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THE EFFECT OF NUTRITIONAL MANAGEMENT ON ENERGY LEVELS IN PENCAK SILAT ATHLETES

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Information	Abstract
History: Submitted; July 2023 Revised; August 2023 Accepted; September 2023 Keywords: Nutritional Management; Energy Levels; Pencak Silat Athletes	Athletes are encouraged to balance their energy needs by consuming 55–65% carbohydrates, 20–35% fat, and 12–15% protein. The purpose of this study is to evaluate the association between food and energy sufficiency in Pencak Silat athletes at Bina Guna College of Sports and Health. This study included ten samples of active student athletes from UKM Pencak Silat at Bina Guna College of Sports and Health, aged 18 to 20. This is a qualitative study conducted using a case study design. All data on the degree of energy adequacy of these Pencak Silat athletes was obtained through characteristic interviews and questionnaires completed on a Google form with three 24-hour food recalls. Data collection includes eating habits, eating behaviour, food consumption over three days, exercise intensity, and diet that influences training. The results of the research analysis showed that nutritional status based on BMI ten athletes obtained 100% normal BMI, as well as the level of deficit energy adequacy as many as nine Pencak Silat athletes (90%) and one Pencak Silat athlete had a moderate level of energy adequacy (10%).

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INTRODUCTION

In adolescence today, there are often various problems related to nutrient adequacy, absorption, and use of nutrients due to physical and psychological changes that can later affect adolescent health (Ramadan et al., 2023). Adolescents need relatively more nutrients because they are still growing and generally perform higher physical activity compared to other ages. Nutritional status refers to the condition that arises due to the balance between nutrient intake and nutrient requirements needed by the body for metabolic processes. In addition, sufficient energy is also needed to carry out biological activities in the process of energy metabolism, which occurs through a series of chemical reactions with the help of enzymes as catalysts. For athletes, especially adolescent athletes, it is important to take into account energy and nutrient requirements because the optimal health and physical abilities required by athletes depend on normal nutritional status.

In meeting nutritional needs, a person has a way, view, or action towards the food they will consume, called eating behaviour (Azandi et al., 2022). A person's diet is also a factor in fulfilling their nutritional needs as well as in adjusting the amount, type, and frequency of food consumed every day or every meal by respondents, consisting of staple foods, side dishes, vegetables, and fruit. Nutritional problems in adolescents are basically due to nutritional behaviour in adolescents, which is wrong, which causes a mismatch between the consumption of nutrients and the recommended nutritional adequacy and causes a person to experience undernutrition or overnutrition. As is the case with most adolescents, they are not sufficient in the amount or portion of food, and the type of food is not diverse. Foodstuffs that are often consumed by adolescents are fast foods because they are practical and quickly served. Adolescents who have unhealthy eating behaviours can interfere with meeting nutritional needs.

Attention to nutritional problems is not only carried out on normal adolescents in general but also on adolescents who are active in sports. Because teenage athletes need more nutritional intake than normal teenagers, this is due to differences in physical activities and psychological conditions. A sportsman must have appropriate nutrition to obtain optimal health and physical ability so that they can survive during hard physical exercise and be able to maintain good performance during the match. Especially in Pencak silat athletes who are Pencak silat sports with the possibility of someone defending themselves by using parrying, attacking, and self-defence techniques, both with and without weapons. For athletes whose activities are high, they need a good and regular diet, and balanced nutrition will be able to make the body condition ideal and the physical condition strong, thus affecting physical fitness. However, that does not mean excessive nutritional needs, but in accordance with body composition, types of physical activities, environmental factors, and the availability of foodstuffs (Arsani, 2014).

The nutritional needs of athletes in their management are regulated by sports nutrition in accordance with physical performance, which will be beneficial for their health, fitness, growth, and development of sports achievements. The food consumed by athletes must contain maximum energy-producing nutrients and be able to replace nutrients that are reduced due to use for sports activities, so that new food entering the body can be used to meet the energy needs needed during daily activities and further exercise. For national athletes and other sports athletes, they need a large enough energy intake (calories), which will play a role in supporting their activities. In order for an athlete's energy needs to be met in general, they are advised to consume 55–65% carbohydrates, 20–30% fat, and 12–15% protein (Maisun et al., n.d.).

