of material security and relative physical fitness and positive self-assessment of health. The last two conditions are inextricably linked to physical activity [22]. The natural biological depletion of potential with age causes that the offer of types of activities for the elderly is limited [3]. On the other hand, numerous studies have shown that an adequate level of physical activity is a crucial predictor of successful aging [23, 24, 25, 26, 27]. In this context, the practice of Nordic walking seems to be a very attractive offer. The analysis of underlying motivations for this form of activity by the respondents might be an argument here. Bearing in mind the results of the presented study, the dominant motive was an inner need for activity, which - as mentioned above, is a crucial condition for successful aging. Health motivations given by the respondents as the second argument for practicing NW only confirm the "internal" concerns of respondents about the process, and the role of social support (the third argument) indicates the significant potential in the society - for increasing the level of activity.

The bio-psycho-social approach to self-assessment of health was a starting point for the research presented here. Therefore, the SF-36 was used as a research tool to assess health. The problem of assessing the level of physical activity causes methodological problems. As it seems, in relation to population, there is nothing else but to rely on the estimated level, but no matter what kind of tool is used, it will always contain a certain margin of error. The next dilemma facing researchers is to identify the types of activity. Thus, there is a need for reductionism. Given these conditions, the adapted (reduced) version of the questionnaire SEWL was used in the present study, identifying indices of activity levels in sport and leisure.

The summary indicator was used for statistical analysis. It was crucial not only to determine the level of activity (which in this case is instrumental), but to define any differences of activity levels between compared groups as well. Such variables as age, BMI, education and morbidity were also analysed. While taking into consideration age and BMI seems obvious, the other two require some comment. The research on the correlation between the educational level and activity as well as self-esteem of health is the reason for including education in this study [27]. The multi-morbidity is common in the elderly population, so its relationship both to the activity and self-esteem of health cannot be ignored.

There is no statistically significant difference between the compared groups in the case of: age (- in the group of men, women practicing NW were older), BMI, education, and the sum of chronic diseases (Table 1). This is the basis for the exclusion of these variables in a comparative analysis. Therefore, the role of activity and a statistically significant level of differentiation between people practicing NW and the control group are crucial (Table 1).

Analysis of results on the levels of both the physical and mental health component indicate surprisingly high scores of people practicing Nordic walking. The mean was at a much higher level than in two previous studies conducted among students of the Third Age Universities, while the mean of the control group seems to be at a similar level [26, 27]. Remarkable are also much lower rates of variation among people practicing NW, for both of the two components, as well as all dimensions of health and activity, compared with the control group. The importance of this form of activity for improving self-assessment of health is emphasized by greater homogeneity of the group of people practicing NW. Another argument is the differentiation between individuals with the highest level of activity in the control group and people practicing NW. This differentiation may indicate the fact that not only the activity itself but the kind of activity has a beneficial effect on sense of health. Then, undeniable advantages of practicing NW are: the manifestation of activity in the open air, which involves potentially greater social contacts (a kind of isolation or restriction of

social contacts is a common feature of old age), contact with nature and increasing the sense of motoric independence by overcoming space. It seems that this has affected not only the physical component of the high self-esteem, but also the mental one.

## Conclusions

1. Physical activity is one of the key factors influencing self-assessment of health of elderly people.
2. Nordic Walking is an optimal form of physical activity for people in old age.
3. There is a need for further, deeper study of the effectiveness of practicing NW by the elderly, in both biological and psychological terms.

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