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Intensity of physical activity and life satisfaction of physical education teachers

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Abstract

Introduction. The profession of physical education (PE) teacher is an irreplaceable and a specific role. Involvement in physical activities (PA) during both working and non-working times is considered one of the most significant specificity of this profession. PE teachers can perform the activity of sports experts, e.g. referee, instructor or engage in sports as a leisure time activity in non-working time, which mingles with the profession of a teacher. All of this can be a manifestation of a unilateral load that can have an impact on life satisfaction (LS). Aim of Study. The aim of this article is to contribute to the LS findings among middle-aged PE teachers when reflecting the load intensity of PA expressed in MET-min/week in the teacher's total time fund. Material and Methods. We obtained the cross-sectional research data on the sample of 151 PE teachers – comprised of 82 women and 69 men – from primary and secondary schools in the Slovak Republic. The questionnaire methods used were: non-standardized questionnaire (basic socio-demographic data and professional characteristics); short version of the International Physical Activity Questionnaire – IPAQ; and 5-item The Satisfaction with Life Scale [11]. Results. The average value of total activity level was 3235 for women and 3772 MET-min/week for men. A significant difference in intense PA and overall PA score between men and women in favor of men has been demonstrated. The average gross score values of 23.39 for women and 22.96 for men were in the average LS range. A significant difference between men and women has not been demonstrated. No significant relationship between overall PA and LS has been confirmed. Conclusions. Considering the ambiguous results of the research investigating PA and LS relationships, we recommend further analysis of this relationship. Attention should also be paid to burn out prevention among people whose profession interferes with their non-work activities.

KEYWORDS: IPAQ, MET, middle adulthood, SWLS.

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Introduction

PA is any movement of the human body that leads to energy expenditure at a level higher than the resting value of metabolism [1]. Body movement, physical exercise and energy expenditure are also characteristic of exercise. WHO [34] interprets exercise as planned, structured, repetitive physical movements that we perform to improve and maintain fitness or health. At the same time, WHO points out that exercise is a subcategory or a specific form of PA, while both bring health benefits. In professional as well as in common language, PA, including exercise, is bound to another term, which is sport or sport activity. Sport is an institutionalized activity that is performed pursuant to certain rules. It requires a systematic physical effort and it has the character of a game, i.e. competition with yourself or an opponent [28]. Authors [23] point to two different concepts of sport. The first is a performance and top

performance achieved by amateurs or professionals. The second concept includes sport for all, also called recreational sport [28]. In working with professional and scientific literature, we base this work on the notion of PA. With regard to the profession of PE teachers, which requires certain specific abilities, it is necessary to accept also other related notions, which are exercise and, especially, sports activity. Thus, PA creates a unit that adequately covers its performance at the level of ordinary activities in the overall time fund, as well as exercise and sport activities in the work and leisure time of the PE teachers.

In daily mode, leisure time offers the broadest space for doing sports activities. Majority of the current views and definitions of leisure time are based on Dumazedier's formulations [17]. The author divides the time fund into working hours; non-working time (commuting to work, biological needs, family, home care) and leisure time. According to Dumazedier, leisure time is a free choice, freeing the person from a certain kind of duty and satisfying personal requirements. If leisure time is partly focused on some profitable, utilitarian or committed goal, it is only partially free time. It is a half leisure time, which includes activities of half lucrative, half utilitarian character, e.g. paid participation in the sports association [17]. Leisure time is a very important and necessary aspect in the daily routine of man as it provides the following functions. The first feature is entertainment that is related to meeting personal needs and freeing a person from boredom. The second function is represented by one's own personal development in understanding liberation from automatism. The third function is rest and, thus, mental and physical relaxation, compensation for fatigue, recovery and reproduction of labor strength. These features highlight the essential moment of balancing work and leisure time [13]. Methods of choosing leisure activities should recognize the needs of the individual, provide new opportunities and the opportunity to escape monotony of work. In the case of unilateral, total focus only on the physical aspect, positive results cannot be achieved. In extreme cases, the opposite may occur. It is monotony that can lead to symptoms, such as fatigue, mental frustration, overwork, etc. [10]. High work demands, accompanied by insufficient rest, are an overload on the individual, which can result in burnout or increase the diagnosis of mental health problems [32]. Due to this type of reasons, approximately ten thousand Finnish adults have been involved in the research of the problem how leisure time PA affects their physical, mental and social ability. Nearly 90% of the participants stated that leisure time PA positively affects their mental capacity. Over 75% of respondents indicated physical work capacity and 60% of respondents improved their social work capacity [18].

