

Research Article

Assessment of Nutritional Knowledge, Alcohol and Tobacco Consumption in Amateur and Elite Youth Football Players

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Keyword: Nutrition; Nutritional knowledge; Sports nutrition; Sports; Alcohol; Tobacco; Consumption choices



Abstract

Introduction: Nutrition is increasingly recognized as a key component of optimal sports performance. On the other hand, insufficient and continuous food intake can compromise athletic performance and success where Nutritional Knowledge can play a leading role.

Methods: One hundred and three youth athletes from 6 different clubs belonging to the District, Honor, and National Championship participated in this study. To assess Nutritional Knowledge, consumption of alcohol and tobacco the Abridged Nutrition for Sport Knowledge Questionnaire was applied.

Results: The percentage of Nutritional Knowledge obtained in the District Championship was 31.25%, in the Honors it was 35.56% and in the National Championship it was 35.02%. No significant differences were found between the Nutritional Knowledge of athletes. In turn, there were statistical differences in the consumption of alcohol and tobacco among the athletes of the 3 Championships, with the District division having the highest percentage of smokers (100%) and alcohol consumers (42.6%).

Conclusion: It is essential to increase the Nutritional Knowledge observed in these young athletes since it can have an influential role in their food choices.

Introduction

Nutrition is increasingly recognized as a key component of optimal sports performance [1]. It plays a significant role in the performance of athletes, through an individualized and balanced diet that positively influences body composition, adaptation to training, recovery, fatigue prevention, and injury reduction. Insufficient/deficient and continuous food intake can therefore jeopardize performance and sporting success [1]. Athletes, mostly young people but also adults, need to understand which foods are suitable for providing energy when to eat certain foods, how to eat during an event, and when/what to eat to recover after exercise [2]. Understanding some concepts about nutrition on the part

of the athlete is essential but little observed in practice [1]. This need to understand athletes' Nutritional Knowledge (NK) has been pursued to such an extent that various tools have been developed and validated for this purpose [1,3-5]. NK is the ability to understand concepts of healthy and balanced nutrition, where it can influence behavior and eating habits which, in turn, can affect health status [5,6]. The age group that seems to have the most impact on the change in NK is adolescence, which is generally characterized by rapid physical, psychological, and emotional changes [5,7]. Although many teenage athletes believe that an adequate nutritional plan plays a fundamental role in sports performance, the specific nutritional needs for the sport they play are often not met [5,7].



One of the biggest problems in Portugal is alcohol consumption, as it is a legal drug, accepted by society, and one of the first that young people are experimenting with at an increasingly younger age [8]. Alcohol consumption is harmful, whether you play sports or not, and in athletes it can not only interfere with their health but also their sporting performance [9]. On the other hand, alcohol consumption by competitive athletes can have very damaging effects, since acute ingestion can reduce a series of essential characteristics for an athlete such as reaction time, precision, balance, and coordination, and can impair body temperature regulation during exercise in cold environments, where the nutritionist must intervene effectively to stop the problem [9,10].

Just as alcohol consumption is very detrimental to the proper functioning of the body and performance, tobacco consumption plays a similar role at this level [8]. Tobacco use poses a major risk to the health of the population and young people have the highest incidence of starting to use this drug [8]. Although the harms of smoking are publicly known, such as cancer, stomach ulcers, chronic bronchitis, and atherosclerosis, the prevalence of smoking remains high in the general population [8].

Understanding young people's lifestyles, with the main focus on physical activity and alcohol and tobacco consumption, is of great importance to understand this reality and adopt strategies to improve young people's lifestyles [8]. To optimize the athlete's performance, health, and proper development during adolescence, good eating habits and an adequate intake of macronutrients and micronutrients are essential, and a better lifestyle can also be achieved by increasing the NK [5,11]. It is therefore necessary to understand the NK of athletes so that they are made aware of the importance of nutrition at a sporting level [5].

This study aimed to assess the NK in the youth divisions of football teams in the District, Honor, and National Championships, as well as the consumption of alcohol and tobacco.

Methods

This study was classified as observational, analytical, and cross-sectional. As for the level of Knowledge, it was classified as Level II (Descriptive-Correlational). The type of sample in this study was non-probabilistic. The sampling technique used was convenience sampling. The inclusion criteria were: healthy athletes; over 15 years of age and playing football for at least 6 months. The exclusion criteria included: completion of certified training in the area of Nutrition or obtaining a degree in Dietetics and Nutrition/Nutrition Sciences.

