Спортивное питание

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THE IMPACT OF THE NEEDS AND ROLES OF NUTRITION COUNSELLING IN SPORT

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Aim. The aim of study was to identify the essential needs and roles of sport nutrition counselling. **Material and Methods.** 1410 subjects participated in the study: n = 564 (40 %) active athletes; n = 437 (31 %) nutrition and dietetics students; n = 409 (29 %) students of physical education and sports. The assessment targeted a survey based on a questionnaire containing 10 items with Likert responses (5), concerning the degree of needs and the impact of the roles of sport nutrition counselor. **Results.** The average number of subjects that rated the assessment questionnaire with maximum points 5 were 1082 subjects (76.73 %); 4 points 212 subjects (15.03 %); 3 points 85 subjects (6.06 %). The Cronbach's alpha coefficient of questionnaire was 0.926, valid number 1410, suggesting that the items have very high internal consistency and Kolmogorov–Smirnov Test showed data statistically normal of all items of questionnaire. **Conclusions.** To promote a healthy and active lifestyle, experts in sports nutrition counseling can identify, through a holistic approach, solutions to the issue of change and optimization of dietary habits according to subjects peculiarities and the specific nature of sports activities.

Keywords*: sport nutrition counseling; needs, roles, health; lifestyle; sport performance, eating behavior.*

Introduction

The world issues of obesity, sedentary life and incorrect diets require updated and efficient strategies for public education starting at a young age and throughout life concerning the right nutrition adjusted to age, gender, metabolic typology peculiarities completed by the index of physical activity and somatic typology.

We believe that changing mentalities reflected in sports and nutrition proactive behavior is in line with the current trends of athletes' education. We believe that sports nutrition counseling is an interdisciplinary congruency between nutritional and physical activities and sports fields. Recent research shows that optimizing the quality of life through the level of health and fitness is the result of the interrelation between the dietary control, the systematic practice of physical activities and lifestyle.

Latest studies on the need of nutritional counseling and improving dietary sports habits concluded that the responsibility of a sports nutrition counselor who provides guidance and assistance to a person is very high, because the results of this process will influence the evolution of lifestyle, quality of life and sports performance to a high extent [1–6].

The counseling process is a complex process of guidance, mentoring, intervention, monitoring, mediation and evaluation of human behaviors made by a qualified person called counselor in order to optimize individual performances [2, 7–10].

In our opinion a sports nutrition counselor is a qualified person whose academic level is a master's degree based on specialized knowledge and skills. The targeted potentialities in the nutritional counseling process are the following: action-oriented, dietary, psychological, relational, performance and self-management.

Correct nutrition behavior, good fitness condition and good health are the main conditions for an optimum quality of life [7, 11–17].

The responsibility of the counselor who provides support and guidance to people with problems and eating disorders is very high, with effects on a personal level (self-esteem, health, ethics) [2, 18, 19], on a professional level (reduction of

work capacity) and on a social level (problems of integration, discrimination) [2]. The evaluation of eating behavior provides important information about health, BMI, deficit of essential vitamins, mineral substances and food fibers, functional disorders of digestion [20–24]. Although athletes and dieticians are the primary factors, it is important to involve coaches, sports medicine staff and even parents, in terms of building basic education of proper nutrition [3, 25–28].

The necessary knowledge of a sports nutrition counselor focuses on: principles of nutrition, nutrients role for the body, nutritional supplements in relation to the type of effort, the composition of diets for athletes depending on the type of exercise, energy sources according to the types of effort, professional ethics, knowledge of efficient communication etc.

The aim of study was to identify the essential needs and roles of sport nutrition counseling. The paper is equal contribution of all authors.

