

*Opšti pregledi/
General reviews*

NUTRITIONAL KNOWLEDGE AND
BEHAVIOR AMONG YOUTH PRACTICING
SPORTS IN TURIN, ITALY

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ZNANJE I PONAŠANJE U VEZI SA
ISHRANOM KOD MLADIH KOJI SE BAVE
SPORTOM U TORINU, ITALIJA

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Key words

nutritional knowledge, nutritional educa-
tion, sportsmen's diet

Ključne reči

nutritivna znanja, edukacija o ishrani,
ishrana sportista

Abstract

Proper nutrition is an important component of any physical exercise. Despite many advances in nutritional knowledge and dietary practices, sports nutrition-associated issues are still challenge. The aim of this study was to analyze nutritional knowledge and behavior among the youth practicing sports in Turin, Italy. The anonymous survey was conducted from February to June 2012 among the youth aged 17-27 years in 41 subjects. It was carried out by means of a specially prepared author's questionnaire. The youth practicing sports in Turin have limited knowledge of the principles of nutrition for sportsmen. Only 14 (47%) answers out of 30 were true in more than 70% of participants. Also the youth practicing sports in Turin utilize the principles of adequate nutrition in a limited scale. For example, almost 60% of the subjects do not know the proper percentage of nutrients of a daily balance diet. Proper nutritional education among the athletic staff was critical. Despite a positive attitude toward nutrition, poor nutritional knowledge and dietary practices were observed in many youth practicing sports in Turin. It confirmed the need of nutritional education among the youth practicing sports.

INTRODUCTION

Proper nutrition is an important component of any physical fitness program. The main dietary goal for physically active individuals is to obtain adequate nutrition for optimizing sport performance. Similarly proper nutrition is important for the athlete's health and improper nutrition can be harmful to both short-term and long-term health [1].

For many people engaged in sports, nutrition is not on the radar. However, nutrition is a major component of their training. Nutrition interacts not only with growth and development, but also with recovery, performance, avoiding injury and problems that may arise as a result of deficiencies [2]. Recommending appropriate selection of foods and fluids, timing of intake, and supplement choices could optimize health and exercise performance [3].

Supplements are not needed if adequate energy to maintain body weight is consumed from a variety of foods. Adequate food and fluid should be consumed before, during, and after exercise to help maintain blood glucose concentration during exercise, maximize exercise performance, balance fluid losses and improve recovery time.

Young people doing sports activity often attempt to lose weight by not eating, limiting caloric or specific nutrients from the diet, engaging in pathogenic weight control behaviors, and restricting fluids. These people often respond to pressures of the sport or activity, coaches, peers, or parents by adopting negative body images and unsafe practices to maintain an ideal body composition for the activity, but they frequently ask questions about calories, energy balance, body composition, and/or weight [1].

The purpose of this study was to evaluate nutritional knowledge and behavior among youth practicing sports in Turin, Italy.

MATERIALS AND METHODS

The survey was conducted from February to June 2012 and it involved 41 randomly selected examinees aged 22±5 years. A total of 45 individuals participated in this study, out of which 4 were excluded based on noncompliance with reporting.

Data were collected by using an originally constructed questionnaire that represents a modification according to similar studies [4,5]. A cover letter was included to explain

the purposes of the study to the participants and to indicate their rights as participants.

The two-part questionnaire was used; the first part comprised questions about individual demographic information and eating habits and behavior. The second part comprised a true/false test with 30 items to assess their nutritional knowledge. The questions were categorized into four domains of nutrition: micronutrients and macronutrients, supplements and performance, weight management and eating disorders and hydration.

We computed basic description statistics for all descriptive data and basic question about nutrition resources. All data were analyzed using Microsoft Excel (Microsoft Office, 2003).

RESULTS

The study included 41 young athletes (men = 31, women = 10). The average years of subjects were 22±5 years with a range of 18 - 40 years. Of all the respondents 24 young sportsmen (58% of the total sample) were resident in Turin and all were Italians. The study participants practiced the following disciplines (Figure 1): basketball (n = 18), volleyball (n = 7), football (n = 5), rowing (n = 3), Thai box (n = 3), swimming (n = 2), motoring (n = 1), cycling (n = 1), water polo (n = 1).

Most of the examinees (n= 28, 68%) were high school or college student and the others (n= 13, 32%) were professionals from various sectors (construction worker, salesman, military, plumber, lawyer, storekeeper, geometer).

