



EFFECT OF RECREATIONAL FUTSAL ON BODY COMPOSITION IN PASSIVE FOOTBALL PLAYERS

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Abstract

The purpose of this study was to evaluate the impact of recreational futsal on passive middle-aged footballers in body composition.

Materials and methods. The research was conducted on a sample of 58 men aged from 30 to 40, average age 35.88 ± 2.39 . The sample was divided into two groups. The first group included 29 passive football players (average age 35.58 ± 2.36) who were engaged in recreational futsal 2-3 times a week, and the second group included 29 passive football players (average age 36.17 ± 2.42) who weren't engaged in recreational physical activity. The body composition was assessed by TANITA BC-601, the method of bioelectrical impedance, which became a reference method in research studies in the body composition analysis. The variables obtained were: body height (cm), body weight (kg), fat mass (%), muscle mass (kg), bone mass (kg), body mass index (kg/m^2), calorie consumption – daily calorie intake (kcal), vitality of the body, quantity of water in the body (%), visceral fat (%).

Results. Groups are not distinguished in the variables body height (HBH), calorie consumption – daily calorie intake (DCI), vitality of the body (BMR), and quantity of water in the body (TBV) because $p > 0.05$. In the variables where body mass, body fat tissue and muscle mass were assessed, namely body weight (BWT), fat mass (BFP), muscle mass (TBM), bone mass (BMD), body mass index (BMI) and visceral fat (AVF), a statistically significant difference was gained $p < 0.05$ in favor of the group of passive football players who were involved in recreational futsal.

Conclusions. It can be said that the recreational futsal as physical activity is an effective tool to improve body composition not only in passive football players but in all persons of all ages regardless of gender. Intensity and duration in recreational futsal is an effective way to reduce body fat in the population of passive middle-aged football players.

Keywords: recreational futsal, body composition, passive football players, variables.

Introduction

Lifestyle changes, the transition from an active state in sports to a passive state bring many psychophysical changes that endanger the health of passive athletes. Physical inactivity on the one hand, as well as increased calorie intake, on the other hand, lead to a reduction in (excess) calorie burning, which can have major negative effects on the human body, activation of pathophysiological mechanisms and the development of disease (Hollmann & Hettinger, 2000) as a result of increased subcutaneous fat and blood fat (Booth & Chakravarthy, 2002). Several other studies speak about this issue (Trost et al., 2003; Hajmer, 2010) which stress that

engagement in recreational sports is in significant correlation with various social factors (Sallis et al., 2000). In these studies, the finding for the negative impact of hypokinesia is confirmed, and is stressed its impact on the increasingly pronounced occurrence of non-communicable diseases which can be prevented (and treated) directly with regular and adequate physical activity (Warburton et al., 2001; World Health Assembly, 2004; Schneider & Becker, 2005). Many studies have shown that middle-aged people who are engaged in sports and organized recreational activities enjoy better psychophysical health, normal body mass index 18.5-24.9, are more vigilant and resilient to the stresses of modern living (Xu et al., 2017; Altavilla et al., 2018). Recently research has been done on the impact of recreational futsal on the health of athletes and passive football players (Krustrup et al., 2010; Raiola, 2013) and the effects on the fundamental health vari-

ables that influence the risk of lifestyle-related illnesses of young and middle-aged men (Severino et al., 2019). In addition to the health benefits, the improvements resulting from practicing recreational futsal were compared to other types of recreational physical activity that were practiced more widely. And the results show recreational futsal is complete in the various districts examined (Severino et al., 2019) always at the same level as other sports and more effective in other fields where others are scarce (Krustrup et al., 2010). Recreational futsal less structured than traditional fitness classes, but for many people it is more enjoyable and thus it has a greater potential to develop and sustain the intrinsic motivation of participants (Helge et al., 2010). Factors such as pitch size, the number of players, and training time and format can substantially modify exercise characteristics (Randers et al., 2014). Compared to research in other fields of anthropology conducted so far research with passive athletes is less. This research is therefore an attempt to clarify the effect of continuity from active competitive football to recreational football.

The purpose of this study is to evaluate the impact of recreational futsal on body composition at passive middle-aged football players. In particular, we focus on reducing of some parameters of body composition, especially body mass index (BMI) and subcutaneous adipose tissue (as risk factors for many diseases) in passive football players engaged in recreational futsal compared to passive football players of this age who have not been engaged in recreational physical activities.

Materials and Methods

Participants

The research was conducted on a sample of 58 men from 30 to 40 years of age, average age 35.88 ± 2.39 . The sample is divided into two groups. The sample is divided into two groups. In the first group are involved 29 passive football players average age 35.58 ± 2.36 who have been engaged in recreational futsal 2-3 times a week by 2×20 min to a playground between 20 and 25 meters wide, and between 38 and 42 meters long, and in the second group were involved 29 passive football players who has not conducted

recreational physical activity average age 36.17 ± 2.42 . The only condition that was applied in the sample determination was that the passive football players involved in the research voluntarily agreed to be a part of this research.