Material and Methods

Participants. The survey comprised 1410 subjects, out of whom 564 (40 %) were active athletes and 864 (78.4 %) were students at the following specialties: nutrition and dietetics no = 437 (31 %), physical education and sports no = 409 (29 %). Students of our survey were affiliated to the following Universities in Romania: Tirgu Mures 169 (11.9 %), Bucuresti 141 (10 %), Cluj Napoca 125 (8.9 %), Galati 122 (8.6 %), Brasov 116 (8.3 %), Iasi 68 (4.8 %), Constanta 49 (3.5 %), Timisoara 42 (3 %), Sibiu 41 (2.9 %), Craiova 38 (2.7 %), Bacau 29 (2.1 %), Pitesti 24 (1.7 %). Active athletes come from big clubs in major cities in Romania. The sample structure: no = 862 (61.1 %) boys; no = 548 (38.9 %) girls; the average age 22.14 years old for students and 26.15 years old for active athletes. All participants were volunteers and for this type of study formal consent is not required.

Procedure. The research developed in period December 2016 – June 2017. The assessment targeted a survey based on a questionnaire concerning the degree of needs and the impact of the roles of sport nutrition counsellor (SNC). The questionnaire contains 10 items with Likert responses (5 points), 1 point representing the minimum and 5 points the maximum level of appreciation. The questionnaires used Google Form directly provided by online platform.

Statistical analysis. We used SPPS 22 for: Cronbach's alpha statistic index, the number and the percentage of subjects in relation to 5, 4, 3 points on each item, the arithmetic mean (X), the standard deviation (SD), the student t-test (t), the effect size (d), the one-Sample Kolmogorov–Smirnov Test (Z); the significance threshold p, for $p < .05$.

Results

The average number of the subjects that rated the assessment questionnaire with maximum 5 points were 1082 subjects (76.73 %); 4 points 212 subjects (15.03 %); 3 points 85 subjects (6.06 %); 2 points 31 subjects (2,18 %) (Table 1).

The average score (%) for each group of subjects according to the ranking was the following for 5 points: active athletes 420 (74.5 %), nutrition and dietetics students 365 (83.5 %), physical education and sport students 297 (72.6 %); 4 points: active athletes 86 (15.2 %), nutrition and dietetics students 57 (13 %), physical education and sport students 72 (17.6 %); 3 points: active athletes 45 (7.9 %), nutrition and dietetics students 18 (4.1 %), physical education and sport students 25 (6.1 %).

The pooled results (Table 1) highlight superior percentages obtained to all items for the maximum response 5. For 5 points, the maximum percentage was 81.2 % accounting for Item 5 “SNC’s role in personalizing diets according to sport or physical activity” and the minimum percentage value was 63.1 % being registered for Item 9 “SNC’s role in solving the doping problems of the athlete/practitioner of regular physical activities”.

For 4 points, the maximum percentage value was 17.7 % obtained to Item 4 “SNC’s role in optimizing athletes' performance” and the minimum percentage value was 11 % to Item 10 “SNC’s role in nutrition education of children/adults with obesity problems in order to improve health and quality of life”. For grade 3, the maximum value was 11.7 % obtained at Item 9 “SNC’s role in solving the doping problems of the athlete/practitioner of regular physical activities” and the minimum percentage value was 3.5 % to Item 5 “SNC’s role in the individualization of diets according to the sport or physical activity practiced”.

Statistical processing of the questionnaire for the sample of subjects highlighted statistically significant results for $p < 0.05$, $X \pm SD$ of the questionnaire was 4.642 ± 0.142. Kolmogorov–Smirnov Test showed statistically normal data for all items of questionnaire (Table 2).

Table 1

Descriptive responses for the results of the questionnaire assessing the roles of the sport nutrition counselor