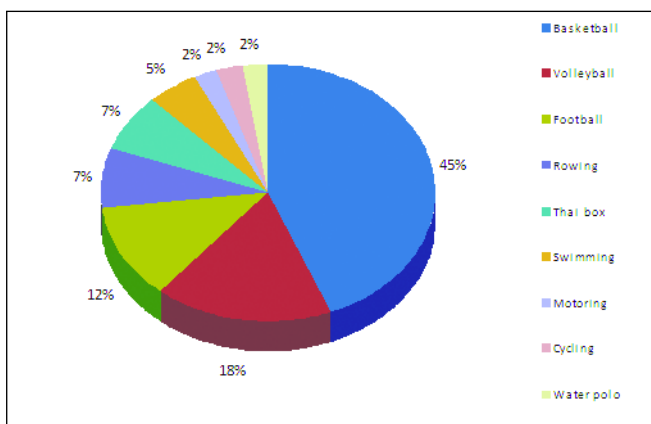


Figure 1. Distribution of participant according to sports disciplines

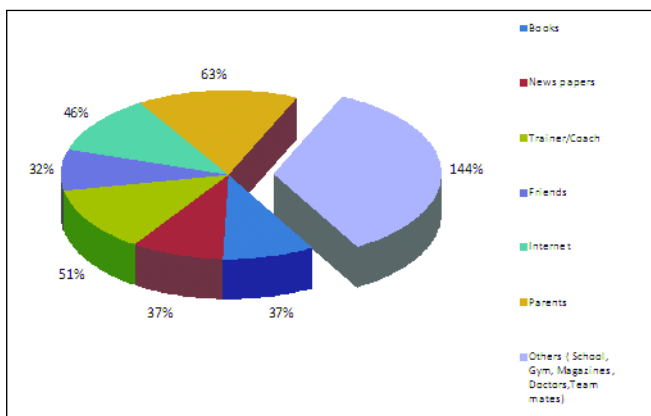


Figure 2. Distribution of nutritional source of information

Anthropometric data of the analyzed sample is reported in Table 1. Anthropometric data investigated were body weight with average of 73±11 kg (men = 77±10 kg, women = 62±9 kg), height 181±10 cm (men = 185±8 cm, women = 170±5 cm), with respective average value of body mass index (BMI) of 22±2 kg/m² (men = 22 ± 2 kg/m²; women = 21±2 kg/m²).

Table 1. Subject characteristics

	N	Age (years)	Weight (Kg)*	Height (cm)*	BMI (kg/m ²)
Male	31	23±5	77±10	185±8	22±2
Female	10	21±2	62±9	170±5	21±2
Total	41	22±5	73±11	181±10	22±2

*Values are expressed as mean ± standard deviation

Only 5% of the examinees responded positively to the question "Do you follow a specific diet?" As for those on a diet, 3% of men followed protein rich diet for sporting purposes to complement the type of exercise and activity practiced, while 10% of women followed a gluten free diet as a therapy against celiac disease.

Most of the examinees (70%) gave negative answer to the question "Has anyone ever suggested changing the eating habits?" with similar distribution among men and women.

The participants highlighted different sources of information considering their nutrition (Figure 2.). The most frequent sources of nutrition information for examinees were categories like parents (26%), coaches (21%), internet (19%), books (15%), newspapers (15%) and friends (13 %).