Anthropometric measurements and assessment of body composition

The body composition was assessed by TANITA BC-601, the method of bioelectrical impedance, which became a reference method in research studies in the body composition analysis. Upon receiving data for each respondent, data were provided on body height, age and gender of respondents. Following the entry of these parameters in the memory of the measuring device, data on the body composition of the respondents were obtained. The variables obtained are: body height (cm), body weight (kg), fat mass (%), muscle mass (kg), bone mass (kg), body mass index (kg/m^2), calorie consumption – daily calorie intake (kcal), vitality of the body, quantity of water in the body (%), visceral fat (%). The evaluation of the parameters of the body composition was performed in the recreational sports centers in the city of Gjilan, Ferizaj and Prishtina in the Republic of Kosovo.

Statistical analysis

For all variables that are applied for measurement of the body composition are calculated basic statistical parameters and Independent Samples Test. All the analyses were performed using the Statistical Package for Social Sciences software (SPSS, v. 22.0 for Windows; SPSS Inc., Chicago, IL, USA), and values of $p < 0.05$ were considered statistically significant.

Results

In the following text we will try to look at the results obtained from the basic statistical analysis and Independent Samples Test that have been made to respond to the objectives of the work.

Table 1 shows the difference between the group of passive football players engaged in recreational futsal and the

Table 1. Basic statistical parameters and difference between groups

Variables	N	Passive football players in recreational futsal	Passive football players	t	p
		Mean $\pm$ SD	Mean $\pm$ SD		
Body height (cm)	29	178.55 $\pm$ 7.15	178.03 $\pm$ 4.20	0.336	0.738
Body weight (kg)	29	73.65 $\pm$ 13.19	81.30 $\pm$ 14.748	-2.083	0.042
Fat mass (%)	29	17.47 $\pm$ 5.97	21.35 $\pm$ 7.58	-2.167	0.035
Muscle mass (kg)	29	58.11 $\pm$ 7.96	53.43 $\pm$ 7.09	2.363	0.022
Bone mass (kg)	29	3.40 $\pm$ 0.34	3.19 $\pm$ 0.37	2.230	0.030
BMI	29	22.76 $\pm$ 2.79	27.05 $\pm$ 4.28	-4.514	0.000
DCI	29	3018.55 $\pm$ 524.52	3284.24 $\pm$ 574.41	-1.839	0.071
BMR	29	34.65 $\pm$ 8.65	37.03 $\pm$ 11.74	-0.879	0.383
TBW	29	59.30 $\pm$ 4.81	58.11 $\pm$ 5.88	0.843	0.403
AVF	29	3.24 $\pm$ 1.48	4.83 $\pm$ 3.09	-2.490	0.016

group of passive football players who were not engaged in physical recreational activities. This table shows the one-sided differences in the same variables. Independent Samples Test shows significant differences in most body composition variables. Groups are not distinguished in variables body height (HBH), calorie consumption – daily calorie intake (DCI), vitality of the body (BMR), and quantity of water in the body (TBV) because $p > 0.05$. In variables where were assessed body mass, body fat tissue and muscle mass, body weight (BWT), fat mass (BFP), muscle mass (TBM), bone mass (BMD), body mass index (BMI) and visceral fat (AVF) a statistically significant difference was gained $p < 0.05$ in favor of the group of passive football players who are involved in recreational futsal.

Discussion

The conducted research is defined as a transversal study in order to determine the effect of kinesiological recreational activity, respectively recreational futsal in the body composition of passive football players. What should be emphasized is the fact that it is clear that there is a certain influence of this recreational kinesiological activity on some parameters of body composition, especially on the parameters of body fat tissue. The presented results of the analysis of the differences in the arithmetic mean for the assessment of body composition in passive football players involved in recreational futsal, show that there has been a significant reduction in body weight, body mass index, reduction in the amount of subcutaneous adipose tissue and visceral fat.

The results of this research are in line with the results of other research where it is emphasized that in the game of recreational futsal there are sequences with high physical loads, with an average heart rate of 80-85% of the maximum heart rate (Krustrup et al, 2009), which is similar to the values observed in professional football players (Altavilla et al., 2018) which significantly affect the reduction of body weight and subcutaneous adipose tissue. The results obtained also show that aerobic recreational content, such as recreational futsal, contributes significantly to the reduction of adipose tissue, body mass and other parameters of body composition that is consistent with research (Donnelly et al., 2009; D'Elia, 2018; D'Isanto et al., 2019; D'Isanto, 2019).

Some research shows that more intense forms of physical activity offer more benefits when it comes to reducing a person's body mass and health than moderate-intensity activities (Tsourlou, 2006). This is mainly due to the reduction of the risk of cardiovascular diseases as well as the increase of the function of the locomotor apparatus (Swain et al., 2006). In addition, the positive effects of high-intensity activities on reducing and maintaining optimal body weight, both in women and men, are well known (Donnelly et al., 2009).

