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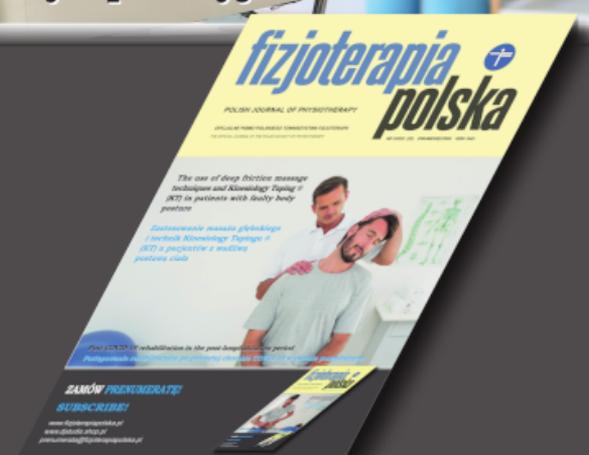
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Sukces czy porażka? Czyli jak wygląda sytuacja w zakresie szczepień ochronnych w Polsce?



Cztery uczelnie – Centrum Medyczne Kształcenia Podyplomowego, Warszawski Uniwersytet Medyczny, Akademia Leona Koźmińskiego i Uniwersytet SWPS zorganizowały konferencję naukową w ramach Projektu „Budowanie zaufania do szczepień ochronnych z wykorzystaniem najnowszych narzędzi komunikacji i wpływu społecznego”.

Podczas czterech paneli dyskusyjnych eksperci, naukowcy, lekarze, psychologowie, przedstawiciele instytucji publicznych dyskutowali na temat szans i wyzwań stojących przed systemem szczepień w Polsce.

Nie da się zaprzeczyć faktom – szczepienia ochronne są najefektywniejszą metodą zwalczania chorób zakaźnych. Podnoszenie zaufania do szczepień, które przekłada się na poziom wyszczepienia populacji, jest więc kluczowym wyzwaniem stojącym przed wszystkim odpowiedzialnymi za zdrowie publiczne w Polsce.

Dużym sukcesem i krokiem w dobrym kierunku było wprowadzenie szczepień w aptekach – podkreślił prof. Jarosław Pinkas, Konsultant Krajowy w dziedzinie zdrowia publicznego.

Niemniej, mimo szeroko prowadzonej kampanii medialnej, Polska należy do krajów o najniższym poziomie wyszczepienia przeciw COVID-19 w Europie (niepełna 60% populacji zostało w pełni zaszczepionych). Co roku w naszym kraju przeciw wirusowi grypy szczepi się jedynie 4-6% osób. Według danych PZH-NIPZ liczba uchyleń od szczepień obowiązkowych wśród dzieci w okresie od 2016 do 2020 roku wzrosła 2-krotnie z 23 tys. do 50.5 tys.

„Szczepienia przeciwko grypie u pracodawców bardzo zmniejszają absencję w pracy, ta sama prawidłowość dotyczy szczepień rotawirusowych” – mówił prof. Marcin Czech



Z danych uzyskanych przez Warszawski Uniwersytet Medyczny wynika, że postawy mieszkańców Polski wobec szczepień nie są spójne. Może to w przyszłości spowodować dalszy spadek poziomu wyszczepienia populacji, a w dalszej perspektywie wzrost zagrożenia epidemiologicznego.



W ramach panelu prowadzonego przez Uniwersytet SWPS zastanawiano się nad przyczynami postaw wobec szczepień. Pierwszym skojarzeniem, jakie większość Polaków wypowiada po hasła „szczepienia” jest „koronawirus”. I choć rzeczywiście od końca 2020 roku szczepienia przeciwko COVID-19 stały się jednym z bardzo ważnych elementów debaty publicznej, to przecież rosnąca liczba osób uchylających się od szczepień na takie choroby jak odra czy krztusiec była ważną kwestią społeczną już przed marcem 2020 roku.

Jednym z kluczowych wyzwań stojących przed systemem szczepień w Polsce jest walka z fake newsami, podkreślali eksperci Akademii Leona Koźmińskiego. Czy dezinformację naukową można interpretować w kategoriach cyberwojny? Czy jest to zagrożenie porównywalne z katastrofą klimatyczną, bądź rozwojem techniki AI? Jaką rolę odgrywają w tym procesie media społecznościowe? To pytania z którymi musimy się jak najszybciej zmierzyć.