Activity energy is the energy expended by the body to perform an activity, expressed in the form of units of cal/kg BW/minute or kj/kg BW/minute. The physical activity (PA) category is a grouping of a person's physical activity that is divided into three categories, namely very light, light, active, and very active, based on the IOM category (2005). Each athlete must have different energy needs depending on age, gender, weight, height, and the form of daily activity. Therefore, the calculation and fulfilment of energy and nutrient requirements for athletes must be considered in accordance with the type of sport and the stages of nutritional fulfilment for training,

competition, and recovery periods. In addition, food variations, preferences, and athlete acceptance also need to be considered so that their intake can meet the athlete's nutritional needs (Faizal & Hadi, 2019a).

An athlete with proper nutritional adequacy can provide excellent performance when competing. In addition to helping provide the energy needed during physical activities such as training and competing, nutrients are also needed to restore the body afterwards. Therefore, choosing the right food is very important for athletes to meet energy needs and correct nutritional deficiencies that arise from exercise. Athletes must also maintain performance and endurance during training and competition (Setiawan et al., 2022).

The energy produced by the body when performing long-lasting types of exercise is through the process of aerobic energy metabolism, where carbohydrates, fats, and a small amount of protein are burned. To ensure aerobic metabolism runs effectively during exercise, an athlete needs to supply enough oxygen to his or her body. Energy sources for the body can be obtained from foods that contain carbohydrates, proteins, fats, vitamins, minerals, and water (Pinkkan et al., 2022).

Having a healthy diet can provide enough energy to perform physical activities that benefit health, fitness, growth, and athletic ability. Diet is an approach to choosing the type and amount of food that suits a specific purpose, such as maintaining health, fulfilling dietary intake, or preventing and curing disease. The body uses as much energy as it needs, and the right balance of nutrient sources also affects the complexity of nutrients the body receives. In addition, athletes need optimal physical fitness to achieve high sporting performance, improve work power, and increase productivity (Paiman, n.d.).

When athletes meet their nutrient requirements, their health and physical fitness can reach maximum levels. The maximum level of athletes can be seen from their achievements in the competition. The more they fulfilled their nutritional intake and added other supporting factors, such as training intensity, the brighter their sporting achievements. Sports achievement is a result that can be obtained by doing a good portion of training, having good facilities, and having qualified trainers, as well as having a balanced nutritional intake (Afriani, 2021).

The nutritional status of athletes is an indicator of good or bad daily food provision. To maintain a degree of fitness and health and support the development of sports achievements, a good nutritional status is needed. The purpose of this research is to find out how the level of knowledge about balanced nutrition and diet determines the nutritional status and physical fitness of Pencak Silat athletes at Bina Guna College of Sports and Health and whether it affects the level of energy adequacy for their daily activities (Kurniawati et al., 2023).

From the description above, it will be examined regarding the analysis of the level of energy adequacy in the 10 students who take part in UKM pencak silat at Bina Guna College of Sports and Health. Because there are still many students who need to know about the level of energy adequacy, it is necessary to know how important energy adequacy is for students who actively participate in UKM Pencak Silat at Bina Guna College of Sports and Health. In this study, there were 10 students who were sampled, and it was estimated that in filling out the 3x24-hour food recall Google Form, the 10 students who participated in UKM Pencak Silat at Bina Guna College of Sports and Health filled it in honestly and correctly. The results of this study are expected to be useful for students of UKM Pencak Silat at Bina Guna College of Sports and Health because they provide additional information about the importance of the level of energy adequacy that affects the body during physical activity, sports, and training.

METHODS

The type of research used is qualitative research. Qualitative research is a research method used to describe the results of research from sources that have been selected and will be accompanied by evidence to support the research results. Bogdan and Taylor define qualitative research methods as a research process or procedure that produces descriptive data in the form of

written or spoken words from people and observable behavior. This research uses a descriptive regression approach because the phenomena or symptoms are observed in the form of data. In addition, the descriptive approach does not manipulate or modify the data on the variables studied but rather leads to illustrating the actual conditions.

The research was conducted using questionnaires or interviews with a sample of people. In this study, we took samples from students of UKM Pencak Silat Bina Guna College of Sports and Health. The data obtained from questionnaires and interviews is expected to represent a population in the form of organisations within the UKM Pencak Silat campus. Research on the influence of diet on the level of energy adequacy of athletes in the Pencak Silat branch of Bina Guna College of Sports and Health is a type of survey research.

