

Article

The Nutrition Counseling Improve Volleyball Athletes Knowledge

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Abstract: The dietary intake of athletes is crucial for attaining peak performance, sustaining physical fitness, preventing the risk of injury, and speeding post-competition recovery. A prevalent issue among athletes is insufficient food consumption relative to their nutritional requirements, resulting from a limited understanding of proper dietary practises. The objective of this study is to increase athletes' understanding of dietary consumption through the provision of nutritional guidance to athletes. The study was conducted on ten volleyball athletes who were in the process of training for the PORPROV (Pekan Olahraga Provinsi) Jawa Timur VIII tournament in 2023. This research used the pre-experimental design method. The research design uses one group pre-test post-test design. The data collected includes body weight, height, food intake and nutritional knowledge of athletes. The analysis used a one sample t-test to see the athletes' food intake and knowledge before and after being given nutritional counseling. The results of this study were a significant increase in athletes' knowledge and energy intake ($p < 0.05$), the average athlete knowledge score before nutritional counseling was 52.5 and after nutritional counseling it was 74.5. The mean energy consumption before to receiving nutritional counselling was 1794.6 kilocalories (kcal), while after receiving nutritional counselling, it increased to 2141.8 kcal. Providing nutrition counselling to volleyball athletes can improve their understanding of dietary requirements and improve their food consumption, finally leading to optimal performance. The government should provide nutritional counseling services for athletes

Keywords: athletes; dietary intake; knowledge; nutrition counse

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1. Introduction

An athlete is a special individual with unique talents, behaviour patterns, and personality traits, whose life background exerts a specific influence on them. Athletes engage in a continual series of sports activities through their participation in matches and their accomplishments in the realm of sports [1]. The standard physical training regimen for volleyball athletes encompasses various components, including agility, flexibility, coordination, power, and endurance. The implementation of physical training possesses the capacity to impact an individual's velocity, thus influencing their general mobility proficiency [2]. To optimize game performance, volleyball players must enhance their physical fitness, fundamental technique, playing strategy, and psychological resilience in collaboration with their teammates [3].

An athlete's performance is influenced by a variety of factors, both internal and external. Internal elements encompass the athlete's anatomical and physiological characteristics, including age, anthropometric profile, and aerobic and anaerobic performance. On the other hand, external factors comprise stress, and as significant is the athlete's nutritional sufficiency [4]. Inadequate energy restitution during the recovery period will result in tiredness during the subsequent training phase. Meal planning for athletes is a continuous and essential practise that should be followed consistently on a daily basis, rather than being limited to a specific training phase [5].

The sport of volleyball is highly susceptible to injury due to the nature of the game, which involves frequent jumping for offensive and defensive maneuvers such as attacking and blocking the opponent's attacks. During international championships, it has been observed that the average player often executes a single jump throughout a rally that spans a duration of 12 seconds. In contrast, the leading player tends to perform a higher number of jumps, ranging from 3 to 4, within the same timeframe [6]. Nutritional intake is one of the factors that supports high training activity and performance during matches. Nevertheless, athletes, coaches, training centres, and parents of athletes fail to adequately prioritise and comprehend the significance of nutritional aspects in enhancing athletes' performance. Athletes' achievements are influenced by internal factors consisting of motivation and talent. Meanwhile, external factors consist of the trainer's abilities and personality, facilities, research results, and nutritional intake [7].

Inadequate nutrition can lead to a decline in athletes' performance, increased susceptibility to injury, and the lengthy recovery duration [8]. A strong understanding of food will enable individuals to effectively handle their dietary needs. Acquiring and comprehending knowledge can guide individuals in selecting food based on their specific requirements, including portion size, nutritional value, and meal timings [9]. Athletes can enhance their nutritional intake by expanding their understanding through nutritional counseling [10].

