

**Level of Adequacy of Nutrition, Physical Activity and Nutritional Status
Youth Soccer Athlete****Arimbi¹✉, Wahyana Mujari Wahid², Poppy Elisano Arfanda³, Arifuddin Usman⁴,
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College of Health Sciences, Panrita Husada, Bulukumba, Indonesia⁵**Article History**Received July 2023
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Published Vol.12 No.(3) 2023**Keywords:**Nutrition, Athlete,
BMI, food recall.**Abstract**

The research purpose to determine the level of nutritional adequacy, physical activity and nutritional status of adolescent soccer athletes. The research was conducted on teenage soccer athletes who are members of the PERSIS Makassar soccer club, which totals 27 teenage athletes. The research method used is a case study presented descriptively. Nutritional intake was measured using the food recall method for 3 x 24 hours using a food composition list (DKBM). Physical activity is categorized into three levels, namely heavy, moderate and light using WHO calculations. Nutritional status is calculated based on body mass index for age (BMI/U). The nutritional adequacy level of the sample was classified into two categories, namely adequate if the nutritional adequacy level was >80% and categorized as insufficient if the nutritional adequacy level was <80%. The results of a 24 hour food recall for 3 days obtained an average sample energy intake level of 14 (51.85%) people who had good energy intake and 13 (48.15%) people with less energy intake and no athletes (0%) who have more energy intake. The results of the questionnaire summary were obtained which were matched with WHO physical activity category standards, it was seen that all soccer athletes (100%) had heavy physical activity categories while the nutritional status of the anthropometric data obtained, it was obtained that there were 14 athletes with normal nutritional status (51, 85%), 13 people (48.15%) were underweight, and 0% were athletes in the category of fat and very thin.

How to Cite

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INTRODUCTION

The game of soccer really requires high energy and can be equated with the energy needs or calories of very heavy workers. This game is a game

Takes place very quickly, in a relatively long time. Movements performed by players in the form of running, kicking, jumping and short sprints are quite large percentage. Soccer is a high intensity sport that places very high demands on various components of motor performance. High muscle activity in competitions and training causes energy to be depleted quickly, accumulation of metabolic waste, muscle pain and ultimately results in peripheral and central fatigue. (von Stengel et al., 2018)

The game of soccer requires skills related to body fitness, namely muscle strength or explosiveness, speed and agility. In addition, this game requires cardio-pulmonary endurance which describes the capacity to carry out activities continuously for a long time without experiencing significant fatigue. Soccer has a high demand for physical capability such as body movement velocity and endurance performance (Zeng et al., 2020)

Based on the characteristics of the game of soccer, in order to achieve optimal performance, soccer players must meet certain requirements. The body shape of a soccer player must be ideal, that is, healthy, strong, tall and agile. As we know, body mass index is related to body weight and height. According to the basic concept, maintaining body weight consists of three main factors, namely metabolic nutrient utilization, eating habits, and physical activity (Porcari et al., 2015). A soccer player must have a normal body mass index (BMI) with above average height (TB). Body composition must be proportional between muscle mass and fat. Therefore, to achieve optimal performance in soccer, players do not only need a regular and targeted training program but also must be supported by fulfilling good nutrition by regulating food and choosing the right nutrients for soccer athletes. The goal of regulating the nutritional intake of athletes is to find the best diet and increase the efficiency of the body's metabolism to face training and competitions (Sasmarianto et al., 2021) Fulfillment and regulation of nutrition must also be programmed properly, in a simple way it can be arranged and fulfilled nutrition before the match, during the match, and after the match or can refer to pre-competition, during the competition and post-competition (Arimbi et al., 2018, 2019) Unfor-

tunately some problems are often encountered in athletes such as; eating less than needed, not knowing how much to eat, consuming calories that are not in accordance with needs, choosing inappropriate food ingredients. Ideally, maintaining energy balance is something that must be done every day, namely by paying attention to daily energy expenditure in accordance with energy intake (Bompa & Buzzichelli, 2015). Irregular eating patterns will affect the body mass index, because the intake is out of balance with that issued. Diet, obesity and physical activity all have important impacts on health (Khan et al., 2015)

