

HOW PHYSICALLY ACTIVE ARE SPORTS EXPERTS?

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Original scientific paper

Abstract

Through their actions and behavior forms, coaches set an example for the athletes they work with, and additionally oblige them to lead a healthy lifestyle, which includes a proper diet and regular physical activity manifested in various forms. The aim of the paper is to compare the categories of physical activities between male and female sports experts. The results of the research showed that 63% of trainers practice high physical activity, and 36% moderate physical activity, with women applying high physical activity by 6.8% more than male sports experts. Observed physical activity is expressed in MET units (metabolic equivalent of task). The analysis of the chi-square test did not show a statistically significant difference in the representation of physical activity categories among male and female sports experts. The observed level of physical activity (light, moderate, heavy, total physical activity), analyzed using the t-test for independent samples, did not show a significant difference between male and female coaches.

Keywords: coaches, IPAQ questionnaire, MET-values, lifestyle

INTRODUCTION

Physical activity refers to all body movements performed by our muscles and during which more energy is consumed than when we are at rest. For health, a person needs a minimum of 150 minutes of physical activity per week (60 minutes per day for children); walking, climbing stairs, hoeing the garden, running or swimming are examples of physical activities. Being physically active is probably one of the most important decisions any person can make to improve their own health, regardless of gender or age. Regular participation in a wide variety of physical activities (e.g. activities at work or school, during free time, housework or transportation, recreational activities) is directly related to improving health and preventing the risk of many diseases, along with other healthy habits such as proper nutrition, smoking cessation and moderate alcohol consumption. Unfortunately, an active lifestyle seems to be practiced by a decreasing number of people worldwide (Batez et al., 2017).

Sports experts, apart from actively participating in training athletes with specific sports knowledge and skills, are often role models for young athletes, and they should definitely keep that in mind. Their behavior is closely monitored by young athletes and their parents. With their actions and forms of behavior, coaches set an example for the athletes they work with, and additionally give them the obligation to lead a healthy lifestyle, which certainly includes a

proper diet and regular physical activity manifested in various forms.

Participating in regular physical activity is strongly associated with health benefits. As important as it is to be physically active, it is just as important how to satisfy personal needs for certain forms of exercise and physical activities. A continuous and well-dosed form of physical activity has a good effect on cardiorespiratory abilities, flexibility, body structure, muscle shape and other psychophysical abilities of individuals who exercise it.

In order to determine the lifestyle of sports experts, i.e. how physically active they are, we approached the subjective assessment of their physical ability, using the International Physical Activity Questionnaire (IPAQ). This questionnaire belongs to one of the simplest questionnaires, which contains 7 questions about the exercise of physical activities in the last 7 days. Objective assessment of physical activity involves the use of devices such as motion sensors (eg, pedometers, accelerometers), heart rate monitors, or a combination of these devices (Kaminsky, 2013).

The aim of the work is to determine in what way and what form of physical activities sports experts of both sexes engage in, as well as to determine the possible existence of differences between the categories and levels of physical activities of male and female sports coaches.

WORK METHOD

The sample of our research consisted of 112 sports experts, of which 66 (58.9%) were male respondents and 46 (41.1%) were female respondents with an average age of 33.04±9.39 years. In 2022, they attended the Professional Training Program at the Provincial Institute for Sports and Sports Medicine to acquire the title of sports operational coach and sports teacher in the following sports: handball, volleyball, basketball, athletics, swimming, cycling, badminton, judo, table tennis, bowling and taekwondo.

For the purposes of our research, a shorter form of the IPAQ questionnaire was used. The International Questionnaire on Physical Activity conducted by respondents is related to the amount of time spent on certain types of physical activity during the previous week. The value of physical activity for total, heavy, moderate and light physical activity was

calculated and expressed in MET-minutes per week (MET.min.week-1). MET stands for "metabolic equivalent of task", i.e. the metabolic value of the task, and expresses the ratio of calorie consumption during an activity in relation to consumption at rest: e.g. 5 MET means that a person performs an activity that consumes 5 times more energy than resting. The value of heavy physical activity was obtained by multiplying the time spent in heavy physical activity in the past 7 days with a correction factor of 8 METs. Moderate physical activity for a week was multiplied by a correction factor of 4 MET, and light physical activity by 3.3 MET in order to adequately calculate the value of moderate and light physical activity in the past 7 days, for each subject individually. The total value of physical activity is the sum of the value of heavy, moderate and light physical activity (Stojmenović and Milosavljević, 2017).

Table 1. IPAQ scoring directive and criteria for classification of physical activity (Papathanasiou, et al., 2009; according to: Stojmenović and Milosavljević, 2017).