The profession of PE teacher is characterized by the specificity of engaging in sports activities in both work and leisure time. The performance of sports activities is presented in two basic dimensions: "doing sports to achieve maximum performance in terms of professional undertaking" and "performance centricity" [35]. The authors point out sports leading towards their own profession, or sports as a person's lifestyle that is one of the means of achieving a harmonious centricity. Thus, in addition to the role of a teacher, the PE teacher can also assume the role of a sports expert after school. In Slovakia, the Sport Act 440/2015 Coll. provides that the activities of a sports expert are carried out in individual areas of a given sport by, e.g. coaches, referees or instructors. At the same time, the PE teacher can do sports, including exercise, as an automatic part of his life.

The right choices of leisure activities and active life can be positively linked to overall life satisfaction [25]. Life satisfaction (LS) is based on quality of life (QOL), but not whole QOL is about LS. An individual may have a good life, but may not be happy with such a life. Alternatively, he may be happy with a not so good life [33]. In QOL definitions and measurements it is appropriate to distinguish: objectivist stream, for which e.g. income or health care is characteristic; and subjectivist stream, representing the measurement of subjective QOL indicators and individual satisfaction [4]. The focus of psychology is on the subjective aspect that not only defines QOL, but also evaluates and measures it by appropriate procedures. Currently, we can observe that the subjective aspect of QOL is approached from the position of two constructs [14]: subjective quality of life (SQOL) and subjective well-being (SWB). At the same time, it can be stated that there are four streams related to the two mentioned constructs, SQOL and SWB [14]: the first stream equals QOL with SWB; the second stream understands SWB as an integrated part of the multidimensional QOL construct; the third stream discusses the implementation of QOL research, which is independent of SWB research, i.e. the importance of the relationship between the two constructs is not considered; and the fourth stream understands the SWB as a QOL indicator (the representative of this stream or concept is Diener). The starting point for our work is the concept of E. Diener's work about SWB [11, 12, 27]. An important aspect of LS is regular sport activity [21]. The findings of the [2] study on the LS level, depending on the sport

activity carried out on the Turkish and German training and non-training groups, show significant differences in LS in favor of the people who trained. In line with the gender equality variable, higher LS was shown in this research for women than for men. LS assessment can also be gender-sensitive. However, studies that do not confirm the differences in LS between men and women dominate [27]. PE teachers clearly represent a different group, which naturally undertakes such activities, with the intention of using them as a supportive and protective means of improving life.

A Person enters middle adulthood at the age of 35 and exits it at the age of 50. A significant and important manifestation of the period of middle adulthood is the ability to judge lives under the influence of experience. Balancing is based on different values and needs than in young adulthood, yet there are no significant physical and mental changes, as would be the case in late adulthood. In this period there are not such as physical and mental changes as in late adulthood. Experience gained with too long practice can lead to routine and negate the positive benefits of an experience base [31]. Middle adulthood is represented by a group of teachers mostly with 10-25 years of experience, which is a sign of relative stabilization in the profession. This means that an individual is usually not under the influence of a deliberate change of profession and at the same time not in the period before his or her professional activity end. All this gives the teacher a wide and specific space to develop, to be creative and effective, and cross the boundaries of the established role of a PE teacher. As evidenced by the authors' research [24], the result is PE teachers who are characterized by a high self-esteem in their professional work.