Nutrition counseling is a communication activity between clients and counselors to overcome nutritional problems. Providing nutritional counseling is expected to improve the client's eating patterns to improve health status [11]. The 2017 Central Java PPLOP (Pemusatan Pendidikan dan Latihan Olahraga Pelajar) athlete nutrition status survey revealed that 70% of athletes in PPLOP Central Java Province had adequate energy intake, 25% had satisfactory energy intake, and 5% had inadequate energy intake. Meanwhile, the assessment of athletes' nutritional state in PPLOP Central Java Province is determined by their Body Mass Index (BMI). The normal nutritional status is seen in 88% of the athletes, while 5% have excess body fat and 7% are underweight [12]. The nutritional status is influenced by factors such as knowledge about nutrition, level of physical activity, and intensity of exercise. The research findings indicated that the nutritional status was classified as normal in 43.3% of the cases, as overweight in 29.9% of the cases, and as underweight in 26.9% of the cases. The percentage of individuals with strong nutritional knowledge was 56.7%, while the percentage of individuals with inadequate nutritional knowledge was 43.3% [13].

The mean energy intake of junior athletes participating in West Sumatra Volleyball is reported to be 1647 Kcal, whereas the average daily total energy need for these athletes is estimated to be 2938 Kcal. This observation indicates that the energy intake of athletes remains insufficient in relation to their daily energy requirements [14]. Athletes greatly benefit from nutritional guidance to meet their dietary requirements. There exist disparities in nutritional understanding prior to and subsequent to the implementation of nutritional counseling for soccer athletes [15].

The feeling of fulfillment of athletes' nutritional needs will result in peak performance. This study was conducted on volleyball players to increase performance. The objective of this study is to assess the impact of nutritional counseling on the cognitive understanding and caloric consumption of volleyball athletes in Jember regency.

2. Materials and Methods

This research is quantitative research using the pre-experimental design method. This research design uses one group pre-test post-test design, as shown in diagram 1.

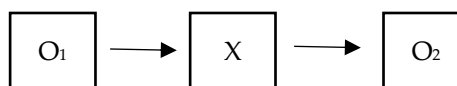


Figure 1. Research Design Diagram

Before getting nutritional counseling, athletes take a pre-test called O1, and after that, they receive an intervention called X, which is nutritional counseling on their dietary needs. Lastly, O2 is a post-test designed to determine how well athletes have understood the material covered in the preceding lessons. Making use of a pre- and post-test questionnaire with fourteen statements. Determining the number of research subjects using total sampling, namely all volleyball athletes who will take part in the 2023 PORPROV (Pekan Olahraga Provinsi) Jawa Timur VIII tournament, is ten people. The research start from August until September 2023 in volley ball arena and nutrition care center Politeknik Negeri Jember. Data taken includes body weight, height, food intake and nutritional knowledge of athletes.

Nutritional conseling Body weight was measured using a microtoice device, body weight used a digital scale, food intake was measured using the 24-hour recall method and athletes' nutritional knowledge used a questionnaire. Nutrition counseling for two session, one hour each. The analysis used a one sample t-test to see the athletes' food intake and knowledge before and after being given nutritional counseling. Statistical analysis uses SPSS version 16.0 software.

3. Results and Discussion

3.1. Characteristics of Subjects

The majority of respondents had a normal body mass index (BMI) value between the range of 18.5-25, with a total of 7 participants. Only 1 subject fell into the obese group, with a BMI value greater than 25-27.

Table 1. Characteristics of Subjects

No	Characteristics	Total	
		n	%
1	Age		
	16-19	4	40
	20-28	6	60
2	BMI		
	18.5-25	7	70
	>25-27	1	10
	>27	2	20

3.2. Statistic Analysis

The mean subject knowledge score before and after being given the nutritional counseling intervention increased from 52.5 to 74.5. Before the nutritional intervention the minimum value obtained was 40 and the maximum was 85. After nutritional counseling the minimum value was 50 and the maximum was 100. This shows that the nutritional counseling intervention was able to increase athletes' knowledge. There was an increase in the average value of athletes' nutritional knowledge and there was an influence on athletes' knowledge before and after being given nutritional counseling on the value ($p < 0.05$). Knowledge is the outcome of perception and understanding when an individual uses their sensory organs to interact with an item.

Table 2. Differences in Athletes' Knowledge Before and After Nutritional Counseling

Knowledge	Mean	SD	Min	Max	p-value
Before Counseling	52.5	± 14	40	85	0.000
After Counseling	74.5	± 18.9	50	100	

Table 3. Differences in Energy Intake Before and After Nutritional Counseling

Energy Intake (kcal)	Mean	SD	Min	Max	p-value
Before Counseling	1794.6	± 745.5	977.2	2823.2	0.000
After Counseling	2141.8	± 742.6	1310.8	3389.3	

Based on the average energy intake of subjects before nutritional counseling, which was 1794.6 kcal and after counseling it was 2141.8 kcal, there was an increase of 347.2 kcal. The results of the analysis showed that there was a difference in energy intake before and after providing nutritional counseling ($p < 0.05$).