The study was carried out in football clubs, namely Grupo Desportivo Santo Amaro (GD Santo Amaro), Academia Desportiva do Colégio Conciliar de Maria Imaculada (Academia CCMI), União Desportiva da Batalha (UDB), Grupo Recreativo

Amigos da Paz (GRAP), Atlético Clube Marinhense (ACM) and Vitória Sport Clube (VSC). The questionnaire was related to the assessment of NK, validated with the original name: Abridged Nutrition for Sport Knowledge Questionnaire (a-NSKQ), and which was previously authorized by the author for use. Other relevant indicators to be studied were added to the author's main questionnaire: 'alcohol consumption' (number of drinks consumed during the week and at the weekend), 'tobacco consumption' (number of cigarettes/packs smoked per week), and biographical data: 'age', 'weight' and 'height'. The structure of the questionnaire was divided into 11 questions on 'General Nutrition Knowledge (GNK)', 24 questions on 'Sports Nutrition Knowledge (SNK)', 5 questions on 'alcohol consumption', and 4 questions on 'tobacco consumption'. The data obtained through the a-NSKQ, the quantification of alcohol and tobacco consumption, and some information from the athletes (age, height, weight, and division of the club they belong to) were analyzed statistically using IBM SPSS Statistics software. To answer the hypotheses formulated, the following statistical tests were used: Anova I Factor, Pearson's Chi-Square, and Pearson's Chi-Square Post-Hoc. The research project was approved by the Ethics Committee of the Polytechnic Institute of Coimbra (Opinion No. 9_CEIPC/01-2022). To carry out the study in the sports clubs, their approval was required and, once the organizations had given their confirmation, each athlete or their legal representative - in the case of underage athletes - needed to sign the Free and Informed Consent Form. All study participants signed and delivered an informed consent form.

Results

The final sample included 103 athletes (32 from the District Championship, 36 from the Honors Championship, and 35 from the National Championship). From the District Championship, the teams assessed were GD Santo Amaro (16 players) and Academia CCMI (16 players). As for the Honors Championship, UDB participated with 19 players and GRAP with 17. Finally, the National Championship included ACM (14 players) and VSC (21 players). The questionnaires revealed that the Honor Championship had the best NK results (35.55%) while the District Championship had the lowest (31.25%). There were no significant differences in NK between the different divisions ($p = 0.26$, $p < 0.05$) (Table 1).

There were no significant differences in General Nutrition Knowledge between the athletes according to the different divisions ($p = 0.307$, $p < 0.05$). The Championship with the

Table 1: Relationship between Nutritional Knowledge and Championship.

Championship	N	Nutritional Knowledge (%)			p - value ^(a)
		M ± SD	Minimum	Maximum	
District	32	31,250 ± 12,7143	5,7	51,4	0,260
Honor	36	35,556 ± 11,3352	2,9	57,1	
National	35	35,020 ± 10,6757	8,6	54,3	
Total	103	34,036 ± 11,6100	2,9	57,1	

M: Mean; SD: Standard Deviation; (a) Statistical test: ANOVA I factor (p - value < 0.05)



best results in terms of General Nutrition Knowledge was the Honors Championship (47.98%) and the one with the lowest values for this indicator was the District Championship (42.33%). On the other hand, the National Championship obtained 47.53% of the same indicator (Table 2).

There were no significant differences in the level of Sports Nutrition Knowledge among the athletes according to the different divisions ($p = 0.447, p < 0.05$). The Championship with the best results in terms of Sports Nutrition Knowledge was the Honors Championship (29.86%) and the one with the lowest values was the District Championship (26.17%). In

turn, the National Championship obtained 29.28% of the same indicator (Table 3).

There were significant differences in the type of alcohol consumed in the different football leagues ($p = 0.004, p < 0.05$). Of the drinkers, more than 40% were in the District Championship, while the percentage of drinkers in the Honor and National divisions was very similar. Regarding occasional drinkers, over 60% were in the Honor division ($p = 0.004, p < 0.006$), while in the District and National, the figures were similar, 15.8% and 21.1% respectively. Regarding non-alcohol drinkers, the vast majority (53.3%) were in the National Championship, 26.7% in the Honor Division, and 20% in the District Division (Table 4).

Regarding the type of smoker in the different divisions, there were significant differences ($p = 0.01, p < 0.05$), given that all the smokers were in the District Championship ($p = 0.001, p < 0.006$). Regarding occasional smokers, 45.5% were in the Honor League, 36.4% in the District League, and the lowest percentage (18.2%) in the National League. Regarding the non-smokers, which comprised most of the athletes (87 individuals) who took part in the study, the percentages in the Honor and National Championships were very similar, 35.6% and 37.9% respectively, and in the District Championship 26.4% (Table 5).

