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Influence of sport activity on satisfaction with life and sense of coherence among physically disabled people

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Influence of sport activity on satisfaction with life and sense of coherence among physically disabled people

Abstract

Background: The study discusses the differences in the levels of satisfaction with life (SWL) and a sense of coherence (SOC) in disabled sedentary people, disabled persons performing leisure sports and competitive disabled athletes. Material/Methods: The data were analyzed using analysis of covariance, Pearson-correlation and a linear regression. Results: The results indicate that sport elicits an insignificant increase in SWL and SOC. SOC correlates with SWL in sedentary disabled and competitive disabled athletes. In disabled persons performing leisure sports, the level of physical activity must be tuned in order to elicit a congruent increase in SWL and SOC. Conclusions: Continued research on sport and wellness interventions for the individuals with disabilities is recommended. A critical emerging issue is to develop and promote evidence-based sport and wellness programs for physically disabled people in the Republic of Poland.

Keywords

disabled persons, sport, satisfaction with life, sense of coherence

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ORIGINAL

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Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
G Funds Collection

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INTRODUCTION

While comprehension of subjective well-being (SWB) is of paramount importance from both the sociological and economical point of view, the studies on this subject date back only to the 80s of the last century [1]. The early studies were mainly focused on positive and negative components of subjective well-being, while satisfaction with life, defined as "a global assessment of a person's quality of life according to his chosen criteria" [2], has received much less attention [3]. Among multiple approaches used for assessment of satisfaction with life [4], the model proposed by Pavot et al. [5] is among the most popular. In this model, the scale of satisfaction with life (SWL) is a multi-positional scale correlating, among others, with a measure of happiness; also encompassed in a mental health model [6]. Additionally, mental health is a function of an emotional well-being [7], which is a derivative of the following components: 1) one's life based on emotional reactions to events and 2) a cognitive judgment of one's life. In other words, subjective well-being can be divided into two quantitative components; 1) an affective component (a pleasant affect and an unpleasant affect) and 2) a cognitive component (life satisfaction). According to the current literature, the latter component of emotional well-being, i.e., satisfaction with life, positivelycorrelates with the following factors: 1) extroversion [8, 9], 2) conscientiousness and agreeability [10, 11], 3) high self-esteem [1, 12, 13], 4) sense of control [12], especially the internal locus of control [1], and 4) optimism [14, 15, 16].

The number of the disabled in Poland who accordingto the United Nations Educational, Scientific and Cultural Organization (UNESCO) [17] may be (and very often are) marginalized in society due to disability amounts to 14% of the total population [18]. Individuals with disabilities, as a group, prove to be at a high risk of poor health outcomes such as obesity, hypertension, mood disorders (depression). They often engage in unhealthy behaviors such as smoking cigarettes. Thus, sport is considered as one of the most efficient instruments [19] of improvement in social integration. It improves one's overallenjoyment with life, mobility skills, perception of health and well-being [20]. Consequently, one may conjecture that sport should elicit an improvement in the health-related quality of life (HRQoL), which, in turn, will lead to a higher level of satisfaction with life in disabled persons.

The study presented here isfocused on an assessment of the influence of sport, both leisure and competitive, on the level of SWL in the disabled. We studied the following three groups: 1) sedentary disabled people, 2) disabled people doing recreational (leisure) sport, and 3) competitive disabled athletes. The study was performed under the two null hypotheses 1) sport does not lead to an increase in SWL, and 2) a higher sense of coherence of the physically disabled will correlate with a higher assessment of the satisfaction with life and the sense of fulfillment.

MATERIAL AND METHODS

STUDY SUBJECTS

The study subjects were selected using the following inclusion criteria: they should have a congenital and acquired physical disability, i.e., amputated limbs, spinal injuries, body deformities, cerebral palsy, and/or limb reduction defect (amelia). All the subjects were recruited through advertisements in disability centers across the Republic of Poland.