Subject characteristics are classified depending on age into several stages of athlete development. The fourth stage, known as specialization, occurs between the ages of 16 and 19. During this period, athletes engage in individualized training programs to prepare for competition in different situations. Meanwhile, athletes between the ages of 20 and 28 are categorized in the athlete development stage, specifically denoting high levels of accomplishment. At this stage, athletes undergo rigorous training and planning in order to attain high-level accomplishments. The activities involved encompass comprehensive individual training, competition, recovery, and mental conditioning [16].

An athlete's body mass index (BMI) that falls below or exceeds the normal range is not inherently negative, as it is typically tailored to suit the specific demands of their sport. Some sports, such as weightlifting, necessitate athletes to possess adequate muscle strength in order to lift heavy weights. Although BMI is classified within the overweight or obese categories.

However, such behavior is typical for an athlete. Athletes should maintain a healthy body mass index. In order for athletes to compete in alignment with the requirements of their sport and attain their highest level of performance. Nutrition counselling entails the exchange of information and ideas between clients and counsellors in an effort to resolve nutritional issues. It is anticipated that nutritional counselling will impact the client's health status by promoting healthier dietary habits [11]. The development of human information is mostly facilitated through visual and auditory awareness [17]. Education, mass media information, social culture, economy, environment, experience, and age are all influential factors that contribute to a person's knowledge [18].

A study was conducted on martial arts athletes at the Yogyakarta regional athlete training center, involving a total of 30 subjects. The utilization of dinner plates as a medium for concluding counseling sessions has been found to have a positive impact on improving athletes' understanding and attitudes towards maintaining a well-balanced

diet [19]. Energy is the total amount of food consumed a person to meet their needs for carbohydrates, protein and fat [20].

An athlete's nutritional intake is determined by the athlete's and coach's knowledge of the food consumed by the athlete, the quality and quantity of food consumed by the athlete as well as the physical and mental condition of the athlete regarding health, nutritional needs, the form of food consumed and the training program. Periodization of athlete's nutrition during the training period is very important in determining the athlete's intake. Training periodization is the planning of a training program for athletes which consists of training volume and intensity which is useful for preventing injury and improving athlete performance.

Nutritional arrangements during training periodization must be adjusted to the type of sport, training intensity, health status, fitness, physical condition, body weight and body composition of the athlete (Kemenkes, 2014). The results of this study are in accordance with previous research, namely on soccer athletes and swimming athletes. Research on 15 soccer athletes and 15 swimming athletes who were given intervention in the form of education and counseling for 8 weeks showed results in increasing nutritional knowledge, self-efficacy and eating patterns (Abood, 2004).

The results of providing nutritional counseling and assistance to PS UNNES football athletes showed good results. There was a significant difference between the percentage of energy consumption levels before and after the intervention ($P=0.0001$). The average knowledge score increased to 80 after athletes received nutritional counseling and assistance [15]. Engaging in nutritional counseling with a nutritionist can effectively modify and enhance dietary patterns based on the specific demands of a particular sport.

A study conducted on pupils of Dewantara football school found a statistically significant correlation ($p<0.05$) between their degree of knowledge, dietary intake, and body mass index. Acquiring knowledge about food choices is crucial for enhancing athlete performance [21]. Nutritional counseling proves efficacious in promoting the advantages of modifying dietary habits in athletes, enhancing their understanding and optimizing their body composition. Adult athletes who receive nutritional counseling experience modifications in their eating habit, such as changes in meal frequency and reduced consumption of sugary foods (Nascimento, 2016). The stamina of soccer sportsmen is positively and significantly influenced by energy intake, lifestyle, physical activity, and nutritional status [22].

4. Conclusions

Providing nutritional counseling interventions to athletes can improve their understanding of nutrition, therefore increasing their consumption of nutrients to enhance their performance during competitions. It is important that every sport provide nutritional counseling to athletes at the training center in order to adequately prepare them for competition. In order to optimize their performance throughout training and tournaments with the final goal of achieving the targeted championship.

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