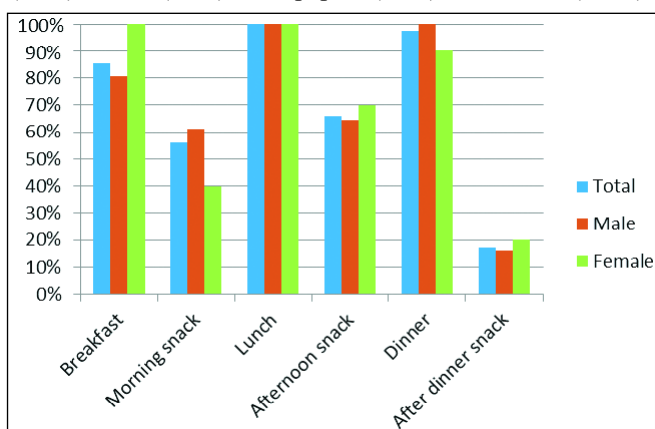


Figure 3. Meals consumed daily

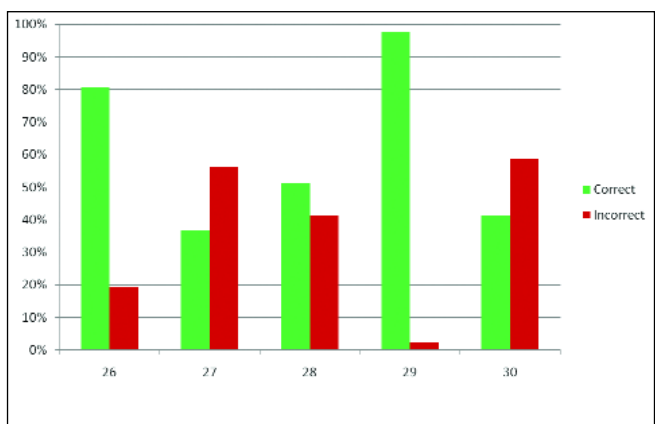


Figure 4. Importance of nutrition in sport diet and body weight regulation

Questions about the quality of personal eating habits revealed that more than half participants (54%) ate outside at least “1-2 meals per week”, more men (58%) than women (40%). About 30% of examinees both genders ate outside “more than 4 times a week”. Moreover, 10% of participants consumed meals away from home 3-4 times /week and the same number of respondents reported that they take food only at home.

Regarding behavior toward food preparing, 78% of the total consumed meals was prepared by parents of participants (male 77%, female 80%), only 2% of the examinees (all male) ate food prepared by partners and almost a third (27%) of the participants prepared the meals themselves (male 26%, female 30%).

The Figure 3 summarizes the distribution of meals consumed daily. Lunch was never skipped by participants, and less than 10% of them had after dinner snack.

It was established that participants consumed breakfast and dinner almost always (over 80%), dinner more frequently (98%) than breakfast. It was clear that it is more important for young sportsmen to eat dinner (100%) than breakfast (80%), while in the case of women the situation was just the opposite. The more frequently consumed snacks among participants of the study were the afternoon snacks (total = 66%, men = 65%; women = 70%) and mid-morning snacks were more frequently consumed than after dinner snack. The male participants consumed mid-morning’s snacks more frequently (61%) than women (40%), probably because they skip breakfast more often. Women consumed snacks after dinner more frequently (20%) than men (16%), probably due to the fact that they consume a dinner last frequently.

The majority of the participant sportsmen (76%) answered negative the question about using supplements, with a majority for females (90%). Moreover, 34% of them (men = 39%, women = 20%) answered the statement “if any supplements had been suggested to you” as true.

The importance of the coach in nutritional education was also investigated. Over half of the participants (66%) agreed about giving importance to the figure of the coach as a relevant part of nutrition education. Regarding the importance of having adequate knowledge of the topic to make actual changes of lifestyle and eating habits, 90% (men = 87%, women = 100%) of the responses was positive.

Finally, the level of satisfaction by their eating habits was also validated among participants. The 80% of the total answers claimed to be satisfied with their eating habits. A substantial difference was found according to gender, because 90% of men were satisfied and in the case of female only 50% were satisfied with their eating habits.

The mean nutrition knowledge score in the general sample was 66,7% out of 30, an average of 30% out of 30 answers was wrong and one question was left incomplete on average for each test answered.

We divided test into 4 parts; the first part consisted of the questions about main nutrients and their role in nutrition. As Table 2 shows only the question about saturated fats had high percentage of correct answers (71%) that is satisfying. The lowest number of correct answers had the question about the size of portion of the food group of bread and cereals.

The basic nutritional knowledge concerning the sources and role of vitamins and minerals in every day diet was satisfying. The only question with low rate of correct answer is the one concerning use of vitamin supplements in physically active people (Table 3). The highest level of correct answer is shown at the questions that are very well known in population, probably because of the frequent mentioning of the topics.