The level of physical activity was assessed by means of a self-reported questionnaire. The following criteria were used to assess the level of sport activity: 1) the length of performing of sport activities (years), and 2) sport achievements measured by results achieved during international competitions. Such an approach allowed us to divide the sample into three following groups: 1) physically disabled sedentary individuals who do not participate in any physical activity apart from the necessary rehabilitation (G1, n = 188, male = 106, female = 82; mean age ±SD: 37 ±8.17), 2) physically disabled individuals who perform leisure sports regularly (G2, n = 64, male = 20, female = 44; age mean ±SD: 31 ±9.20), and 3) physically disabled athletes participating in various Paralympic disciplines who achieve high sports results on the international arena (participants and medal winners of the European Championships, the World Championships and the Olympic Games (G3, n = 21, male = 4, female = 17; age mean ±SD: 37 ±9.10). The study was approved by the local Ethics Committee.

ASSESSMENT OF THEGENERAL SATISFACTION WITH LIFE

The satisfaction with life was measured using the Satisfaction with Life Scale (SWLS) [3] adjusted to the Polish population [21]. The scale consists of five statements, whose validity concerningthe respondent's self is assessed by him/her on a seven-point scale with responses ranging from 'Strongly disagree' to 'Strongly agree'. Overall scores on the SWLS range from 5–35; the higher respondent's score is, the greater life satisfaction is.

SENSE OF COHERENCE

The sense of coherence was measured by means of the Orientation to Life Questionnaire (SOC-29) [22, 23] adapted to the Polish population [24]. In brief, the questionnaire consists of 29 test items, expressed in the form of questions: eleven of the set refer to the sense of comprehensibility (C), ten – to the sense of manageability (Ma) and eight – to the sense of meaningfulness (Me).

STATISTICAL ANALYSIS

Distributions of the analytical samples were examined by means of numerical and graphical methods employing the following numerical tests: Shapiro-Wilk [25], Kolmogorov-Smirnov [26], Cramer-von Misses [27], and Anderson-Darling [28], and histograms and quantile-quantile plots, respectively.

Differences between the mean values of SWLS between the studied groups were analyzed using ACOVA, adjusted for age, and post-hoc Tukey' tests. The result of the statistical test was considered significant for P-values < 0.05. Cross-correlations between SOC and SWLS were analyzed by means of Pearson-correlation and a linear regression analysis.

RESULTS

MULTI-YEAR SPORTS TRAINING AND GENERAL SATISFACTION WITH LIFE AND THE SENSE OF COHERENCE OF THE PHYSICALLY DISABLED

There was a non-significant effect of the level of sports activity on SWLS and SOC at $p < 0.05$; [$F(2, 270) = 0.58$, $p = 0.5585$], and [$F(2, 270) = 0.22$, $p = 0.7892$] for SWLS and SOC, respectively. There is, however, an increase in the mean values of SWLS across groups G1–G3: $M_{G1} = 18.63$, $SD_{G1} = 5.37$; $M_{G2} = 18.83$, $SD_{G2} = 4.74$; $M_{G3} = 19.90$, $SD_{G3} = 4.27$, resulting in 1% and 5% of a relative increase in SWLS across G1/G2 and G2/G3. It is worth noticing that their life satisfaction is moderately positive in comparison to Juczyński's normative sample (N = 555, adults aged 20–55).

These results provide an important view of the life satisfaction of disabled people that falsifies the standard view that the QOL of people who live with disabilities is extremely low. In fact, what literature proves and our results confirm, they rate their own QOL only slightly lower than individuals without disabilities [29]. There is also an increase inthe average values of SOC across groups G1-G3: $M_{G1} = 120.56$, $SD_{G1} = 16.12$; $M_{G2} = 121.61$, $SD_{G2} = 12.87$; and $M_{G3} = 122.43$, $SD_{G3} = 11.14$, yielding 0.87% and 0.67% of a relative increase in SOC across G1/G2 and G2/G3 (Fig. 1A-B).