Discussion

After analyzing the results, it can be concluded that

Table 2: Relationship between Knowledge of General Nutrition and the Championship.

Knowledge of General Nutrition (%)					
Championship	N	M ± SD	Minimum	Maximum	p - value ^(a)
District	32	42,330 ± 14,8949	9,1	63,6	0,307
Honor	36	47,980 ± 19,7518	9,1	81,8	
National	35	47,532 ± 14,1328	18,2	81,8	
Total	103	46,072 ± 16,5616	9,1	81,8	

M: Mean; SD: Standard Deviation; (a) Statistical test: ANOVA I factor ($p - value < 0.05$)

Table 3: Relationship between Knowledge of Sports Nutrition and the Championship.

Knowledge of Sports Nutrition (%)					
Championship	N	M ± SD	Minimum	Maximum	p - value ^(a)
District	32	26,172 ± 14,0895	0	50	0,447
Honor	36	29,861 ± 11,5513	0	50	
National	35	29,286 ± 12,4790	4,2	54,2	
Total	103	28,519 ± 12,6725	0	54,2	

M: Mean; SD: Standard Deviation; (a) Statistical test: ANOVA I factor ($p - value < 0.05$)

Table 4: Relationship between Alcohol consumption and the Championship.

Championship	Alcohol				Total
	Non-Consumer	Occasional Consumer	Consumers		
District	Count	6	3	23	32
	% Column	20%	15,8%	42,6%	31,1%
	Post-Hoc ($p - value$)	0,119	0,112	0,008	-
Honor	Count	8	12	16	36
	% Column	26,7%	63,2%	29,6%	35%
	Post-Hoc ($p - value$)	0,259	0,004	0,234	-
National	Count	16	4	15	35
	% Column	53,3%	21,1%	27,8%	34%
	Post-Hoc ($p - value$)	0,008	0,187	0,162	-
Total	Count	30	19	54	103
	% Column	100%	100%	100%	100%

Pearson's Chi-Square Statistical Test: ($p - value < 0.05$); $p = 0.004$ Post-Hoc Pearson's Chi-Square ($p - value < 0.006$)

Table 5: Relationship between Tobacco Consumption and Championship.

Championship	Tobacco			Total	
	Non-Smoker	Occasional Smoker	Smoker		
District	Count	23	4	5	32
	% Column	26,4%	36,4%	100%	31,3%
	Post-Hoc ($p - value$)	0,018	0,689	0,001	-
Honor	Count	31	5	0	36
	% Column	35,6%	45,5%	0%	35%
	Post-Hoc ($p - value$)	0,734	0,441	0,930	-
National	Count	33	2	0	35
	% Column	37,9%	18,2%	0%	34%
	Post-Hoc ($p - value$)	0,049	0,242	0,101	-
Total	Count	87	11	5	103
	% Column	100%	100%	100%	100%

Pearson's Chi-Square Statistical Test: ($p - value < 0.05$); $p = 0.010$ Post-Hoc Pearson's Chi-Square ($p - value < 0.006$)