During the last few years there has been a lot of information about healthy life style: the importance of consuming

Table 2: Basic nutritional knowledge about nutrients

Statement	Correct responses (n)	Correct responses (%)
A slice of bread is a good example of appropriate portion of the food group that includes breads and cereals.	12	29%
Honey contains fewer calories than an equal amount of sugar.	20	49%
Eggs and legumes are examples of sources of protein equivalent to meat	22	54%
Proteins are the main source of energy for muscles	16	39%
All red meat has a high content of saturated fat.	17	41%
Not more than 15% of calories in the diet should derive from fat	25	37%
A diet high in saturated fat is recommended to reduce the risk of cardiovascular disease	29	71%

Table 3: Basic nutritional knowledge about vitamins and minerals

Statement	Correct responses (n)	Correct responses (%)
Milk is a good source of calcium for all ages	39	95%
The iron deficiency (anemia), leads to a reduction of the oxygen carrying capacity in the blood.	34	83%
Cheese is a good source of iron in the diet	33	80%
Those who follow diet without meat are at high risk of iron deficiency	26	63%
The iron contained in meat and iron content in food of plant origin is absorbed at the same rate by the organism.	30	73%
Banana and Avocado are good sources of potassium	39	95%
Vitamin supplements are recommended for all people who practice physical activity	16	39%
The vitamins are a good source of energy.	19	46%
Carrot is a good source of vitamin A	18	44%
Salt is an essential element for a healthy diet	34	83%

vegetables daily and the related importance of the dietary fibers, also the role of beverages (alcoholic and non alcoholic) and water in nutrition and rehydration (Table 4).

Figure 4 given above shows the last 5 statements in the test. It is evident that more education in basic information of nutrients percentage in balance diet is needed, since 56% of the subjects did not know the correct answer to this question. Like most of the population, our subjects consider that using carbohydrates exclusively from fruit and vegetables and not from bread and pasta can lead to weight lost.

The questionnaires helped us realize that the level of the nutritional knowledge is not homogeneous in our interviewees. Also, because of the rare consumption of dietary sup-

Table 4: Basic nutritional knowledge about dietary fibers and beverage

Statement	Correct responses (n)	Correct responses (%)
The dietary fiber can help, reduce constipation, reduce the level of cholesterol in the blood and prevents the occurrence of certain cancers.	36	88%
Bread and cereals are the only source of dietary fiber	37	90%
Two servings of vegetables a day, reach the recommendations for a healthy and balanced diet	28	68%
Vegetables: fresh, frozen and canned ones have the same nutritional value.	39	95%
The reduction of 4% of body weight during exercise can affect athletic performance.	29	71%
Sports drinks are the best solution to replace fluids lost during exercise	26	63%
The consumption of alcohol may alter the absorption and utilization of some nutrients	36	88%
At equal weight, alcohol has more calories than proteins	34	83%

plements, future investigation should focus on real nutritional requirements in sportsmen and education about healthy use of supplements.

DISCUSSION

The present study investigated the knowledge and behavior of a sample of young sportsmen from Turin. At the beginning of our study we examined the athlete's eating habits and the results revealed that a lot of them ate outside from 1 – 2 times a week to more than 4 times a week. These numbers are not surprising considering the prevalence of fast food consumption in today's world. To eat fast food only once a week is not a poor choice, considering that some fast food choices may actually be healthy. According to Valliant et al. the most common reason for skipping meals is lack of time [6]. Many athletes face barriers that preclude them from maintaining a steady diet schedule. These barriers include class schedules, work, practice, studying, and making time

for family and friends. Future studies should address these barriers and propose solutions to accommodate athletes and their busy schedules.

Athletes included in the study were from a wide variety of sports, which eliminated any assumptions that responses from athletes and coaches are sport related (e.g., sports that rely on high-intensity training, such as football or aesthetic sports, such as gymnastics or dance). Athletes are using more reliable resources for nutrition information, yet their nutrition knowledge is still lacking. More importantly, athletes in our study revealed that they understood the importance of following a healthy diet and relatively understood the value of an athlete's nutritional needs, but lack of knowledge about it was found by nutritional knowledge test. Examinees specify that their dominant source of information about nutrition comes from parents and coaches, which is similar to other researches [5, 7]. Dietitians are qualified professionals who should be the primary source for athletes and coaches regarding diet information for their respective programs. An athlete cannot sustain optimal performance with a low energy intake. Thus, athletes should be advised against skipping meals and should be encouraged to keep healthy snacks available.

The sports nutrition knowledge survey revealed that participants had a problem with recognizing the adequate amount of nutrients and their ratio, basic differences between macronutrients and appropriate use of dietary supplements.