The conclusion of much research on QOL is the presence of association between PA and LS. Results of the study of [21] revealed that engaging in sports activities is a valuable tool for increasing LS. Theoretical knowledge of health and QOL point to compensation – the need for balancing between work and leisure time. In this context, the issue is whether sport activities, performed during working or non-working hours, are the determinants of LS for PE teachers. The research question is whether there is a relationship between sport activity and LS for PE teachers. Thus, in this context, the implicit problem is whether this activity is a compensating factor for the workload. Gender is another determinant in question that can determine engagement in after school activities and relate to LS.

The aim of this thesis is to extend the knowledge about LS reflecting PA load expressed in MET-min/week within the total time fund of PE teachers in middle adulthood.

In the set of men and women – teachers and PE teachers – we set the following hypotheses:

H1: Men have significantly higher MET-min/week scores in high intensity PA than women.

H2: Men have significantly higher total MET-min/week scores than women.

H3: Women achieve significantly higher LS scores than men.

H4a: There is a significant positive relationship between the height of MET achieved by min/week and the subjective measure of LS identified for women.

H4b: In men, there is a significant positive relationship between the MET-min/week and the LS subjective measure.

Material and Methods

Sample and procedure

The research group consisted of 151 PE teachers, 82 women and 69 men from primary and secondary schools in the Slovak Republic. In order to maintain the homogeneity and objectivity of the research, the teachers were of middle age, 35-50 years old, with 10-25 years of teaching experience in physical education. The average age of the teachers was 43 years, sd 4.90 for women and 4.97 for men. Research and data collection through questionnaires was done in the period of September 2018 – January 2019. PE teachers or school management were approached personally or by telephone call and they were told the goal of the research. The questionnaires were administered personally or with the help of an online version, via a link www.survio.com/survey/d/U6W3B7N7H0G3X4S1X. There were no conflicts of interest. The research was approved by the Ethics Committee of Pavol Jozef Šafárik University in Košice.

Measures

In cross-sectional research we used the following methods: non-standardized questionnaire surveying socio-demographic data; short version of the International Physical Activity Questionnaire – IPAQ [19]; and the Satisfaction with Life Scale – SWLS [11]. The study of reliability and validity from 2003 performed in 12 countries states that IPAQ has appropriate measuring properties for monitoring of PA levels in the population of age between 18-65 [9]. On the official website http://www.ipaq.ki.se, a published list of all versions of the questionnaire is available for sharing. The Slovak version of the questionnaire originated from the English version

at Pavol Jozef Šafárik University in Košice (2018). Currently it is being prepared for publishing while adhering to page translation methodology https://sites.google.com/site/theipaq/cultural-adaptation.

The SWLS scale has sufficient psychometric characteristics, which includes both high internal consistency and stability over time. The scale significantly correlates with other scales for measuring SWB and also with personality characteristics [11]. It is on the official website of E. Diener https://www.eddiener.com/scales/7. A Czech version of the questionnaire is available for public, with the author's permission to freely use this scale for research purposes. The Czech version was subsequently translated into Slovak and used in our research. The gross score ranges from 5 to 35. A higher score indicates a higher total LS.

Statistical analysis

To process the results the basic descriptive mathematical statistics were used (absolute frequency, relative frequency, arithmetic mean, median and standard deviation). To determine the significance of the difference we used The Mann-Whitney U test and Pearson's Chi-square test and relationships analysis was tested by Spearman correlation. The statistical significance of the obtained results was considered from level $p \leq 0.05$ and $p \leq 0.01$. Substantive interpretation was performed on the basis of logical methods. The data were processed in the statistical program SPSS Statistics 17.0.