there were no significant differences in the NK of the 3 championships observed. In the study by Duarte Junior, et al. and Elshoryi, et al. the average percentage of correct answers (34.45% and 35% respectively) was higher than in the District Championship in this study, but lower than in the Honor and National Championships [11,12]. In Haryana, India, an investigation was carried out by Davar on hockey players aged between 17 and 23, where the NK was similar to that of the Honor and National Championships in this study (38.8%) [13]. For the most part, the NK of the athletes in the aforementioned studies showed percentages of 40% to 50% correct answers. In 168 young professional football players, McCrink, et al. found an average of 40.2% of NK, while Mitchell, et al. with a sample of 190 players, obtained 46.5% of NK [1], [14]. In two studies of Australian professional footballers, the NK was 46% [15,16]. Trakman, et al. in young Australian non-elite athletes obtained an average of 47% correct answers [4]. In two studies of male students in elite sports, Werner, et al. and Jagim, et al. showed a similar NK in the athletes under study, 44.8% and 49.5% respectively [7,17]. Rosi, et al., in 264 young Italian footballers, tried to apply a questionnaire to assess NK which revealed an average of 48.4% correct answers [5]. In 2012, a study was carried out by Torres-McGehee, et al. on athletes from Division I, II, and III of the National Collegiate Athletic Association (NCAA) where the average number of correct answers (54.9%) in the 3 divisions was much higher than in the present study in the District, Honors and National Championships. [18]. In a sample of 46 elite Australian athletes, Devlin and Belski showed an NK of 60.5% of athletes [6]. Much higher results concerning NK were found in a 2015 study by Alaunyte, et al. in elite rugby athletes with a score of 72.82% and in a study by Sedek and Yih in athletes from different types of sports in Malaysia who showed values of 83.6%. [19,20]. A possible explanation for the low NK values found in this study and the others is the fact that young athletes are not interested in nutrition, since at this stage of growth, the search for identity, the struggle for independence and acceptance are usual characteristics of adolescents, where the intake of unhealthy food is recurrent [3]. Another probable explanation could be that the amateur clubs in this sample didn't have a full-time nutritionist on their premises, which could improve the NK of the most interested athletes [5]. Even in elite clubs, budgets, lack of time and latent competitive pressure can be limitations to providing athletes with better nutritional support [1]. Tam, et al. state that nutritional education is necessary to promote better NK in young people. He reported that in most of the studies observed, there was a significant increase in NK after dietary education (average increase of 17%) [21].

Regarding alcohol consumption, in an investigation carried out by Taylor, et al. in 2017, it was reported that young NCAA Division 3 athletes had higher drinking habits than Division 1 and 2 athletes, just as it was possible to visualize in the Championships of the present study [22]. Elite

student-athletes in a study by Martinsen and Sundgot-Borgen reported drinking several times a week, in contrast to the National Championships in this research [23]. Taylor, in 2013, reported that there were no significant differences in the alcohol consumption of the 3 NCAA divisions [24]. High levels of alcohol consumption by athletes can be explained by young athletes entering universities where alcohol consumption is known to be high [22]. Taylor, et al. pointed out that the high consumption of alcoholic beverages by athletes in team sports compared to athletes in individual sports is due to the group spirit of all team members [22]. Regarding tobacco consumption, Martinsen and Sundgot-Borgen presented similar results to this research, since elite student-athletes had a lower smoking habit than non-elite student-athletes and, in this study, the smokers from the 3 Championships analyzed all belonged to the District Championship [23]. In 2012, Precioso, et al. reported that in a sample of 8,371 adolescents, 87.5% were non-smokers, as in this research, where the percentage of non-smokers was 84.47% [10]. Reading the results on smoking, the majority ($n = 87$ athletes) had no smoking habits. This can be explained by the amount of information available on the harmful effects of tobacco consumption and the good examples set by family, friends, or even coaches who don't smoke and influence young athletes not to develop smoking habits [10,23]. Intervention programs seem to be an interesting way of alerting young athletes to the dangers of tobacco and alcohol consumption to reduce the percentage of athletes who smoke and drink alcohol daily [5,7].

One of the limitations of this study was the fact that there have been several studies on the NK of athletes with different tools to the one used, namely the difference in the number of response items and the types of questions. Another limitation was that the young athletes may have underreported their tobacco or alcohol consumption for fear of denouncing their habits to colleagues or coaches, even though the data was confidential. The strengths of the research include the fact that the questionnaire presented to the athletes was always administered face-to-face, making it impossible to use the Internet or other means of obtaining answers to the questions. The questionnaire was validated for athletes' NKs and because it was short, the athletes didn't leave any questions unanswered. The translation of the questions into Portuguese was successful, as the athletes had no doubts about any of the questions.

It would be interesting to carry out more studies looking at young people in this age group (since the next level is professional adult football) which can serve as a stimulus for improving the nutritional awareness at the sports clubs and the importance that athletes should give to nutrition.

Conclusion

The NK of the athletes in this study was rather weak concerning the other research mentioned. Since NK was



weak, it was to be expected that GNK and SNK would also be weak. There were no significant differences between the three championships evaluated and the level of NK in the 103 athletes in the sample. Ensuring that the athlete knows how to acquire credible nutrition knowledge will benefit them in making better food choices, thus increasing their performance on the pitch and eating a healthier, more balanced diet.

Regarding alcohol and tobacco consumption, we found that there were significant differences between the various championships in the sample, where the competitiveness factor present in the different championships seems to be crucial to the choices that athletes can make. Intervention programs seem to be interesting for alerting young athletes to the dangers of tobacco and alcohol consumption to reduce the percentage of athletes who smoke and drink alcohol in their daily lives.

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