Mimo wszystko wysoka wyszczepialność w Polsce to sukces wszystkich profesjonalistów medycznych i osób działających na rzecz zdrowia publicznego. Wciąż zdecydowana większość Polaków dokonuje właściwych wyborów zdrowotnych. To optymistyczny wniosek płynący z konferencji CMKP, WUM, SWPS i ALK. Jednak nic nie jest dane raz na zawsze – pojawiające się wyzwania powinny mobilizować lekarzy, naukowców, edukatorów, przedstawicieli administracji publicznej do szukania nowych sposobów dotarcia z komunikatem zachęcającym do szczepień i podejmowania zdecydowanych działań na rzecz walki z dezinformacją.





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Do Recommended Dietary Allowances (RDA) and levels of physical activity help to maintain fitness status? Study on futsal women's

Czy zalecane spożycie (RDA) i poziomy aktywności fizycznej pomagają w utrzymaniu sprawności fizycznej? Badanie zawodniczek futsalu

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Abstract

Introduction. The level of fitness is fundamental in the athlete's success in achieving optimum performance. **Aim.** This paper aims to know the rate of recommended dietary allowances (RDA) and the physical activity to stay fit. **Material and Methods.** Analytical observational analysis with the cross-sectional design was the approach used in this study. Participants in this study is women's futsal player of 16 subjects was selected for measures of physical health, macronutrient consumption, nutritional status, nutritional awareness, and level of physical activity. Fitness levels were assessed using a Multi-stage Fitness Test (MFT), and nutritional knowledge and physical activity with the International Physical Activity Questionnaire (IPAQ). Analysis of data is carried out in univariate, bivariate, and multivariate form using statistical software. **Results.** The findings of this analysis are that energy consumption, carbohydrates, and proteins are all under the RDA for most female futsal athletes. Nutritional status is not a significant relation with the degree of fitness. Better dietary awareness may enable us to pay more attention to safer and more healthy eating behavior. **The conclusion** is that the average intake of calories, carbohydrates, and proteins in most female futsal athletes is still well below the RDA. Nutritional status has no significant relationship with fitness level. Good nutritional knowledge will encourage a person to pay more attention to his eating behavior to be healthier and more balanced. **Conclusions.** The conclusion is that the average intake of energy, carbohydrates, and protein in most female futsal athletes is still far below the recommended Nutritional Adequacy Rate (RDA).

Keywords

futsal, physical activity, physical fitness, recommended dietary allowances

Streszczenie

Wstęp. Poziom sprawności ma fundamentalne znaczenie dla sukcesu sportowca w osiągnięciu optymalnych wyników. **Cel.** Celem tego artykułu jest poznanie wskaźnika zalecanych diet (RDA) i aktywności fizycznej, aby zachować formę. **Materiał i metody.** Analityczna analiza obserwacyjna z projektem przekrojowym była podejściem zastosowanym w tym badaniu. Uczestniczki tego badania to zawodniczka futsalu. 16 badanych zostało wybranych do pomiaru zdrowia fizycznego, spożycia makroskładników odżywczych, stanu odżywienia, świadomości żywieniowej i poziomu aktywności fizycznej. Poziom sprawności oceniano za pomocą wieloetapowego testu sprawności (MFT), a wiedzy o odżywianiu i aktywności fizycznej za pomocą Międzynarodowego Kwestionariusza Aktywności Fizycznej (IPAQ). Analiza danych przeprowadzana jest w formie jednowymiarowej, dwuwymiarowej i wielowymiarowej za pomocą oprogramowania statystycznego. **Wyniki.** Wyniki tej analizy wskazują, że zużycie energii, węglowodany i białka są zgodne z RDA dla większości zawodniczek futsalu. Stan odżywienia nie ma istotnego związku ze stopniem sprawności. Lepsza świadomość żywieniowa może umożliwić zwracanie większej uwagi na bezpieczniejsze i zdrowsze zachowania żywieniowe. **Wnioski.** Średnie spożycie energii, węglowodanów i białka u większości zawodniczek futsalu jest nadal znacznie poniżej zalecanego wskaźnika adekwatności żywieniowej (ang. Nutritional Adequacy Rate, RDA).