Items	Subjects	Responses weight n (%)			X ± SD (points)
		5 points	4 points	3 points	
Item 1. How do you assess the need to implement the sport nutrition counselling?	Active athletes (564)	411 (72.8 %)	109 (19.3 %)	24 (4.2 %)	4.695 ± 0.746
	Nutrition students (437)	354 (81 %)	63 (14.4 %)	3 (0.6 %)	
	Sport students (409)	340 (83.1 %)	48 (11.7 %)	43 (10.5 %)	
	Total (1410)	1105 (78.4 %)	220 (15.6 %)	70 (5 %)	
Item 2. Do you appreciate the impact of SNC in guiding the nutritional behaviors of physical and sports practitioners?	Active athletes (564)	413 (73.2 %)	117 (20.7 %)	29 (5.1 %)	4.709 ± 0.836
	Nutrition students (437)	357 (81.7 %)	57 (13 %)	23 (5.2 %)	
	Sport students (409)	344 (84.1 %)	51 (12.4 %)	13 (3.2 %)	
	Total (1410)	1115 (79.1 %)	215 (15.2 %)	65 (4.6%)	
Item 3. How do you assess SNC's role in monitoring food habits of physical and sports practitioners?	Active athletes (564)	473 (83.8 %)	56 (9.9 %)	29 (5.1 %)	4.666 ± 0.701
	Nutrition students (437)	396 (90.6 %)	63 (14.4 %)	11 (2.5 %)	
	Sport students (409)	206 (50.4 %)	126 (30.8 %)	30 (7.3 %)	
	Total (1410)	1075 (76.2 %)	245 (17.4 %)	70 (5 %)	
Item 4. How do you appreciate SNC's role in optimizing athletes' performance?	Active athletes (564)	401 (71.1 %)	126 (22.3 %)	32 (5.7 %)	4.609 ± 0.741
	Nutrition students (437)	331 (75.7 %)	92 (21.1 %)	41 (9.4 %)	
	Sport students (409)	303 (74.1 %)	62 (15.1 %)	27 (6.6 %)	
	Total (1410)	1035 (73.4 %)	250 (17.7 %)	100 (7.1 %)	
Item 5. How do you appreciate SNC's role in personalizing diets according to sport or physical activity?	Active athletes (564)	411 (72.9 %)	108 (19.1 %)	40 (7.1 %)	4.737 ± 0.796
	Nutrition students (437)	362 (82.9 %)	69 (15.8 %)	1 (0.2 %)	
	Sport students (409)	372 (90.9 %)	23 (5.6 %)	9 (2.2 %)	
	Total (1410)	1145 (81.2 %)	200 (14.2 %)	50 (3.5 %)	
Item 6. How do you appreciate SNC's role in setting the diets according to the stages of sports training?	Active athletes (564)	503 (89.2 %)	21 (3.7 %)	27 (4.8 %)	4.687 ± 0.711
	Nutrition students (437)	393 (89.9 %)	28 (6.4 %)	12 92.7 %)	
	Sport students (409)	224 (54.8 %)	141 (34.5 %)	31 (7.6 %)	
	Total (1410)	1120 (79.4 %)	190 (13.5 %)	70 (5 %)	
Item 7. How do you appreciate SNC's role in setting diets according to the metabolic typology of the athlete/practitioner of regular physical activity?	Active athletes (564)	417 (73.9 %)	105 (18.6 %)	32 (5.7 %)	4.687 ± 0.695
	Nutrition students (437)	355 (81.2 %)	26 (5.9 %)	53 (12.1 %)	
	Sport students (409)	343 (83.8 %)	54 (13.2 %)	10 (2.4 %)	
	Total (1410)	1115 (79.1 %)	185 (13.1 %)	95 (6.7 %)	
Item 8. How do you appreciate SNC's role in solving the dietary issues of the athlete/practitioner of regular physical activities?	Active athletes (564)	447 (79.2%)	37 (6.5%)	58 (10.3%)	4.652 ± 0.719
	Nutrition students (437)	378 (86.5 %)	56 (12.8 %)	3 (0.6 %)	
	Sport students (409)	255 (62.3 %)	127 (31.1 %)	24 (5.8 %)	
	Total (1410)	1080 (76.6 %)	220 (15.6 %)	85 (6 %)	
Item 9. How do you appreciate SNC's role in order to decrease the doping issues of athletes/ practitioner of regular physical activities?	Active athletes (564)	322 (57.1 %)	104 (18.4 %)	102 (18.1 %)	4.287 ± 1.107
	Nutrition students (437)	363 (83.15 %)	72 (16.55 %)	2 (0.4 %)	
	Sport students (409)	205 (50.1 %)	64 (15.6 %)	61 (14.9 %)	
	Total (1410)	890 (63.1 %)	240 (17 %)	165 (11.7 %)	
Item 10. How do you appreciate SNC's role in nutrition education of children/adults with obesity problems in order to improve their health and quality of life?	Active athletes (564)	401 (71.1 %)	79 (14 %)	55 (9.7 %)	4.684 ± 0.741
	Nutrition students (437)	361 (82.6 %)	48 (10.9 %)	27 (6.2 %)	
	Sport students (409)	378 (92.4 %)	28 (6.8 %)	3 (0.7 %)	
	Total (1410)	1140 (80.9 %)	155 (11 %)	85 (6 %)	

