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Ocena czynników wpływających na skuteczność terapii integracji sensorycznej u dzieci w wieku przedszkolnym i wczesnoszkolnym

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Micronutrient intake in the martial arts community: Preparation for national sports

Przyjmowanie mikroskładników odżywczych w społeczności sztuk walki: Przygotowanie do krajowych zawodów sportowych

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Abstract

Study Purpose. The provision of protein is related to the intake of calorie reserves and is useful in repairing body cells. Therefore, the provision of protein for the body needs to be considered, especially for athletes. Protein intake can minimize calorie debt and immediately replace damaged cells caused by hard and overused training done by athletes. This study aims to determine the availability of protein intake in martial arts athletes in West Kalimantan
Materials and Methods. The research method used was a survey with a sample of nine martial arts athletes in West Kalimantan. The instrument used in this study was a 24-hour food recall for 7 days. Data obtained through food recall were then analyzed using a food analysis application. The data analysis used in this research is descriptive statistics.
Results. The results showed that 22.22% of low protein intake athletes and, 33.33% of high protein intake athletes, only 44.44% had moderate protein intake. These results prove that the protein intake of martial arts athletes in West Kalimantan is predominantly moderate. Conclusions. Fulfillment of balanced protein intake will help muscle adaptation, excess and deficiency of protein can interfere with the health and performance of athletes. Therefore, protein intake must be carefully considered, even though protein serves as a secondary energy source where the presence of protein in the body must remain and be fulfilled.

Keywords

protein intake, martial athletes, national sports olympics

Streszczenie

Cel badania. Dostarczanie białka wiąże się z przyjmowaniem rezerw kalorycznych i jest przydatne w naprawie komórek ciała. Dlatego dostarczanie białka dla potrzeb organizmu powinno być brane pod uwagę, szczególnie w przypadku sportowców. Przyjmowanie białka może zminimalizować deficyt kaloryczny i natychmiast zastąpić uszkodzone komórki spowodowane intensywnym i nadmiernym treningiem, któremu poddają się sportowcy. Celem tego badania jest określenie dostępności przyjmowania białka przez sportowców uprawiających sztuki walki w Zachodnim Kalimantanie.
Materiały i metody. Metodą badawczą używaną w tym badaniu była ankieta z próbą dziewięciu sportowców sztuk walki w Zachodnim Kalimantanie. Instrumentem używanym w tym badaniu był 24-godzinny wywiad dotyczący spożywanych posiłków przez 7 dni. Dane uzyskane za pomocą przypomnienia o spożywanych posiłkach zostały następnie przeanalizowane przy użyciu aplikacji do analizy żywności. Analiza danych użyta w tym badaniu to statystyka opisowa.
Wyniki. Wyniki pokazały, że 22,22% sportowców miało niskie przyjmowanie białka, a 33,33% wysokie przyjmowanie białka, tylko 44,44% miało umiarkowane przyjmowanie białka. Wyniki te dowodzą, że przyjmowanie białka przez sportowców sztuk walki w Zachodnim Kalimantanie jest przeważnie umiarkowane.
Wnioski. Spełnienie zrównoważonego przyjmowania białka pomoże w adaptacji mięśni, nadmiar i niedobór białka mogą zakłócić zdrowie i wydajność sportowców. Dlatego przyjmowanie białka musi być starannie rozważone, mimo że białko służy jako drugorzędne źródło energii, gdzie obecność białka w organizmie musi być stale i odpowiednio uzupełniana.

Słowa kluczowe

przyjmowanie białka, sportowcy sztuk walki, igrzyska sportów narodowych

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Introduction

Achievement requires support from various levels, including efficient techniques and tactics. The skill of concocting techniques and tactics requires a lot of practice. Exercises must be performed repeatedly and continuously to achieve the fullest potential. Therefore, we prepared and implemented a detailed training program [1–3]. The athlete training programs include physical training, tactics, psychology, and food intake.