Problems like this are more often encountered in athletes at an early age and adolescents, while it is known that at an early age and adolescents actually even have "special" nutritional needs because they are in a period of very rapid growth, where there will be changes in the function of the body's organs, especially physiology associated with the onset of puberty. This growth factor will greatly affect the nutritional needs of athletes at an early age. The nutritional benefits are very important for the body, especially who are still in the stage of growth and development. Fulfilling balanced nutrition at the age of children during their growth period will reduce the risk of infectious diseases in the future, as well as an effort to prevent and overcome malnutrition. (Sari et al., 2020)

Several studies have revealed that the level of nutritional adequacy in football athletes in general is not in accordance with what is recommended. This of course can happen in any region. Fulfillment of appropriate nutrition for athletes, especially teenage athletes, where they are also in their growth period, inadequate nutrition not only affects their performance on the field, what is more important is the occurrence of problems in their growth and development process, increasing the risk of various diseases in the future, the potential for injuries in training and competitions will increase as well as the recovery process being long and not optimal, which will have an impact on many young athletes who should be the forerunners of professional athletes who will be forced to stop due to health factors and not seeing performance improvements as expected. coach. However, consistent training will never be enough to guarantee the development of an athlete's abilities.

Based on various sources of information and data from previous studies, as well as as a basis for scientific arguments in strengthening various existing theories, we conducted research on a number of teenage male soccer athletes in the

Makassar City area, built by PERSIS which is a center for developing young soccer athletes. who on average will enter the Makassar City PSM club. The aim of this research is to get an idea of their level of nutritional fulfillment as athletes, what their physical activity is like and whether their nutritional status is ideal as soccer athletes who are still teenagers who need more attention to nutrition. This research is located in Makassar City.

METHODS

The research design used is a descriptive case study. There are several measurements carried out in carrying out this research, namely; Body Mass Index (BMI) is measured based on body weight and height (Body Weight (Kg)/ Height (m)²). Then, to determine the adequacy of athletes' calories and nutrition based on their track record of consumption, it is measured using the food recall method for 3 x 24 hours (3 days) using the Food Composition List (DKBM) guide as a reference. The research was conducted on 27 male youth soccer athletes, trained by PERSIS in Makassar, aged 13 to 17 years. The implementation of this research took approximately 2 weeks, including special time for providing guidance in filling out the food recall form that had been provided, as well as how to convert the portion of food they consumed from URT (Household Measurement) units into standard weight measurements in grams.

$$BMI = \frac{\text{Weight in Kilograms}}{\text{Height in Metres}^2}$$

Figure 1. Body Mass Indeks Formula.

RESULTS AND DISCUSSION

Table 1. Distribution of Energy Intake

Criteria	N	%
Good	14	51,85
Less	13	48,15
Total	27	100

The energy requirement for soccer athletes is around 4500 calories, athletes who are still in their infancy (children and adolescents) need additional energy for the growth of bones and body

tissues. The results of a 24-hour food recall for 3 days Obtained an average level of energy intake for a sample of 14 people who had good energy intake and 13 people with less energy intake and no athlete (0%) had more energy intake.

Table 2. Distribution of Protein Intake

Criteria	N	%
Good	20	74,07
Less	7	25,93
Total	27	100

Teenage athletes need more protein for tissue formation and growth than adult athletes who are not growing anymore. The results of a 24-hour food recall for 3 days obtained an average level of protein intake in the sample of 20 people (74.07%) who had good protein intake, 7 people (25.93%) who had less protein intake and 0% athletes with more protein intake.

Table 3. Distribution of Fat Intake

Criteria	N	%
Excess	4	14,82
Good	14	51,85
Less	9	33,33
Total	27	100

Sports training will increase the capacity of the muscles to use fat as an energy source, however, it is recommended that energy consumption from fat be no more than 30% of total energy per day. The results of a 24-hour food recall for 3 days obtained an average level of fat intake in the sample as many as 4 people (14.82%) had excess fat intake, 14 people (51.85%) had good fat intake and 9 people (33.33%) had less fat intake.

Table 4. Distribution of Carbohydrate Intake.

Criteria	N	%
Good	14	51,85
Less	13	48,15
Total	27	100

Carbohydrates are the main source of energy for people around the world. It is recommended that 55-75% total energy consumption come from complex carbohydrates and at most only 10% from simple carbohydrates. The results of a 24-hour food recall for 3 days obtained an average carbohydrate intake in the sample of 14 people (51.85%) had good carbohydrate intake,

13 people (48.15%) had insufficient carbohydrate intake, while athletes with excess carbohydrate intake were not found in the sample (0%).