Note: x – arithmetic mean; SD – standard deviation; SNC – sport nutrition counselor.

Table 2

Descriptive statistics for the results of the questionnaire assessing the roles of the sport nutrition counselor

Items	One simple t test		d	Kolmogorov–Smirnov Test	
	t	p		Z	p
Item 1. How do you assess the need to implement the sport nutrition counselling?	17.714	.000	0.525	17.199	.000
Item 2. Do you appreciate the impact of SNC in guiding the nutritional behaviors of physical and sports practitioners?	17.155	.000	0.563	17.399	.000
Item 3. How do you assess SNC's role in monitoring food habits of physical and sports practitioners?	17.843	.000	0.517	16.713	.000
Item 4. How do you appreciate SNC's role in optimizing athletes' performance?	19.744	.000	0.565	16.183	.000
Item 5. How do you appreciate SNC's role in personalizing diets according to sport or physical activity?	15.730	.000	0.529	17.681	.000
Item 6. How do you appreciate SNC's role in setting the diets according to the stages of sports training?	16.476	.000	0.511	17.420	.000
Item 7. How do you appreciate SNC's role in setting diets according to the metabolic typology of the athlete/practitioner of regular physical activity?	17.350	.000	0.503	17.469	.000
Item 8. How do you appreciate SNC's role in solving the dietary issues of the athlete/practitioner of regular physical activities?	18.133	.000	0.533	16.816	.000
Item 9. How do you appreciate SNC's role in order to decrease the doping issues of athletes/practitioner of regular physical activities?	24.163	.000	0.910	13.674	.000
Item 10. How do you appreciate SNC's role in nutrition education of children/adults with obesity problems in order to improve their health and quality of life?	15.984	.000	0.528	17.641	.000

Note: t – Student test; d – effect size; Z – Kolmogorov–Smirnov Test; p – level of probability; SNC – sport nutrition counselor.

According to the assessment scale of Cohen's effect size, for $p < 0.05$ (Table 2) the study highlights a large effect $d \geq 0.80$ in Item 9 about the role of the sports nutrition counselor in solving the doping problems of the athlete/practitioner of regular physical activities.

Discussions

Cronbach's alpha coefficient of questionnaire was 0.926, valid number of subjects 1410, suggesting that the items have very high internal consistency.

Our study found that a medium (average) level of the effect size (values between 0.50–0.80) was registered in the case of the following: Item 1 "The need to implement the occupation of SNC", Item 2 "The impact of SNC in guiding the nutritional behaviors of physical and sports practitioners", Item 3 "SNC's role in monitoring food habits of physical and sports practitioners", Item 4 "SNC's role in optimizing athletes' performance", Item 5 "SNC's role in the individualization of diets according to the sport or physical activity practiced, Item 6 "SNC's role in setting diets according to the stages of sports training", Item 7 "SNC's role in establishing diets according to the metabolic typology of the athlete/practitioner of regular physical activities", Item 8 "SNC's role in solving the dietary issues of the athlete/practitioner of regular physical activities" and Item 10 "SNC's role in nutrition education of children/adults with obesity problems in order to improve health and quality of life". It is relevant for our research that there were no values of the effect size of questionnaire smaller than 0.503 (Table 2).

