

WEEKLY PHYSICAL ACTIVITY OF TABLE TENNIS PLAYERS

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Abstract

Everyone who practice sports shows a developed awareness of the importance of physical exercise by developing their performance in sports training and diet, which together certainly contribute to the sports result, and above all to the improvement and preservation of health. The aim of this work is to determine the way of conducting physical activities of athletes who play table tennis on a weekly basis, as well as to establish whether there are differences between the categories of physical activities between men and women. The research includes a total of 40 respondents, of which 18 are male table tennis players and 22 are female table tennis players who play for clubs participating in the First League of Serbia in the 2023/24 competition season. By comparing the level of physical activity of table tennis players, it was concluded that there is no statistically significant difference in physical activity expressed in MET values on a weekly basis between male table tennis players and female table tennis players, as well as in daily sitting next to small screens, at work or with friends.

Key words: IPAQ questionnaire, MET metabolic equivalent, lifestyle, athletes

INTRODUCTION

Present time is very different from the time about 30 years ago when people were more active and in some way forced to do their own work and actions with the help of engaging their locomotor apparatus. Today, life is made easier by many modern devices, which have „put people to sleep" and contributed to reduced movement, movement, engagement of muscle musculature, reduction of energy consumption, which brings harmful consequences for people's health. Lifestyles have changed, there is a sedentary lifestyle and the wrong way of eating (fast food rich in saturated fat) are factors that lead to numerous chronic cardiovascular, endocrinological and other diseases. Regardless of the profession, people must be physically active in order to preserve and improve their health, thereby contributing to the development of society as a whole.

Physical activity, as any form of muscle activity that leads to higher energy consumption than at rest, can be a preventive, diagnostic (ergometry) and therapeutic tool. The frequency, intensity, duration and form of physical activity are dosed - the same rules apply as for any other drug. The dose must be individually determined, which means appropriate to the sex, age, health condition, physical ability,

occupation of the person and must also be individually programmed and definitely controlled (Salmon, Arundell, Hume, et al., 2011). By definition, physical activity is any competitive or recreational activity that is based on movement and changing the position of the body, where the goal is to achieve a result in accordance with the capabilities of the person performing the activity (Bouchard, Blair, & Haskell, 2012). 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 which are 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).

People who engage in sports show a developed awareness of the importance of physical exercise by the fact that they develop their performance in sports training and their diet every day, which together certainly contribute to the sports result, and above all to the improvement and preservation of health. There is a large number of researches in our areas that focus on physical exercise and activity, lifestyles of young people, adults, students, athletes (Malčić,

Marić, Jurišin, 2018; Vukićević, Inić and Miličković, 2017; Đurić, Simović, Rašeta and Vujnić, 2017; Obradović, 2020; Đukić et al., 2022; Stojmenović and Milosavljević, 2017).

The aim of this work is to determine the way of conducting physical activities of athletes who play table tennis on a weekly basis, as well as to establish whether there are differences between the categories of physical activities between men and women.

WORKING METHOD

For the purposes of the research, the sample of respondents consisted of 40 table tennis players, of which about 55% were female and 45% male, aged 14-43 years, average age 24.30±7.78 years.

In order to find out about the amount and character of physical activity, a subjective testing method, a shorter form of the IPAQ questionnaire, was applied. 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 MET. Moderate physical activity for a week was multiplied by a correction factor of 4 METs, and light physical activity by 3.3 METs 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).

RESULTS AND DISCUSSION

The research includes a total of 40 respondents, of which 18 are male and 22 female table tennis players who play for clubs participating in the First League of Serbia in the 2023/24 competition season. They filled out the questionnaires in Dimitrovgrad, at the second tournament of the league competition in October 2023.

Looking at Table 1, it can be seen that physical activity measures expressed in MET units are divided into intense, moderate and light physical activity. The displayed physical 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-skunis) range from 0.38 to 1.15, indicating that it is a negligible asymmetry that is accepted, and that the results are among the lower values. Flatness values (Kurt-kurtosis) are in the range from -1.02 to 0.73, less and around the value of 0, and indicate platykurticity, that is, flattening of the distribution. Of the total number of respondents, 95% engage in light physical activity, 88% moderate physical activity, and 62% table tennis players engage in heavy physical activity.

Table 1. Basic descriptive statistics for the level of physical activity

Physical activities (MET)	N	Min	Max	M	SD	Sk	Kurt
TFA	26	480	8640	2690.77	2307.54	1.15	0.60
UFA	37	120	3360	1472.43	958.18	0.38	-1.02
LFA	40	396	4158	1691.50	1049.41	1.02	0.33
UKFA	40	1272	11715	4927.90	2962.61	0.65	0.73

Legend: TFA-heavy physical activity, UFA-moderate physical activity, LFA-light physical activity, UKFA-total physical activity, 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

In order to determine the differences in the level of physical activity between female and male table tennis players, a T-test for independent samples (Independent Samples T Test) was applied. Table 2

shows the values of heavy, moderate and light physical activity of athletes in MET minutes on a weekly basis. The determined significance levels of Levene's test (p > 0.05) show that the variances of

male and female subjects are equal, except for heavy physical activity. 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 heavy and moderate physical activity are higher among table tennis players, while the average values of light and total physical activity are higher among table tennis players. We conclude that there is no statistically significant difference in physical activity expressed in MET values on a weekly basis between male and female table tennis players.