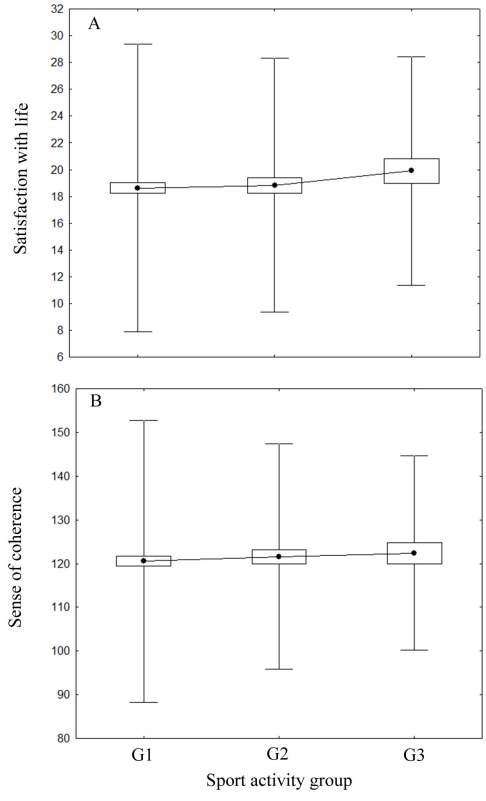


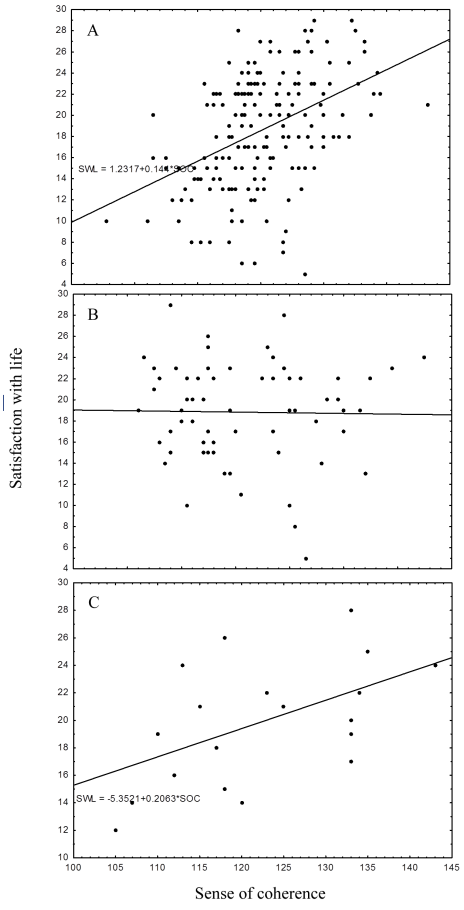
Fig. 1A–B. Differences between scores of life satisfaction and a sense of coherence assessments among disabled people: G1 – disabled sedentary, G2 – disabled performing leisure sport, G3 – disabled competitive athletes

MODERATING INFLUENCE OF MULTI-YEAR SPORTS TRAINING ON THE RELATIONSHIP BETWEEN THE SENSE OF COHERENCE AND SATISFACTION WITH LIFE

An analysis of cross-correlations between SWLS and the SOC within the studied groups brings the following results; G1: $r(188) = 0.433$, $p < 0.001$, G2: $r(64) = -0.018$, $p = 0.8893$, G3: $r(21) = 0.53875$, $p = 0.0117$.

A linear regression analysis employed to test if SOC significantly predicts participants' SWLS in group G1 leads to the following results: the predictor explains 18.4% of the variance ($R^2 = 0.1874$, $F(1,186) = 42.89$, $p < 0.0001$) and SOC significantly predicts SWL ($\beta = .144$, $t = 6.55$, $p < 0.0001$).

An analogous analysis for G2 leads to the following results: predictor explains 0.03% of the variance ($R^2 = 0.0003$, $F(1,62) = 0.02$, $p = 0893$). Regression analysis of SWLS as a function of SOC for G3 indicates that the predictor



explained 29% of the variance ($R^2 = 0.2902, F(1,19) = 7.72, p = 0.0117$) and SOC significantly predicts SWLS ($\beta = 0.21$, $t = 2.79$, $p = 0.0117$). The graphical representation of the obtained results is shown in Fig. 2A–C.