Adequate food intake is key to optimal performance [4]. Athletes require consistent high-level performance [5–7]. By performing well, athletes can train and compete optimally to achieve excellence [8–10]. Nutritional intake is used by athletes to meet caloric energy needs, for growth, and also for the recovery process. Therefore, the nutritional needs of athletes are different from those of non-athletes. To be able to display their best skills, athletes need sufficient energy. This energy is the fuel that can help optimize muscle contraction and athlete performance. The availability of this energy will ensure the balance of energy expended during training and/or competition as well as after training or competition as a recovery process.

Nutritional intake for athletes is not only based on quantity but also on the quality of food intake. The quantity of intake will affect the availability of calories that will be used by athletes to train or compete, but the quality of intake can ensure that the athlete's body needs are fulfilled for the nutritional content. This knowledge gap has led many athletes to experience insufficient intake, as shown in studies [11–13]. With nutrition knowledge, athletes in various branches experience insufficient caloric energy, and this will cause athletes to display minimal performance.

The precision and adequacy of nutrition are crucial, given the specific dietary needs of each sport [14]. Eating arrangements significantly affect performance [15]. As the understanding of the benefits of nutrition advances, it can affect strength, speed loss, weight problems, and fatigue. However, the issue of nutritional imbalance persists [16]. Therefore, it is still vital to teach people how to consume meals for athletes [17].

Protein is one intake that needs attention. Apart from being a source of energy reserves, protein has other functions, such as building muscles, helping the process of injury recovery [18], and it can also help athletes prevent injury [19] states that protein is important for the body, especially for the growth of muscle tissue and supporting the immune system. Deficiency or excess of protein can be bad for the health of athletes. When the body is deficient, muscle tissue growth or tissue repair will not occur and the body can easily become infected with the disease. However, the excess protein will also negatively impact the athlete's body [20]. In a study by [21], fighting athletes consumed more protein than their daily protein requirement. Several studies suggest that protein intake is related to the physical fitness of athletes and the menstrual cycle [22]. Furthermore, [23] suggests that physical fitness will be in line with the provision of supplements. The provision of protein supplementation reduces the percentage of fat in the body and is able to increase lean body mass [24]. The use of supplements to boost performance and muscle growth is an intriguing topic [25].

Controlling protein intake is the foundation of athletes in training and competing. Therefore, in this study, the researchers tried to describe the percentage of protein intake from martial arts athletes in West Kalimantan. Athletes are compelled to conduct independent training camps, a situation not supported by the governmen. Previous research has discussed the quality of diet and nutritional status [26]. However, there are differences, namely in this study focusing more on protein in martial arts athletes. As such, there is a gap as to why this research is important. In addition, the results of this study will be able to provide additional references, especially in the development of martial arts athletes. This study aims to detail how athletes meet their protein requirements, addressing these identified issues.

Research methods

Participant

The sample comprised martial arts athletes from West Kalimantan who participated in the training center for the National Sports Week in Papua, totaling 9 people.

Procedure

This study employed a descriptive research approach, including a measurement test. The 'Food Recall 24 Hours' method focuses on the subject's ability to recall all food and drink consumed in the previous 24 hours.

Data analysis

Data collected from food recall were analyzed using a food analysis application. his research used descriptive statistics for data analysis.

Results

The research was conducted at the KONI in the province of West Kalimantan in May 2021. The martial arts sports in West Kalimantan that have passed the PON event in Papua are five sports, including Tarung Derajat, karate, wushu, taekwondo, and muathay. The distribution is shown in Table 1.

Table 1. Distribution of athletes

Sport branch	Gender	
	Male	Female
Tarung Derajat	2	3
Muathay	0	1
Taekwondo	1	0
Wushu	0	1
Karate	0	1
Total	**3**	**6**

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The average daily intake of 9 martial arts athletes who attended the training center can be seen in Table 2.

Table 2. Descriptive statistics on the protein intake of West Kalimantan martial arts athletes

Result	Recommendation	Protein Intake	Fulfillment
Mean	61	51.16	0.84
Standard Error	1.55	8.06	0.13
Median	62	47.9	0.79
Standard Deviation	4.38	22.81	0.36
Sample Variance	19.14	520.18	0.13
Range	10	60.6	0.91
Minimum	56	19.5	0.35
Maximum	66	80.1	1.26

The average daily protein intake for martial arts athletes is 51.16 grams, compared to the recommended average of 61 grams. Based on the protein intake, martial arts athletes in West Kalimantan meet 83.65% of the average daily requirement. The average daily intake of each athlete can be seen in Table 3.