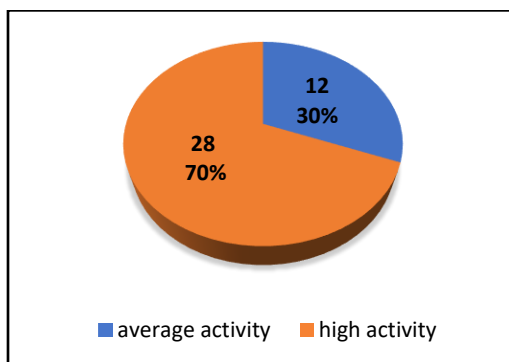
Table 2. Differences in the level of physical activities of male and female respondents (Independent Samples Test)

Type of physical activity	N	gender	AS	Lev p	t-test	
					t	p
TFA	16	male	2242.50	0.00	-0.95	0.36
	10	female	3312.00			
UFA	18	male	1440.00	0.15	-0.20	0.84
	19	female	1503.16			
LFA	18	male	1793.56	0.45	0.55	0.59
	22	female	1608.00			
UKFA	18	male	5360.22	0.73	0.83	0.41
	22	female	4574.18			

Legend: TFA-heavy physical activity, UFA-moderate physical activity, LFA-light physical activity, UKFA-total physical activity, N-number of respondents, AS-arithmetic mean, Lev p-level of statistical significance of Levene's coefficient, t-value of t test; p - level of statistical significance for the t-test

Criteria for classification of physical activity: Low FA (physical activity) - Total value of FA<600MET.min.week-1; Moderate FA - Value of severe FA≥480MET.min.week-1 or Total value of FA≥600MET.min.week-1; High FA - Value of heavy

FA≥1500MET.min.week-1 or Total value of FA≥3000MET.min.week-1 (Papathanasiou, et al., 2009; according to: Stojmenović and Milosavljević, 2017).



Graph 1. Classification of the physical activity of the respondents

Based on the value of total physical activity, the respondents were classified into three categories of physical activity: low, moderate and high. According

to the presented criteria, it was determined that out of the total number of respondents, 70% of table tennis players are physically engaged, that is, they

perform high physical activity, because the value of their total physical activity value is above 3000 MET.min.week-1. The results of the research showed that 12 table tennis players, 30%, carry out moderate physical activity (Graph 1), and it was established that there is not a single athlete whose physical activity is less than 600 MET.min.week-1, that is, he is not in the category of low physical activity.

The question about time spent sitting includes time spent at school, at home, during study and during leisure time. This part of the questionnaire includes the time spent in a sitting position at the table, when visiting friends, as well as the time spent in a sitting or lying position while reading or watching television.

Table 3. Differences in daily sitting of male and female respondents (Independent Samples Test)

Type of physical activity	N	gender	AS	Lev p		t-test	
				t	p	t	p
TFA	18	male	3.50	0.87	-1.03	0.31	
	20	female	4.25				

Looking at table 3, it can be established that 95% of the total number of athletes usually spend time sitting during a working day. On average, table tennis players spend 3.5 hours in a sitting position, and table tennis players spend 4.25 hours. The established significance levels of Levene's test ($p > 0.05$) show that the variance of male and female subjects is equal. Based on the negative value of the t-test ($t = -1.03$), it can be concluded that the value of the arithmetic mean of the variable Daily sitting expressed in hours is higher in female table tennis players. The level of statistical significance of the t-test for independent samples is greater than 0.05 and is $p = 0.31$, which confirms the absence of a significant difference in the arithmetic mean of the observed variable.

The results of our research are in agreement with the research of the authors Đukić, Strajnić, Glamočić and Ivanek (2022) where the level of physical activity (light, moderate, heavy, total physical activity) was observed, analyzed using the t-test for independent samples and did not show a significant difference between male and female coaches.

In relation to the student population (Stojmenović and Milosavljević, 2017), the level of physical activity in our research is higher, i.e. athletes practice more moderate and high physical activity, which is a consequence of daily training, as well as the attitudes of athletes about the importance of regular physical

activity. The situation is similar to the research by Vukićević, Inić and Miličković (2017), where more than half of the respondents are in the category of those who are intensively engaged in physical activity (53.4%), the percentage of respondents who moderately engage in physical activity is 39.3%, and only 6.4% of the respondents are insufficiently engaged in physical activity, so the table tennis players from our research are more or less active in the moderate (70%) and high category of physical activity (30%).

CONCLUSION

In order to find out about the amount and nature of physical activity of athletes who have been training table tennis for at least 7 years, a subjective testing method, a shorter form of the IPAQ questionnaire, was applied. The research was carried out on a sample of 40 table tennis players, of whom 55% were female and 45% were male, aged 14-43 years, average age 24.30 ± 7.78 years, with the aim of determining the way of conducting physical activities on a weekly basis by athletes who play table tennis, as well as to establish whether there are differences between categories of physical activities between male and female table tennis players.

The research results showed that 30% of table tennis players perform moderate physical activity, and it was established that there is not a single athlete whose

physical activity is less than 600 MET.min.week-1, that is, he is not in the category of low physical activity. It was determined that of the total number of respondents, 70% of table tennis players are physically engaged, that is, they perform high physical activity, because the value of their total physical activity value is above 3000 MET.min.week-1. By comparing the level of physical activity of table tennis players, it was concluded that there is no statistically significant difference in physical activity expressed in MET values on a weekly basis between table tennis

players and female table tennis players, as well as in daily sitting next to small screens, at work or with friends.

The findings of the study lead to the logical conclusion that athletes are more physically active than those who do not play sports, which is understandable and is a consequence of their determination to be more physically active every day through the form of the training process.

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