The analysis of the data in the study was carried out by means of quantitative and qualitative analysis. Quantitative data presentation uses tables to combine information or data that has been received to make it more cohesive, easy to understand, and neatly arranged so that it is easier to read the data, draw the right conclusions, and can be re-analysed in recognition of the research. While the presentation of qualitative data used is in the form of data explanations from tables and verbal and descriptive information about the data that has been obtained by conducting the research,.

Data collection was carried out in the form of a 24-hour food recall. In order to get representative data, the Google 24-hour food recall form was given three times a 24-hour recall without succession. According to Sajur, several studies have shown that carrying a minimum of two 24-hour recalls with no succession can produce a more optimal picture of nutrient intake and provide more variety of consumption information in each individual's day. The purpose of the 24-hour food recall is to obtain data in the form of detailed information about all foods and beverages consumed in 24 hours for 3 consecutive days, starting from morning until noon. Subjects were asked to fill out a questionnaire in the form of a Google Form containing questions about the food that had been consumed for 3 consecutive days as well as snacks consumed before entering the actual meal time. In addition, the Google form also contains questions about each athlete's opinion regarding the importance of the athlete's nutritional status in relation to their performance during training. The data that has been obtained from conducting interviews, observations, and filling out the questionnaire will be described and presented as it is without changing the data so that it can obtain new findings that are not yet contained in the data that has been obtained.

In addition, to determine the nutritional status of the subject, it can be obtained by asking questions about height and weight. Then enter the IMT formula to get nutritional status. The definition of BMI is body mass index, which is the value taken from the calculation of the quotient between body weight in kg and the square of height in meters. BMI is used as an indicator to describe a person's body fat percentage. It is then converted into an age group with a certain standard deviation as the research standard. According to Perdana and Hardiansyah, a person's energy adequacy level can be determined by calculating the number of calories consumed per day divided by the daily energy requirement and then multiplied by 100%.

In social research, a population can be defined as a group of subjects who will be subject to the generalisation of research results (Saifuddin, 2020). The population in this study were athletes from the Pencak silat branch of Bina Guna Sports and Health College, totaling 10 athletes. Respondents were selected who met the inclusion criteria, namely getting enough sleep for at least 7 hours at night before conducting the interview, not doing strenuous activities that cause fatigue, and having eaten at least 2 hours before the research was conducted. The data collected for this statement includes diet, physical exercise, physical fitness, body physiology, and athlete performance. The completion of the survey was carried out for 3 days on March 9–11, 2023.

RESULTS & DISCUSSIONS

Results

After obtaining data from the Pencak Silat athletes of Bina Guna Sports and Health College, data analysis was carried out to find out whether their diet had an effect on the adequacy of energy used for daily activities and exercise. By calculating BMI according to body weight and height, which is then used to determine nutritional status according to their age, Their nutritional status is related to their diet and how much they get from what they consume, whether they are in deficit, deficient, or moderate in fulfilling the energy they need.

According to the data that has been collected through Google Forms and athlete interviews, it can be seen that athletes still have a poor diet. This can be seen from their diet for 3 days, which shows that they still often snack on unhealthy foods such as preservatives and so on. And there are some athletes who rarely eat rice, only 1 or 2 times a day, and they also rarely consume vegetables and fruits. The reason is that they are not hungry because they have eaten snacks from outside, such as cakes, snacks, and sweet drinks.

Whereas diet is a system that is done repeatedly or can be called a habit that is done regularly to meet food needs every day. A good diet is very influential for the condition and health of a person's body, especially athletes. A good food intake for the body is to fulfill the substances needed by the body. Especially for athletes who have high activity and a good and regular diet, nutrition will become more balanced, body condition will become more ideal, and physical condition will become stronger, which will affect physical fitness. In accordance with existing principles, everyone must provide adequate food energy for their bodies so that existing calories can be maintained in a balanced manner. With balanced calories, it will refer to a situation where the number of calories provided in food is completely balanced with the calories expended through various activities. The source of energy obtained comes from food in the form of carbohydrates, protein, fat, vitamins, minerals, and water. Carbohydrates are the main source because carbohydrates and fats provide energy for cell work.

Each athlete will have different needs depending on gender, age group, level of physical activity, and so on. So athletes must pay attention to their diet in order to have sufficient energy levels when practicing and participating in a race, because this can affect their achievement and performance. To get a good nutritional status, a healthy diet is needed, meaning that all needs must be fulfilled in accordance with doses such as carbohydrates, protein, fat, minerals, vitamins, and so on. But in reality, we can see from the research that has been done that athletes still do not follow a healthy diet. This is influenced by several factors, such as the absence of the role of nutritionists or related parties in reminding and providing a healthy diet for athletes. Athletes should get special attention by working with nutritionists, but because it is still at the UKM level, which clearly still has obstacles in working with several parties, Because working together will require funds that may not be small. In addition, the poor diet of athletes is also influenced by individual factors such as a lack of self-awareness in paying attention to food intake and a lack of time due to other activities, so they do not have time to eat.