Table 3. The average daily protein intake of martial athletes

No	Sports	Protein Intake	Recommendation	Fulfillment
1	Tarung derajat	51.9	62	84%
2	Tarung derajat	42.6	56	76%
3	Tarung derajat	19.5	56	35%
4	Muathay	80.1	66	121%
5	Tarung derajat	53.2	65	82%
6	Karate	37	62	60%
7	Tarung derajat	77	62	124%
8	Wushu	70.6	56	126%
9	Taekwondo	29.3	65	45%

The homogeneity test in Table 3 shows a significance value of 0.706 > 0.05. The results indicate that the data is homogeneous. Next, this study will employ the Independent Samples Test formula for further analysis.

Table 4. Frequency distribution of protein intake in martial arts athletes [27]

Classification interval	Interval		Frequency	Percentage
Low	X < M – 1SD	≤ 4.,18	2	22.22%
Medium	M – 1SD < X < M + 1SD	47.18 – 120.1	4	44.44%
High	M + 1SD < X	≥ 120.1	3	33.33%

Among West Kalimantan martial arts athletes, two have low protein intake, four have moderate intake, and three exceed the recommended protein intake

Discussion

Protein is very important for an athlete's body, especially for the growth of muscle tissue to support the immune system [28]. Muscle mass is strongly influenced by protein intake. Meanwhile, muscle strength is influenced by muscle mass [29]. Athletes with excellent stamina tend to have good energy and protein intake [22]. Muscle strength is developed through protein synthesis in the body, which also generates waste products. While urine protein levels change before and after exercise, these changes are not statistically significant [30].

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Many aspects will be affected by the availability of protein in the athlete's body. One issue is that a low proportion of vegetable protein can cause PMS-related athletic disorders among athletes [31]. Jang et al. also suggested that dietary protein intake would have a negative impact on the gut microbiota [32]. This is certainly detrimental to athletes in providing caloric energy to be able to perform optimally. Optimal carbohydrate and protein intake are essential for modulating exercise adaptation, recovery, and exercise performance. [33]. Athletes' food intake needs to be optimized and adjusted according to needs, gender, and sports types in order not to interfere with the athletes' health and performance [34].

A safe protein intake level for athletes is in the range of 1.2–2.0 g/kg/day [35]. Some studies argue that optimal protein intake for athletes can exceed 1.6 g/kg body weight per day. The improper amount of protein intake will certainly have a bad impact on the body. Protein metabolism in the body will produce a waste product which is better known as ammonia. The accumulation of ammonia, a waste product of protein metabolism, can cause health problems, particularly in the kidneys and respiratory tract.

It was identified that the dietary intake of professional AFL athletes during pre-season training, which included body composition assessments, did not meet the recommended levels [36]. However, the majority of the subjects participating in this study were able to meet the recommended protein intake for athletes. Without protein supplementation, 27% of the athletes were below the guideline range [37].

Providing protein in the body can help athletes maximize the adaptive response of skeletal muscles to exercise [38]. In this study, two athletes were included in the low category in consuming protein for their bodies. This makes muscle adaptation difficult during exercise. During exercise, undeniably, the muscles will experience changes, and the changes that occur require the availability of protein. Insufficient protein content to support changes in the muscles will cause injury to the muscles.

Conclusion

Protein intake must be carefully considered, even though protein serves as a secondary energy source. The presence of protein in the body must still be present and fulfilled. There are 2 West Kalimantan martial arts athletes whose protein availability in their bodies is low, and three athletes are included in the high criteria. All the risks and disturbances due to the inappropriate availability of protein intake can have a detrimental effect on athletes. Further research needs to be done on the effects of excess or deficiency of protein in each training period as well as the study on the availability of Muscle and bone-related proteins.

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