Słowa kluczowe

futsal, aktywność fizyczna, sprawność fizyczna, zalecane diety

Introduction

Futsal is a term given to two teams playing indoor football sports. Futsal is a variant of a football game that is performed indoors with high physical demands of five players, including the goalkeeper [1]. The international football association of federations (FIFA) has released regulations relating to the indoor sport as an alternative to football [2]. Futsal popularity has grown in recent years, with more than 12 million people participating in the sport from different parts of the world [3]. In addition to the ability to run (sprint) and the large muscle mass, futsal sports rely on high-intensity frequent movements requiring high aerobic capacity [4]. Physiologically, the futsal match is a competition of high intensity, using aerobic and anaerobic capacities [5].

The study reported that futsal is a form of multiple sprints sport with higher intensity movements than other sporadic sports such as football, basketball, and handball [6]. So, futsal player wants proper body fitness. Several factors affect physical health levels like nutrient intake [7] and nutritional status [8]. Therefore, it is crucial in futsal sport for the physical fitness of a prime player [9]. The nutritional awareness importance is critical in deciding athletes' success in the field, but to what degree the stress affects the physical health of athletes still needs to be checked. However, good dietary awareness can create healthier eating habits, which will later boost the various components of physical fitness, such as body structure, anaerobic strength, and endurance [10].

Furthermore, the study results showed that nutrient intake is related to the level of nutritional awareness and nutritional status [11]. Proper dietary intake is required in terms of quality and quantity to achieve an optimal nutritional status. Physical activity is a further factor impacting physical fitness [12]. Contrary to its success, there is not much work on futsal, as opposed to other sports such as football [13]. To date, futsal work analyzes more the nature of game or the player's physical demands and results during training or competing [14]. Research on futsal and its nutritional relationship is minimal and rare, particularly in athletes and women's teams [15]. Therefore, this research is performed to know the RDA and physical activity to maintain fitness.

Method

This study is a cross-sectional research observational quantitative analysis. Using a cross sectional design because the research carried out measurements and observations at the same time. This sample is a member of the futsal student activity unit (SAU) with inclusion requirements of 1) futsal SAU; 2) in the last three months, implement the exercise routine; 3) have no history of metabolic and cardiovascular conditions that may impair physical activity. A continuous process of sampling achieves retrieval of the subject. For this study, the minimum item needed is 16 respondents. Independent variables in this analysis include the consump-

tion of macro-nutrients (energy, carbohydrates, proteins, and fats), nutritional status, nutritional awareness, and physical activity levels. In this analysis, the dependent variable is the fitness level. Data collected included weight, height, body mass index, macro-nutrient consumption, diet awareness, and physical activity. Data on macronutrient intake obtained using the 24-hour food recall process, which is further analyzed by the nutriture program. Nutrient consumption is also compared with RDA to collect data.

Nutritional status is achieved by calculating anthropometry to know the respondents' body mass index. Calculate weight using 0.1 kg precision digital scales and calculate height using a 0.1 cm precision microtome. The levels of nutritional knowledge are assessed using the general questionnaire on nutritional knowledge. While physical activity was measured using the international physical activity questionnaire (IPAQ) which consisted of 27 questions covering 5 sections that described the average amount of energy (metabolic equivalent) used in carrying out daily activities. The fitness level was measured using the multistage fitness test (MFT). MFT is performed by measuring cardiovascular endurance which describes the subject's VO₂max. The test was conducted with the subject running on a 20-meter-long track back and forth following the signal at an increasing speed with each level. The level achieved by the subject will be converted into a norm that describes the level of VO₂max.

The data collection procedure in this study was carried out simultaneously for all subjects. A total of 16 members of the women's futsal SAU were taken to collect data on macronutrient intake using the 24-hour food recall method through interviews and filling out the IPAQ questionnaire, after which the subjects took anthropometric measurements and MFT tests. Data analysis was carried out univariate, bivariate, and multivariate using the SPSS program. Univariate analysis was used to describe the characteristics of research subjects descriptively, which included age, weight, height, nutritional status, food intake, level of knowledge, and level of physical activity. In addition, bivariate analysis was used to analyze the variables involved in the study.

Results and discussion

A total of 16 SAU futsal women participants consisting of two to six-semester students were study respondents. The respondents averaged 20.0 ± 1.32 years, with an age range of 18–22 years. In the study, the respondents' age was included in the late adolescent category (ages 18–25). The new youth is not a time of children or adults but a start to growth [16]. The numerical results of the anthropometry measurements on body weight and height were 53.48 ± 7.92 kg and 1.55 ± 0.05 meters (Table 1). The results of anthropometry measurements on body weight and height obtained numerical results of 53.48 ± 7.92 kilograms and 1.55 ± 0.05 meters which is shown in Table 1.