<p>A. Physical Activity Scoring (FA) Heavy FA value = 8 × (days with heavy activity) × (minutes per day with heavy activity) Value of moderate FA = 4 × (days with moderate activity) × (minutes per day with moderate activity) Value of light FA = 3.3× (days with light activity) × (minutes per day with light activity) Total FA value = Severe FA value + Moderate FA value + Mild FA value All FA values are expressed in MET.min.week-1 Participants were informed to record only FA for at least 10 minutes For recorded FAs with a duration of less than 10 minutes per day, a value of zero minutes per day was taken For recorded FAs with a duration greater than 180 minutes per day, the value 180 minutes per day was taken Questions with missing data for time or number of days or with the answer "don't know" were not included in the analysis</p> <p>B. Criteria for classification of physical activity Low FA: Total value of FA < 600 MET.min.week-1 Medium FA: Severe FA value ≥ 480 MET.min.wk-1 or Total FA value ≥ 600 MET.min.wk-1 High FA: Severe FA value ≥ 1500 MET.min.wk-1 or Total FA value ≥ 3000 MET.min.wk-1</p> <p>FA – physical activity; FA value – physical activity value</p>

RESULTS AND DISCUSSION

Based on the value of total physical activity, the respondents were classified into three categories of physical activity: low, medium and high. The research found that 63% of sports experts are physically active, and are classified in the category of high physical activity, while 36% are medium in their daily physical activities. When looking at physical activity in relation to gender, it is observed that female sports experts

apply high physical activity by 6.8% more than male sports experts. Using the chi-square test, the difference in the representation of the physical activity category among sports experts of different genders was analyzed in a sample of 112 respondents. It was found that the difference is not statistically significant at the level of inference p=0.576, with a chi-square test value of 1.105 (Table 2).

Table 2. Physical activity classification in relation to category and gender

gender	Physical activity category	Sample number (112)	percentages
male	low	1	1.5
	medium	25	37.9
	high	40	60.6
	total	66	100.0
female	low	0	0
	medium	15	32.6
	high	31	67.4
	total	46	100

$$\chi^2=1.105; df = 2; p = 0.58$$

Looking at Table 3, it can be concluded that physical activity measures expressed in MET units are divided into heavy, moderate and light physical activity. The given activities are expressed in MET-minutes per week, with minimum and maximum values, arithmetic mean and standard deviation. The values of the

coefficient of asymmetry (Sk-skewness) range from 0.18 to 1.01, indicating that it is a negligible asymmetry that is accepted. The values of the coefficient of curvature (Kurt-kurtosis) are in the range from -0.35 to 0.55, around the value 0, and indicate of distribution flattening.

Table 3. Descriptive data for the level of physical activity

Physical Activities (MET)	N	Min	Max	AS	SD	Sk	Kurt
Heavy	98	480	5040	2064.65	1160.38	0.63	-0.23
Moderate	108	80.0	2880	966.67	965.09	1.01	0.55
Light	111	49.5	2079	847.62	467.58	0.46	-0.18
Total activities score	112	995	7116	3870.15	1364.04	0.18	-0.35

Legend: N-number of entities in the study, Min-minimum values, Max-maximum values, AS-arithmetic mean, SD-standard deviation, Sk-coefficient of asymmetry, Kurt-coefficient of curvature

T-test for independent samples (*Independent Samples T Test*), was used to determine the existence of the influence of gender on the level of physical activity among sports experts included in this research. Table 4 presents the results of high, medium and low physical activity in MET minutes on a weekly basis through arithmetic mean values. The Leven's test significance levels shown ($p > 0.05$) show that the variances of male and female subjects are equal. Based on the positive value of the t-test, it is concluded that the values of the arithmetic

means of certain_levels of physical activities are higher in men, and the negative sign indicates a higher average value of physical activities in women. The values of the level of statistical significance of the t-test for independent samples are greater than 0.05, which confirms the absence of a significant difference in the arithmetic means of the observed variables. The average values of high physical activity are higher in men, while the average values of medium and low physical activity, expressed in MET values, are higher in women.

Table 4. Differences in the level of physical activities between male and female subjects (Independent Samples Test)

Physical activity type	gender	AS	Leven's Test	t-test	
				t	p
high	male	2181.10	0.86	1.29	0.2
	female	1876.55			
medium	male	930.64	0.24	-0.73	0.47
	female	1026			
low	male	880.4	0.79	-1.29	0.22
	female	1043.58			
total	male	3690.59	0.18	0.85	0.4
	female	3446.39			

Legend: AS-arithmetic mean, t-value of t-test; p- significance of the t-test

Physical activity was subjectively assessed based on the IPAQ questionnaire and expressed in MET units and is the subject of many studies (Malčić and Marić Jurišin, 2018; Stojmenović, Milosavljević, 2017; Vukićević, Inić, and Miličković, 2017).