Results

For closer monitoring and measurement of PA, we analyzed the results of the PA in a total time fund of PE teachers. Based on the evaluation of the international IPAQ questionnaire, we found a weekly frequency and daily PA volume over the last seven days. The results were recorded into three monitored indicators – PA of higher intensity, moderate intensity and walking. The next step was to convert the obtained raw data to a common MET-min/week unit. The calculations were performed in accordance with the internationally recognized IPAQ Research Committee evaluation methodology [19]. Based on the set limits, we evaluated the results in four categories – high PA intensity, moderate PA intensity, walking and the resulting PA level in MET-min/week (Table 1). MET-min values showed that men scored significantly over women in high intensity PA. Women scored in medium load (712.20 MET-min/week) and in walking (1557.84 MET-min/week). The significance of the difference between men and women was demonstrated in PA of high load intensity (Mann-Whitney U test 1627.50; $p = 0{,}000 \leq 0.01$). The difference between men and women was 683.24 MET-min/week in favor of men. We accept hypothesis 1 that men have a significantly higher MET-min/week score in PA than women. Intensive PA was also measured by a short version of IPAQ in research [16] and equally, men significantly outscored women, but in [3] the men outscored women insignificantly.

The average value of total PA in our research was 3234.99 for women, and men reached values of 3772.33 MET-min/week. Thus, the difference was 538 MET-min/week. Mathematical statistics showed the significance of the difference in gender also in total PA (Mann-Whitney U test 2270, $p = 0.03 \leq 0.05$). The results indicated that the hypothesis 2 was confirmed. Men had a significantly

Table 1. PA in terms of the load intensity of women and men in MET-min/week

PA	Gender	$\bar{X}$	m_e	SD
Higher intensity	Women (n = 82)	964.88*	960.00	1817.74
	Men (n = 69)	1648.12*	1440.00	1234.94
Medium intensity	Women (n = 82)	712.20	480.00	834.97
	Men (n = 69)	624.35	480.00	544.19
Walking	Women (n = 82)	1557.84	1386.00	1245.08
	Men (n = 69)	1499.83	1039.50	1264.06
Total PA	Women (n = 82)	3234.99**	3120.00	2595.70
	Men (n = 69)	3772.33**	3573.00	2172.40

Note: PA – physical activity, $\bar{X}$ – arithmetic mean, m_e – median, SD – standard deviation

* Statistically significant difference at $p \leq 0.01$* between women and men

** Statistically significant difference at $p \leq 0.05$** between women and men

higher total MET-min/week score than women. Men's PA was higher than PA of women in [16], with mean women values of 3066 and men 3946 MET-min/week, but without a statistically significant difference.

The characteristics of the research set in terms of basic descriptive mathematical and statistical characteristics of the total LS in the set of men and women are presented in Table 2. The standard deviation in men pointed to a lower homogeneity of results for men than for women. The most commonly reported value and arithmetic mean score was higher in women. The statistical significance of LS difference between men and women was not confirmed (Pearson $\chi^2 = 23.44$, $p \geq 0.05$). Both samples were in the gross score range of 21-25 points, corresponding to the mean level of LS at the website https://www.eddiener.com/scales/7. The hypothesis verification revealed a rejection of the hypothesis 3. We compared the achieved average scores of LS with the scores of SWLS [27]. The average score for a sample of adult Americans was 24.2 for sd 6.1. For example, the correlation in LS and gender has been pointed out by [7] with significant female positive effects on LS.

Table 2. Mathematical and statistical characteristics of the gross life satisfaction score of women and men

Gender	$\bar{X}$	SD	m_e
Women (n = 102)	23.39	4.23	24
Men (n = 98)	22.96	4.31	23

Note: $\bar{X}$ – arithmetic mean, m_e – median, SD – standard deviation

The relationship analysis of total mean score achieved by MET-min/week, which determined the weekly PA load intensity and the average SWLS gross score that arrived at the LS rating was not significant. The Spearman correlation coefficient of women reached 0.718 ($p \geq 0.05$) and in men 0.439 ($p \geq 0.05$). We reject hypotheses 4a and 4b. The results do not confirm that there is a significant positive correlation between the MET-min/week score and the subjective LS score in women and men. Total PA was not significantly associated with a positive assessment of teacher health in the study of authors [8]. In particular, the study investigated the effect of PA intensity by IPAQ on teachers' mental and physical health. Other observations of university staff, including those who have been involved in higher levels of PA, have revealed a significant and positive health-related QOL assessment [29]. These sources indicate that there should be a positive effect of PA on LS.