The aim of training is to achieve optimum performance on the day of competition. Dietary strategies for competition must target the factors that would otherwise cause fatigue during the event, promoting an enhancement of performance by reducing or delaying the onset of these factors. In some cases, the nutritional strategies needed to achieve these various paradigms are different, and even opposite to each other, so athletes need to adjust and schedule their nutrition, just as they do with their training program. The evolution of new knowledge about sports nutrition usually starts with a stark concept that must be further refined; to move from individual nutrients to food, from 'zone size fits all' to the individual needs and practices of different athletes, and from single issues to an integrated picture of sports nutrition. The transition from theory to practice usually requires an educational program.

In fact, there is a clear desire for these athletes to absorb knowledge about nutrition in general and its branch more specific, related to sports. Therefore of absolute importance are sources of information from which these athletes can incorporate such teachings being counseled and followed during their sporting experiences and every day.

The small sample size limits the finding, but these results do provide pilot investigation to be utilized in a longer, more diverse population of sportsmen.

The present study reveals that there is a paucity of nutrition education intervention among selected sportsmen. There is sports specific variation in the food fads and practices indicating the strong influence of coaches and peers and tradition. It is vital to educate the sportsmen and accustom them to dietary patterns. Failure to consume the right diet during competition due to false belief and constant fear of eating prohibited foods may hamper performance. Hence,

delivering continuous education through workshops and courses helps to improve trainers' nutritional knowledge, attitudes and practices [6].

Nutritional education programs should involve both athletes and coaches. They should be instructed by qualified nutrition educators (e.g., dietitian), but still be aware of the importance of the following:

(1) Examining nutrition knowledge differences between different types of sports (e.g., power sports, aesthetic sports).

(2) Examining the sports nutrition knowledge of athletes, coaches and professionals in this field involved with sportsmen [5].

Professionals in nutrition field should be cautious when they are giving nutritional advices to athletes. Furthermore, adequate sports nutrition knowledge can improve standard of care (e.g. injury prevention, rehabilitation) [8].

Dietary education is useful in improving dietary intake and nutrition knowledge among athletes. Future education needs to focus on counseling athletes about meeting the appropriate energy requirements according to their activity level as well as consuming adequate amount of nutrients [9].

Strategies for improving dietary intake might include encouraging athletes to select high carbohydrate foods such as whole grain bread, pasta, rice, and cereal and to choose quality protein sources such as lean meats, poultry, eggs, legumes, and low-fat dairy products. An athlete cannot sus-

tain optimal athletic performance with a low energy intake. Thus, athletes should be advised against skipping meals and should be encouraged to keep healthy snacks available. Athletes might also benefit from traveling tips such as packing healthy snacks and selecting appropriate menu items while dining at restaurants.

CONCLUSION

We demonstrated that knowledge and behavior among young sportsmen in Turin regarding nutrition is inadequate. Proper nutritional education among the athletic staff is critical. Furthermore, dietitians with an expertise in sport nutrition are qualified professionals who should be the primary source for athletes and coaches regarding diet information for their respective programs.

Sažetak

Pravilna ishrana je od velikog uticaja na zdravstveno stanje svakog pojedinca, a posebno sportista koji su izloženi stalnim psiho-fizičkim naporima. Uprkos značajnom napretku u znanju i razumevanju o značaju ishrane, problemi vezani za ishranu sportista još uvek predstavljaju izazov. Cilj rada je bio ispitivanje znanja o značaju ishrane i stavovima mladih koji se bave sportom u Torinu, Italija. Anonimna anketa je sprovedena u periodu od februara do juna 2012. godine među mladima uzrasta 17-24 godine i obuhvatala je 41 ispitanika. Znanja mladih iz Torina koji se bave sportom o principima sportske ishrane su ograničena. Svega 14 (47%) od 30 odgovora je bilo odgovoreno tačno sa više od 70%. Takođe, mladi koji se bave sportom se samo delimično pridržavaju principa pravilne ishrane. Na primer, 60% ispitanika ne zna zastupljenost osnovnih nutrijenata u izbalansiranoj ishrani. Podizanje nivoa znanja o ishrani je izuzetno važno među spportskim stručnjacima. Iako je uočen pozitivan stav prema pravilnoj ishrani, nedostatak znanja i primene pravilne ishrane uočen je među mnogim mladima koji se bave sportom u Torinu. To potvrđuje važnost edukacije o ishrani u mladima koji se bave sportom.

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■ The paper was received and accepted on 14.04.2013.