Table 5. Distribution of nutritional status based on Body Mass Index.

Category Nutritional Status	N	%
Normal	14	51,85
Underweight	13	48,15
Total	27	100

Good nutritional status is needed to maintain fitness and health, assist growth and support the development of athlete achievement. From the anthropometric data obtained, based on the calculation of the Z-Score with the youth BMI indicator according to WHO standards in 2005, it was obtained an illustration that athletes with normal nutritional status were 14 people (51.85%), with underweight nutritional status were 13 people (48.15%), and 0% athletes were in the category of fat and very thin.

Table 6. Distribution of physical activity levels.

Category	N	%
Heavy	27	100
Total	27	100

Physical activity is any activity of body movement due to the activity of the skeletal muscles which results in energy expenditure. Physical activity, in this case, is not just exercise but every other activity that is carried out from getting up in the morning to going back to sleep. Based on the results of the questionnaire summary obtained which was matched to WHO physical activity category standards, it can be seen that all soccer athletes (100%) have heavy physical activity categories.

In the growth and development of a person's life process is influenced by many factors, one of which is nutritional intake. Food for an athlete must contain all the nutrients needed to replace the nutrients in the body that are reduced due to the use of these nutrients for sports activities. Sports nutrition also improves performance during training and competition, which can minimize injuries and speed up the recovery process (Waskiw-Ford et al., 2020)

In general, athletes have a calorie requirement of 2,000 kcal per day to meet their energy needs. As for athletes, these needs are fundamentally insufficient with a relatively high level of activity (Heikkilä et al., 2018). Energy is needed

to maintain body functions so that they can function properly, blood circulation, nerves, breathing, muscle movement so that athletes can train and compete properly, the amount of energy needs depends on the activities or physical activities carried out. Based on the results of data collection using the 24-hour food recall method for 3 days, in general the energy intake of athletes was in the good category as many as 14 people (51.85%) had good energy intake and 13 people (48.15%) had less energy intake and no athletes (0%) had more energy intake. This result is inversely proportional to the results of a study by Asikin 2008 in (Masri et al., 2018) on Makassar Soccer School (MFS) students who found that as many as 10 students (83.3%) had insufficient energy intake and 2 students (16.7%) had sufficient energy intake.

Energy requirements to support growth (one of the important components of energy needs of adolescent athletes) consist of two parts, namely energy expended to synthesize new tissue, and energy stored in growing tissue (Muriyati Asnidar Safruddin and Andi Imam Arundhana Thahir, 2019). A good level of energy intake is caused by the consumption of food sources of energy or energy that are in accordance with their daily needs, the low level of intake is due to the consumption of food sources of energy which is not sufficient for their daily needs, this is evident from the results of observations using the 24-hour food recall form. The results of these observations indicate that there are still many athletes who skip breakfast for reasons of habit.

Protein is a nutrient that has the main function as a building material and forming tissue during the growth period or during the formation of muscle tissue, supporting the formation of red blood cells, stabilizing hormones, enzymes, antibodies and also plays a role in replacing damaged tissue. Apart from that, protein also functions to build and repair muscles, hair, nails, skin and other body tissues. In light sports activities and sports of short duration, protein does not act as the main energy source because the metabolism of protein into ATP takes a long time. However, as the duration of exercise increases, protein helps maintain blood glucose through liver gluconeogenesis, so more protein will be utilized in long-duration exercise (Sanford et al., 2020; Waskiw-Ford et al., 2020). A teenage athlete who actively exercises with a frequency of 3 to 4 days per week needs additional protein of at least 1.0 grams per kg of body weight per day. For athletes who exercise at high intensity and want to increase their muscle volume, they will need addi-

tional protein of around 1.7 grams per kilogram of body weight per day (Bentley et al., 2020). The results of the analysis of athlete's protein intake showed that the number of athletes who had good protein intake was 20 people (74.07%), 7 people (25.93%) who had less protein intake and 0% athletes with more protein intake, meanwhile in a study conducted by Asikin (2008) in (Masri et al., 2018) of 12 MFS students studied, it showed that all students had less protein intake. If this continues, it will have a negative impact, decrease the body's resistance, be susceptible to disease, decrease creativity and physical abilities and so on (Almatsier, 2013). The composition between animal and vegetable protein sources in each meal can produce a high quality amino acid composition, so that the function of protein as an energy reserve, maintenance of body tissues and as a combination of antibodies runs optimally (Sediaoetama, 2000).