15 football players and 15 swimmers were involved in one study making dietary choices and dietary practices on 8 weeks which demonstrated that specialized intervention in sports nutrition improved the nutrition knowledge, self-efficacy and dietary behavior [29].

A survey carried on 236 athletes showed that the basic sources of nutrition information originated from the athletic trainers (39.8 %), strength and conditioning coaches (23.7 %) and dieticians (14.4 %). The authors of this survey concluded that dieticians have to accelerate their marketing efforts to provide sound nutrition information and services to all sports actors [26]. It is also essential that coaches and athletes appreciate that nutrition together with training strategies enhance performance [30–31].

Study on 15 elite basketball athletes under counseling and dietary planning in training and competition days suggests that the Healthy Eating Index (HEI) was lower in training compared to competition days and the counseling process improved their physical potential [32].

Some studies highlight the benefits of adequate dietary counseling for the muscle mass improving and recovery [33–34]. One study target on water polo players highlighted that the sport nutrition counseling could improve the performance-related outcomes and to promote correct dietary understanding [35].

Conclusions

The practical approaches of our research consisted in assessing the needs and roles of sports nutrition counselor in accordance with the current requirements of sport performance and the nutritional modern trends in terms of health and wellness concepts.

Solutions to the issue of change and optimization of dietary habits according to subjects peculiarities and the specific nature of sports activities can be provided by experts in sports nutrition counseling.

The most appreciated item (5 points) for each group was: for active athletes – item 6. About the SNC's role in setting the diets according to the stages of sports training, nutrition and dietetics students – item 5. About the SNC's role in personalizing diets according to sport or physical activity; for physical education students – item 10. About the SNC's role in nutrition education of children/adults with obesity problems in order to improve their health and quality of life.

Intrinsic and extrinsic motivations of people that address to a sports nutrition counselor are complex and multiple. Identifying solutions as a result of the counseling process requires expertise, experience and efficiency.

The role of a sports nutrition counselor is to identify and provide an athlete with positive thinking which lead to behavioral changes in diets and lifestyle in order to overcome the nutritional, functional issues in terms of body aesthetics and improvement of sport performances.

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РОЛЬ И ВЛИЯНИЕ КОНСУЛЬТАНТА ПО ВОПРОСАМ ЗДОРОВОГО ПИТАНИЯ В СПОРТЕ

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Цель данного исследования – изучить роль и влияние консультанта по вопросам здорового питания в спорте. **Материалы и методы.** В исследовании приняли участие 1410 человек, из них 564 (40 %) – действующие спортсмены, 437 (31 %) – студенты направления «Питание и диетология», 409 (29 %) – студенты направления «Физическая культура и спорт». Исследование проводилось в форме опроса с использованием анкеты, состоящей из 10 пунктов относительно роли и влияния консультанта по вопросам здорового питания в спорте. Оценка ответов производилась с использованием шкалы Лайкерта. **Результаты.** Число участников опроса, поставивших оценку «5», составило 1082 человека (76,73 %), оценку «4» поставили 212 человек (15,03 %), «3» поставили 85 человек (6,06 %). Коэффициент альфа Кронбаха для данной анкеты составил 0,926, число статистически пригодных ответов 1410. Таким образом, можно сделать вывод, что ответы на все поставленные вопросы демонстрируют внутреннюю согласованность, и данные, полученные по результатам теста Колмогорова–Смирнова, являются статистически нормальными для всех пунктов анкеты. **Выводы.** Консультанты по вопросам питания способны предложить различные пути изменения и оптимизации пищевых привычек с учетом особенностей человека и в зависимости от вида спорта, которым он занимается, что содействует ведению здорового и активного образа жизни.

Ключевые слова: *консультирование по вопросам спортивного питания; потребности, роли, здоровье; образ жизни; спортивные показатели; пищевое поведение.*

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