In the research by Stojmenović and Milosavljević (2017), in which, based on the IPAQ scoring directive and criteria for the classification of physical activity, they came to the result that only 14.2% of students are highly physically active. The reason given is that the lack of time is of crucial importance for insufficiently engaging in physical activities. A higher percentage (63%) of sports experts, obtained in our research, are intensely physically active, which can be attributed to professional commitment, as well as to the knowledge of the importance of continuous physical engagement of coaches.

The physical activity of young people of 54.3% physically intensively active and 39.4% moderately active is in accordance with our research. When we look at the female respondents of our research, a higher percentage was recorded in highly active women (67.4%) compared to the study (Vukićević et al., 2017) where 43.8% are intensely active girls, which can be attributed to the healthy lifestyle habits that are present in female sports experts. In the presented works, the International Physical Activity Questionnaire (IPAQ) was used as a research instrument. The level of physical activity was assessed through total energy expenditure expressed in metabolic equivalents per week (MET-minute/week). Studies of a review nature (Bunčić et al., 2021), in which 15 papers were analyzed, show that male students have a higher level of physical

activity compared to female students, and in general male and female students have a high level of physical activity, which speaks of their lifestyle and culture of living.

CONCLUSION

The research included 112 sports experts, of whom 66 were men and 46 were women aged 22 to 59. The IPAQ standardized questionnaire on adults physical activities was applied. The research results showed that 63% of trainers practice high physical activity, and 36% moderate physical activity, with women applying high physical activity by 6.8% more than male sports experts. Observed physical activity is expressed in MET units (metabolic equivalent of task). The analysis of the chi-square test did not show a statistically significant difference in the representation of physical activity categories among male and female sports experts. The observed level of physical activity (light, moderate, heavy, total physical activity), analyzed using the t-test for independent samples, did not show a significant difference between male and female coaches.

Aware of the importance of proper nutrition and a healthy lifestyle, sports experts should not only remind athletes every day about the benefits of an active lifestyle and the right choice of food and drinks, they should also show it by example. Participating in various forms of physical activity (cycling, brisk walking, exercising in nature, exercising in fitness centers, morning swimming, running in parks and on treadmills) are forms of exercise that sports professionals apply every day.

The obtained results indicate that 67.4% of female sports experts and 60.6% of men are

physically active and that they engage in high-intensity activity every day, which supports the fact that sports coaches understand the

importance and value of an active lifestyle, while at the same time understanding the harmful effects of a sedentary lifestyle.

LITERATURE

1. Udruženje za sport i medicinu sporta. *Procena fizičke aktivnosti*. Preuzeto: 24.08.2022. sa: http://www.usms.rs/index.php?jezik=la&strana=podaci_i_statistika_ipaq
2. Batez, M., Božić, P., Đorđić, V., Jorga, J., Milanović, I., Ostojić, M.S., Radisavljević, S. (2017). *Vodič za zdrave životne navike. Ishrana i fizička aktivnost*. Beograd: Data Status.
3. Maddison, R., Ni Mhurchu, C., Jiang, Y., Vander Hoorn, S., Rodgers, A., Lawes, C. M., & Rush, E. (2007). International Physical Activity Questionnaire (IPAQ) and New Zealand Physical Activity Questionnaire (NZPAQ): a doubly labelled water validation. *The international journal of behavioral nutrition and physical activity*, 4, 62. <https://doi.org/10.1186/1479-5868-4-62>
4. Stojmenović, M., & Milosavljević, M. (2017). Stavovi studenata prema fizičkoj aktivnosti. *Racionalna terapija*, 9(2), 29-38. <https://doi.org/10.5937/racter9-11543>
5. Papathanasiou G, Georgoudis G, Papandreou M, et al.(2009). Reliability measures of the short International Physical Activity Questionnaire (IPAQ) in Greek young adults. *Hellenic J Cardiol*; 50(4): 283-94.
6. Malčić, B., Marić Jurišin, S. (2018). Fizička aktivnost studenata Univerziteta u Novom Sadu – realnost i perspektive. *Sport-Nauka I Praksa*, Vol. 8, N 1, 2018, str. 13-26.
7. Kaminsky, A., L. (ured.) (2013). *ACSM Priručnik za procenu fizičke forme povezane sa zdravljem-treće izdanje*. Beograd: Data Status
8. Vukićević, V., Inić, L., & Miličković, V. (2017). Fizička aktivnost i način ishrane učenika srednjih škola. *Glasnik Antropološkog društva Srbije*, 52, 95-104. <https://doi.org/10.5937/gads52-14731>
9. Bunčić, V., Žigić, G., Ljubisavljević, M., & Jerković, N. (2021). Fizička aktivnost studenata-razlike u odnosu na polnu pripadnost. *Tematski zbornik radova sa 12. Međunarodne interdisciplinarnе stručno-naučne konferencije "Horizonti 2021"*, 196.

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