Fig. 2A-C. Cross-correlation and linear regression equation of relations between sense of coherence and satisfaction with life in three subjects' groups: A –disabled sedentary, B– disabled performing leisure sport, C– disabled competitive athletes

DISCUSSION

Sport of the disabled is an integral part of contemporary physical culture. It is not only a means of motor rehabilitation but also a factor conditioning the psychological well-being of disabled individuals. We made an attempt to assess the level of cross-correlations between satisfaction with life, and sense of coherence, with a level of sport activity of physically disabled people. Our results are consistent with the already described research in medical and sport science literature that illustrates the influence of sport on the perceived quality of life.

An analysis of SWL as a function of a level of sport activity exposed the highest satisfaction with life in physically disabled athletes participating in various Paralympic disciplines. Although the observed differences are non-significant, the level of SWL in Paralympic sportsmen is clearly greater than the level of SWL in sedentary disabled people and in disabled people participating in leisure sport activities. This has already been discussed in literature where the scientists indicate that the influence of sport on the quality of life of people with disabilities may not be dependent on the level of participation [20]. We made an analogous observation regarding SOC as a function of sport activity.

There is a correlation between the SOC and a SWL in sedentary disabled and disabled athletes. Additionally, a linear regression analysis exposed a clear-cut functional relation between SOC and SWL in these groups i.e., group G1 and G3. This observation leads to a conjecture that SOC correlates with SWL in a bimodal fashion: only extreme values of sport activity, i.e., none or competitive activity drives a correlation between SOC and SWL.

An amalgam of the obtained results leads to a conclusion that an increase in sport activity elicits an increase in satisfaction with life. This observation is in agreement with the results reported by Yazicioglu et al., [30], who showed that physically disabled people have higher life satisfaction scores than those not involved in any adapted sports. The literature review also indicates that sport activity augments the level of life satisfaction not only in adult disabled

sportsmen but also among the youth, *vide* the study on sport activity and satisfaction with life in Middle School Students [31, 32]. However, our results indicate that to elicit an increase in life satisfaction in disabled people, a higher intensity of physical exercises is required.

Reevaluation of our results in the light of those indicating that persons with a strong SOC manage stresses of life better than those with a weak SOC [22, 32] leads to interesting conclusions. Thus, in inactive disabled persons as well as in those involved in competitive sports a cross-correlation between SWL and SOC reveals a direct relationship between comprehensibility, manageability and meaningfulness with satisfaction with life. In disabled persons involved in leisure sport activities an increase in SWL does not render changes in comprehensibility, manageability and meaningfulness. Additionally, an amalgam of the aforementioned observations with a relative increase in SWL and SOC among the studied groups as a function of sports activity exposes a competitive sports activity as the most appropriate medium for adaptation to everyday stresses. This observation can be explained based on our knowledge on a biological response to physical exercises [33, 34]: 1) the direct result of physical effort is the secretion of endorphins, 2) regular physical exercise decreased the risk of depression, cardiovascular diseases and even cancer, 3) sports and physical recreation prevent anincrease in body weight and aging of an organism; 4) physical activity and happiness boost the functioning of the immunological system.

However, we have to stress that in the light of the obtained results only regular exercises result in the aforementioned physiological changes in disabled persons, non-regular sport activities, such as, for example, sporadic leisure sport, may lead to overtraining, which abates comprehensibility, manageability and meaningfulness rendering alack of correlation between SOC and SWL.

The presented results undoubtedlyhave some limitations. The participants included in the study met many of the key characteristics of the physically disabled persons;however, they are not representatives of the population as a whole. Beyond this, the proportion of the involved subsampleswas not equalized. We found, however, that the sport participation variable needs clarification and further research. In future, we plan to measure other aspects of participation such as: benefits derived from participation, its quality, etc.

CONCLUSIONS

Our study, although not exhaustive, reveals that sport elicits, although statistically insignificant, an increase in SWL and SOC among disabled people. SOC correlates with SWL in sedentary disabled persons and competitive disabled athletes. In physically active disabled people, the level of sport activity has to be appropriately adjusted in order to elicit a congruent increase in SWL and SOC. Researchers, especially in Poland, where until recently people with disabilities have been overlooked in public awareness and health prevention, should improve their understanding of the issues related to disability, sport, and the interplay between disability, age and different sources of social and economic inequality.

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