Table 1. Characteristics of respondents

Characteristics of respondents	Min	Max	Mean \pm SD
Age [years]	18	22	20.0 ± 1.32
Weight [kg]	41	64.5	53.48 ± 7.92
Height [m]	1.46	1.63	1.55 ± 0.05
Body Mass Index [kg/m ²]	16.7	30.3	22.26 ± 3.34

Most SAU futsal women's participants have an excellent nutritional status (75%) with an average BMI of $22.26 \pm 3.34 \text{ kg/m}^2$. A total of two respondents (12.5 percent) have lean dietary status (underweight), and each respondent has overweight and obese nutritional status (6.25 percent). Weight management methods and health change in we need adolescents because BMI and weight were related to poor posture [17]. Most respondents have a good knowledge of nutrition (43.75 percent). Just four

respondents conducted healthy physical activity (24 percent) High fitness level as shown Table 2. Functional nutritional status is vital for maintaining body health. Nutritional counseling needs to be provided, especially in women, to make their lives more productive, safer, and prosperous [18]. Therefore, given that the respondent is the athlete who is required to be in shape, it is essential to give directions concerning a nutritional condition.

Table 2. Nutritional Status distribution, dietary knowledge level, physical activity level, and fitness level of respondents

Characteristics	Frequency (n)	Percentage (%)
Nutritional status		
Underweight	2	12.5
Normal	12	75
Overweight	1	6.25
Obesity	1	6.25
Total	16	100
Nutrition knowledge level		
Low	4	25
Moderate	7	43.75
High	5	31.25
Total	16	100
Physical activity level		
Light	6	31.25
Moderate	6	31.25
Heavy	4	25
Total	16	100
Physical activity level		
Light	6	31.25
Moderate	6	31.25
Heavy	4	25
Total	16	100

The results of this study showed that, in most female futsal athletes, the average intake of energy, carbohydrates, and proteins is still well below the minimum RDA. Such results are close to previous study findings where there is still a significant amount of unbalanced diet in research subjects [19]. While most futsal players have a typical index of body mass 75%, but the consumption of macronutrients is still shallow and unbalanced, where most of the nutrition comes from fat and partially from carbohydrates and proteins. Previous experiments Condo et al. [20] and Burke et al. [21] mention that low carbohydrate intake is healthy, particularly in female ath-

letes. Low carbohydrate intake is viewed as a method to lose fat and weight. Carbohydrate is one of the significant sources of energy in exercise, where its role in enhancing exercise efficiency (high intensity and low pressure) is no longer disputed by experts [22, 23]. Protein levels are typically higher in athletes (1.2–2.0 g / (kg × day)) compared with the average nutritional adequacy rate for healthy people (0.8 g / (kg × day)) [24, 25]. Partly due to elevated amino acid oxidation levels during endurance workouts. The relationship between energy and nutrient intake with the VO_2max value of a futsal athlete can be shown in Table 3.

Table 3. Relationship between energy intake and nutrient substance with value VO₂max

Nutrients	Intake average ± SD	VO ₂ max value	
		p-value	r
Energy [kcal]	1677.1 ± 592.1	0.611	0.138
Carbohydrate [gram]	225.4 ± 81	0.913	-0.030
Protein [gram]	54.2 ± 26.9	0.678	-0.113
Fat [gram]	70.6 ± 33.9	0.349	0.251

The results of the Spearman correlation test on Table 3 indicate that the consumption of energy ($p = 0.611$; $r = 0.138$), carbohydrate ($p = 0.913$; $r = -0.030$), protein ($p = 0.678$; $r = 0.113$) and fat ($p = 0.349$; $r = 0.251$) are not linked to the fitness level of the members of the SAU futsal. Previous studies which also examined the relationship between eating consumption and body health indicated that sufficient feeding is needed [26, 27]. Futsal is a sport consisting of a wide variety of repetitive multiplanar moves of high intensity [28] and needs high anaerobic efficiency and excellent operating capabilities [29]. Some studies have shown that children

who cannot hear less than their healthy peers, regardless of gender, are physically fit [30]. Nutrition is an essential element in improving an athlete's success. Lack of nutrient and energy intake on female futsal players can lead to muscle mass loss, menstrual disorders, easily fatigued, and increased risk of injury, as well as prolonged recovery time [31]. This result is one of the limitations of the study, because the sample size was too small and prone to bias during 24-H recall. Meanwhile, the results of nutritional status, level of nutritional knowledge and physical activity with the level of fitness of a futsal athlete can be shown in Table 4.