Discussion

Sports are usually considered to be more dominated by men [3]. This thesis was also confirmed in our observation. The undertaking of our research in a limited autumn–winter period, in particular from September to February, could have an impact on the amount of undertaken PA. Study of authors [15] included seasonality, along with higher age and female gender, to a negative correlation of PA undertaking. The undertaking of PA should be an integral part of the daily PE teacher's regime. Therefore, compared to the ordinary population, the MET-min/week summary score was expected to be higher than the actual score achieved. Nevertheless, PE male and female teachers in our research belong to the active population. We rely on [22], who state that the group can be described as highly active if it shows more than 3000 MET-min/week when working with IPAQ.

The significance of the difference in LS between men and women in our research was not confirmed, but the results show that women tended toward a higher LS rating than men. A higher LS rating, although insignificant, can be explained, for example, by the extent of the effects that women and men experience. Women tend to experience greater pleasure and less grief, and they experience these emotions more often than men [30].

The internationally discussed indicator, which is the amount of PA, was not a significant factor related to LS in our observation. The theoretical part of this work and our considerations lead us to the following assumption. The specificity of the target group predisposes the PE teachers to perform PA in working and non-working time, thus creating a high probability of movement dominance. Authors [17] say that in the case of total focus only on the physical area, positive results in regeneration and recreation cannot be achieved. By deferring to the opinions of the authors, it appears that PE teachers do not engage in essential recreational activities that provide regeneration, in other words, they do not recover their exhausted strength after work. We cannot achieve positive results with absolute focus on one area. Recreation is significantly and positively associated with the overall LS [25]. According to [6], high work demands in case of insufficient rest of the individual overload can cause e.g. burnout syndrome. Authors [26] believe that fulfilling the basic leisure needs, such as sufficient rest and recovery, is likely to increase LS and reduce negative feelings. The European Trade Union Committee for Education (ETUCE) has organized research among EU teachers on the causes of stress in the teaching profession. The results showed that stress factors have a direct connection

with working conditions for teachers, e.g. the intensity. Burnout syndrome, depression, or emotional exhaustion has been stated to be the most significant manifestation of load intensity [6]. Research by [5] has confirmed that performing of PA based on intense exercise, regardless of any physiological rationale, is often doomed to failure, just like hard work. In this context, it is necessary to optimize the motion regime of man [17]. An incorrect motion regime is one that is unilateral or excessive. This optimization should be part of both working and non-working life in other activities. We believe that the adequate frequency and volume of PA in the total time fund, together with rest, can contribute positively to subjective LS assessment. The question therefore remains whether this kind of activity, from the point of view of unilateralism, is the right choice for spending time after work for PE teachers.

Conclusions

In the field of research, the monitoring of PA and LS relations in the profession of PE teachers is not observed enough, thus our empirical work expands the knowledge in the field. In addition to the results related to the verification of the hypotheses, we have found the following findings in this research. It seems that the sport activities of the PE teachers after work may overlap with working time activities and become part of their profession. It implies that there is no need for compensatory means between workload and recreation. The PA intensity in our research has not been shown to be a significant determinant in relations to LS. Thus, the results did not correspond to research showing the importance of the relationship between sport and LS. Gender has been shown to be a determinant that is significantly related to the high and overall PA load intensity. We recommend monitoring the performance of PA throughout the year, which will result in a consistent and objective mapping of PA amount. We believe that the profession of the PE teacher and the sport activity after work result in physical dominance. This provides an opportunity to reflect on the choice of interests and reveals the opportunity for self-development of the PE teachers. We support the necessary need for compensation – balancing between work and leisure time. This aspect can be beneficial in addressing the issue of new approaches to improving the quality of life of PE teachers and the issue of burnout syndrome prevention.

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