Discussions

Based on the results of the data that has been obtained, it can be seen that the level of adequacy or energy needs of Pencak silat athletes at Bina Guna Sports and Health College in 2023 has not been fulfilled or fulfilled through the portion of food consumed every day by these athletes. In this case, it can be directly seen from the standard of energy adequacy of Pencak silat athletes at Bina Guna College of Sports and Health, which is included in the deficit category as many as 9 athletes (90%), which is in the category of less none, and which has a moderate category of 1 athlete (10%). If this is not paid too much attention, both coaches and athletes will be able to inhibit the maximum ability to participate in training caused by a lack of energy intake into the body. Of the 10 pencak silat athletes sampled in this study, there were 9 athletes who obtained the level of energy adequacy in the deficit category and 1 athlete who was included in the

moderate energy adequacy level category. Because none of the 10 athletes reached their calorie needs of ± 2000 calories a day.

It is said in research conducted by Kuswari et al. (2020) that consuming an intake of energy, carbohydrates, vitamin C, and iron or Fe is significantly correlated or related to athlete performance. However, other intakes such as protein, fat, or vitamin B1 did not significantly correlate. According to other studies, the majority of athletes have a normal nutritional status of 95% protein and 5% fat. In reality, most athletes do not consume enough energy and protein to meet their needs. An athlete who carries out a high activity should need the right nutrients to maintain the availability of energy sources in the athlete's body properly so that they can carry out their activities as well as when practicing and competing (Irawan, 2007). Calories are an important requirement for supporting optimal physical performance, physiological function, endurance, and performance.

If we compare with other studies regarding eating behaviour and the level of energy adequacy of Pencak Silat UKM athletes located in Surabaya, they have very different eating habits from Pencak Silat UKM athletes at Bina Guna College of Sports and Health. UKM Pencak Silat athletes in Surabaya have quite good eating habits, such as rarely consuming fast food, never going on a diet or having an irregular diet, and not consuming soft drinks (Enggarsari, 2017). Whereas for UKM students who are Pencak Silat athletes at Bina Guna College of Sports and Health, the respondents have a diet that is the opposite of the habits of Pencak Silat athletes in Surabaya. For example, having an irregular diet means eating only 1 or 2 times a day and still eating snacks that are not nutritious.

Seeing as the results of this study show that the level of energy adequacy of Pencak silat athletes at Bina Guna Sports and Health College is in the deficit category, it is necessary to pay attention to their consumption patterns and excessive physical activity, which must be followed by good energy intake as well. Dishes and food, when consumed in the right amount and in the right way, will produce a healthy nutritional state. A healthy daily nutritional state will increase one's productivity and allow one to achieve optimal performance. The nutritional status of Pencak silat athletes at Bina Guna Sports and Health College is divided into 3 categories based on BMI, which is overall included in normal nutritional status.

The research conducted is in line with research conducted by Hidayah and Muniroh (2017) which states that there is a higher burden on people who have more weight, so athletes who have a greater BMI value have lower power. In their research, Amin et al. (2021) stated that the lower the BMI score, the lower the muscle strength. An athlete who has a normal nutritional status will be in good health and will not experience fatigue quickly, and muscle mass will increase.

When an athlete is required to do a match or training that is too dense and sudden they will be able to experience overweight, then he must prepare extra energy to undergo the match. Meanwhile, their energy intake can certainly be less than the energy they expend. As an athlete, they must also be able to determine the type of match that suits their condition, because if the match they live in is not in accordance with their condition, it will be able to worsen their physical condition, which causes poor optimal achievement (Faizal & Hadi, 2019b).

CONCLUSION

The research on the energy adequacy of Pencak Silat athletes at Bina Guna Sports and Health College in 2023 found that their energy needs are not met through their daily food intake. The average energy requirement is 2,178.2 calories, but this imbalance is not balanced. This results in athletes being less optimal in achieving achievements, highlighting the need for cooperation between coaches, athletes, and staff to improve diet. Nine athletes (90%) are in the deficit category, while only one (10%) has a moderate energy need.

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