Table 4. Cross-tabulation between nutritional status, nutritional knowledge level, and physical activity level with fitness level

Characteristics	Fitness Level								p-value	
	Low		Moderate		High		Very High			
	n	%	n	%	n	%	n	%		
Nutritional status										
Under weight	1	20	1	16.7	0	0	0	0		
Normal	2	40	5	83.3	3	100	2	100		
Overweight	1	20	0	0	0	0	0	0	0.676	
Obesity	1	20	0	0	0	0	0	0		
Total	5	100	6	100	3	100	2	100		
Nutrition knowledge level										
Low	3	60	1	16.7	0	0	0	0		
Moderate	2	40	4	66.6	0	0	1	50		
High	0	0	1	16.7	3	100	1	50	0.049*	
Total	5	100	6	100	3	100	2	100		
Level of physical activity										
Low	2	40	3	50	1	33.3	0	0		
Moderate	3	60	3	50	0	0	0	0		
High	0	0	0	0	2	66.7	2	100		
Total	5	100	6	100	3	100	2	100	0.041*	

*Significant against $\alpha = 0.05$

Results of cross-tabulation of variable nutritional status with an SAU Futsal women's fitness level participant showed no vital correlation. Levels of nutritional awareness indicate a secure connection to the SAU member's futsal women's fitness level. Analysis identical to the one seen [32], which shows a strong association between nutritional awareness and VO₂max ($P = 0.331$). The stu-

dy was conducted to assess nutritional knowledge, practice, nutritional status to determine nutritional adequacy, and body composition that predicted physical performance in 40 football players and 50 hockey players among adolescent athletes. Sub-optimal athletic performance reported associated with low nutritional knowledge and a lack of understanding of additional

nutritional needs among athletes [33]. This study demonstrates a clear positive association between calorie intake and $VO_2\text{max}$, thus reinforcing the need for sufficient energy intake to achieve optimum athletic performance [34].

The application of nutritional and dietary patterns will enhance athletic efficiency if channeled to meet the optimal energy needs maintaining healthy muscle mass and weight. Athletes need a functional fuel capacity to maintain success in the game. We must also understand the basic knowledge of nutrients from exercise, stop missing meals, and follow balanced dietary habits according to their nutritional and metabolic needs [35]. Respondents of this study are late adolescent classes known to frequently neglect food consumption, one of which is due to insufficient knowledge of nutrition. Low nutritional awareness among adolescents is a widespread issue, as the effect is related to poor physical and mental health [36]. Athletes who understand the essential functions of an ideal diet and represent the information about their dietary activities tend to be more successful in their sporting achievements [37, 38]. Nutrition can influence fitness, weight, and body structure, the quality of substrates during exercise, recovery after use, and can eventually outstand in sports performance [39].

The level of physical activity demonstrates a secure connection to the futsal women's SAU fitness level. Teenagers doing physical exercise have higher fitness than those not performing physical activity [40]. Similar things are found Gim and Choi [41], the performance of weekly sports affecting $VO_2\text{max}$, metabolic resting rate, and anaerobic threshold (anaerobic threshold), both measures of human physical and health capacities. With the difference in duration of exercises, these three values increase. Therefore, when student-athletes were divided into aerobic pool groups and anaerobic pool groups and swim intermittently at le-

ast three times per week for six weeks, both groups showed a statistically significant increase in $VO_2\text{max}$ [42]. A wide range of exercises performed consistently affects the $VO_2\text{max}$, the metabolic rate of rest, and the anaerobic threshold positively. Further, physical activity performed may change the overall course of the body's organ system [43]. This study is different from the others because previous research has focused more on football, not futsal. In addition, research is still widely used for male athletes.

Conclusions

The average intake of calories, carbohydrates, and proteins are still well below the minimum RDA for most female futsal athletes. One of the drawbacks of this study is the limited number of samples and bias at the time of 24-H recall, so it is less able to explain the relationship between dietary intake and fitness level. Nutritional knowledge and levels of physical activity related to the fitness of athlete's futsal women, where good nutritional awareness can allow one to pay more attention to the safer and more healthy diet behavior. This work can be used as a framework for subsequent studies examining nutritional information in women's futsal athletes and their relationship to fitness rates. For further research related to similar topics, it is better to measure micronutrients in female futsal athletes so that nutritional intake can be better known. In addition, in subsequent studies, larger research respondents can be used so that the results obtained are more representative.

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