The level of fat intake in athletes average fat intake in a sample of 4 people (14.82%) had more fat intake, 14 people (51.85%) had good fat intake and 9 people (33.33%) had less fat intake. Excessive fat intake is caused by food sources of fat consumed that contain a lot of oil, such as foods that are processed by frying. Fat is the main energy producer after carbohydrates, so foods with high fat content contain more energy. Carbohydrates play an important role as an energy source during training and matches. Carbohydrate consumption is related to the regulation of blood sugar levels and glycogen stores in the muscles and liver, where it is known that sugar stores in the blood and sugar reserves in the liver which are stored in the form of glycogen will have an impact on the rate of energy production (Awang Firmansyah & Muhammad Reza Aziz Prasetya, 2021). The results showed that athletes' carbohydrate intake was generally good, as many as 14 people (51.85%) had good carbohydrate intake, 13 people (48.15%) had insufficient carbohydrate intake, while athletes with excess carbohydrate intake were not found in the sample (0%). Carbohydrates, like other macro and micro nutrients, must be given in a balanced or proportional manner, especially to adolescent athletes (Jovanov et al., 2019). Because, when too many carbohydrates are consumed, especially from the wrong source, it can cause weight gain and insulin resistance which will actually increase the risk of diabetes. On the other hand, if the carbohydrates given or consumed by athletes are lower than their needs, it will cause the body to experience increased fatigue, slow down the recovery period after the competition and have a negative

impact on overall performance. Nutritional status is an expression of a state of balance in the form of certain variables, or manifestation in the form of certain variables.

Nutritional status is a balanced result between the various nutrients consumed, optimal absorption of nutrients and the use of nutrients in the form of bio-energy which is used in various activities or physiological conditions that can be measured as a result of the availability of nutrients throughout the body (Muharram et al., 2022). Good nutritional status is very important to maintain fitness and health as well as helping growth and supporting the development of athlete performance, especially for athletes in their growing age (Irianto, 2019). In determining the nutritional status of adolescents, it is carried out anthropometrically using the calculation of body mass index according to age (BMI) for adolescents, based on the WHO-2005 standard. The use of the BMI indicator is one way to find out the current nutritional status (Almatsier, 2013) states that body weight is one of the parameters that gives an overview of body mass, body mass is very sensitive to sudden changes such as daily intake patterns if a person's appetite decreases or the amount of food consumed decreases, or due to infection. From the results of a study of 27 PERSIS Makassar athletes, it was found that 14 athletes (51.85%) had normal nutritional status, 13 athletes (48.15%) were underweight, and 0% were athletes in the category of fat and very thin. Asikin (2008) in (Masri et al., 2018), in his research on the provision of nutritional counseling to MFS students, showed a change in nutritional status after being given nutritional counseling or education of 58.3%. This change indicates that there are benefits from nutritional counseling or knowledge that can improve nutritional intake and also have an impact on improving nutritional status.

CONCLUSION

The physical activity of teenage football athletes trained by PERSIS based on several nutritional status assessment indicators, shows that all PERSIS football athletes are in the heavy activity category with the athlete's nutritional intake on average being in the good category. However, it is certainly highly recommended that there be a role of a nutritionist who will be very necessary to increase athletes' understanding and food preparation to support improving the quality of athletes, also supported by measurable training to achieve optimal stamina. As most sports clubs

and training camps ignore the role of a nutritionist because of the prevailing understanding that a person's training and talent are their main capital in becoming a potential athlete.

This concept causes quite a few young athletes in Indonesia to experience problems during their growth period, athletes also get tired easily and the risk of injury is greater, when their bodies are not supported by fulfilling nutrition that suits their individual needs, of course what is meant is by considering habits. eating or allergies to certain food ingredients. So it can be concluded that adequate nutrition accompanied by an appropriate training program will increase an athlete's potential.

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