It has been proven the fact that recreational futsal affects the increase of muscle strength and thus the increase of muscle mass at the expense of the reduction of body fat tissue. Many studies confirm the positive effects of exercise with sequences of submaximal intensity on muscle mass and strength (Binder et al., 2005; Hanson et al., 2009). Benefits from recreational kinesiological activity, respectively recreational futsal are evident in the increase of bone mass, which is confirmed in this research. Passive football players who practice recreational futsal have higher bone mass than

passive football players who are not involved in recreational physical activity. For this reason, many authors suggest that physical activity with an intensity of 75% -85% and a duration of more than 30 minutes is a key factor in strengthening and developing healthy bones at all stages of development (Vicente-Rodriguez, 2006; Khan et al., 2001; Gracia-Marco et al., 2011). Passive football players who practice recreational futsal have a higher percentage of water by 1.2%, (although statistically insignificant) compared with passive football players who are not involved in recreational physical activity.

The decrease in the percentage of water in the body is partly due to the increase in fat mass and the reduction in muscle mass which is consistent with the research of other authors (Gallagher et al., 1997; Baumgartner, 1998). Programs in the form of recreational activities such as recreational futsal significantly lead to more significant improvements in body composition compared to other recreational activities (Ho, 2012). As a conclusion, maintaining total body water is of utmost importance. Therefore, it is especially necessary to consider whether programs, such as those that increase muscle mass, and by increasing the total amount of water in the body, improve the body water decline that naturally occurs with age.

Conclusions

As a conclusion, it can be said that recreational futsal as physical activity is an effective tool to improve body composition not only in passive football players, but to all persons of all ages regardless of gender. Intensity and duration in recreational futsal is an effective way to reduce body fat in the population of passive middle-aged football players.

The data found showed that recreational futsal is less strenuous and less stressful than many recreational activities due to the fact that recreational futsal is a sport based mainly on fun and not on achieving a specific result or optimal performance, therefore it is more easily both physically and psychologically, so, participants feel better both physically and mentally when practicing this type of recreational activity.

This can be determined by the fact that participants, when practicing this activity, relax emotionally, forgetting that they are actually practicing. So recreational futsal reduces the factors that cause the appearance of many non-communicable diseases improves the overall well-being of the person.

Conflicts of interest

The authors declare that they have no conflicts of interest concerning this article.

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ВПЛИВ ОЗДОРОВЧОГО ФУТЗАЛУ НА СКЛАД ТІЛА В ПАСИВНИХ ФУТБОЛІСТІВ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 5 с., 1 табл., 30 джерел.

Метою цього дослідження була оцінка впливу оздоровчого футзалу на пасивних футболістів середнього віку в показниках складу тіла.

Матеріали та методи. Дослідження проводили на вибірці з 58 чоловіків віком від 30 до 40 років, середній вік $35,88 \pm 2,39$. Вибірку розподілили на дві групи. До першої групи входили 29 пасивних футболістів середнім віком $35,58 \pm 2,36$, які займалися оздоровчим футзалом 2-3 рази на тиждень, а до другої групи входили 29 пасивних футболістів середнім віком $36,17 \pm 2,42$, які не займалися оздоровчою фізичною активністю. Склад тіла оцінювали за допомогою аналізатора TANITA BC-601, методом біоелектричного імпендансу, який став еталонним методом аналізу складу тіла в наукових дослідженнях. Одержані такі змінні: висота тіла (см), маса тіла (кг), маса жиру (%), маса м'язів (кг), маса кісток (кг), індекс маси тіла ($\text{кг}/\text{м}^2$), споживання калорій – добове споживання калорій (ккал), життєздатність тіла, кількість води в тілі (%), вісцеральний жир (%).

Результати. Групи не відрізняються за такими змінними: висота тіла (висота тіла, НВН), споживання калорій –

добове споживання калорій (добове споживання калорій, DCI), життєздатність тіла (рівень базального метаболізму, BMR) та кількість води в тілі (загальний об'єм крові, TBV), тому що $p > 0,05$. У тих змінних, за якими оцінювали масу тіла, масу жирової тканини та м'язів тіла, масу тіла (маса тіла, BWT), масу жиру (відсоток жиру в організмі, BFP), масу м'язів (загальна маса тіла, TBM), масу кісток (мінеральна щільність кісток, BMD), індекс маси тіла (індекс маси тіла, BMI) та вісцеральний жир (черевний вісцеральний жир, AVF), було одержано статистично значущу відмінність $p < 0,05$ на користь групи пасивних футболістів, які займалися оздоровчим футзалом.

Висновки. Можна сказати, що оздоровчий футзал як фізична активність є ефективним засобом покращення складу тіла не лише для пасивних футболістів, але й для всіх осіб усіх вікових категорій, незалежно від статі. Інтенсивні й тривалі заняття оздоровчим футзалом є ефективним способом зменшення вмісту жиру в організмі в генеральній сукупності пасивних футболістів середнього віку.

Ключові слова: оздоровчий футзал, склад тіла, пасивні футболісти, змінні.

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