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The Influence of Energy Intake on The Performance and Endurance of Athletes

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ABSTRACT

Background. *Adequate energy intake is an essential component in achieving sports success that plays a role in calorie expenditure, improving and increasing strength, endurance, muscle mass, and health. Many factors can affect each person's immune system, such as genetics, gender, energy intake, age, and nutritional status.*

Research Methods. *the method used in this study is a literature review. A literature search, both international and national, was carried out using the Sinta Indonesia database according to the topic to be discussed by the author. The data obtained were published from 2014-2021. There were 11 articles obtained, 10 of which became material for analysis of the objectives, methods, and interventions, and the results and the suitability of the topics carried out in the research and making of this article.*

Research Result. *it is likely that energy intake will significantly affect the speed, agility, and endurance of an athlete.*

Conclusion. *The effect of energy intake on the performance and strength of the athlete's body can be significantly related depending on the type of exercise performed by the athlete.*

BACKGROUND

Sport is a structured, planned, and sustainable physical activity that aims to improve physical fitness and achievement (Debian et al., 2021). Adequate energy intake is an essential component in achieving sports success which plays a role in expanding calories and improving and increasing strength, endurance, muscle mass, and health. According to Samiharja, 1995 in an article belonging to In Mutmainah in 2019, the sport has gained a place in the world of health as an essential factor in efforts to prevent disease and improve health status and physical fitness. Many factors can affect everyone's immune system, such as genetics, gender, energy intake, age, and nutritional status. The preparation of this literature review aims to determine the effect of energy intake on athletes' endurance by comparing ten journal articles.

RESEARCH METHODS

The method used in this study is a literature review. A literature search, both international and national, was carried out using the Sinta Indonesia database according to the topic to be discussed by the author. The data obtained were published from 2014-2021. There were 11 articles obtained, 10 of which became material for analysis of the objectives, methods, and interventions, as well as the results and the suitability of the topics carried out in the research and making of this article.

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RESULTS

Summary of Study on Energy Intake and Endurance

No	Researcher	Methods	Intervention	Output
1	Mailina PS, Nurmasari W, and Ayu Candra (2019)	Observational study with cross-sectional Multistage Fitness Test (MFT) method the Biometrical Impedance Analysis (BIA) method using the Body Fat Analyzer	Data retrieval of food consumption, personal data, and physical activity in this study was obtained through interviews and got 60 (41 male athletes and 19 female athletes)	98.3% of research subjects had poor-quality diets. Therefore, this study showed no relationship between the quality of diet and physical activity with the endurance of badminton athletes.
2	Nur Amin, Yanesti Nur AL (2019)	Correlation descriptive with cross-sectional	Data collection in this study was anthropometric data and interviews regarding the diet of hockey athletes, which were then analyzed for their relationship with the speed or agility of hockey athletes. The nutritional status of the subject was determined using the BMI/U indicator.	The average intake of energy and nutrients in this study was obtained from interviews with research subjects using a semi-FFQ questionnaire over 30 days. When viewed from the relationship between the average level of intake adequacy with speed, there are results that the level of adequate intake of macro and micronutrients is not significantly related to the speed performance of hockey athletes. Meanwhile, athletes with a deficit intake showed promising results in the 50-meter sprint running a speed test. So it can be concluded that athletes or subjects with excessive intake show moderate to good speed performance.
3	I Gusti Putu Ngurah Adi Santika, and Maryoto Subekti (2020)	This study uses the correlational method.	The research, which was conducted in March 2018 at the Lila Bhuana Gymnasium in Denpasar, obtained a sample of 18 kabaddi athletes. Data analysis used SPSS 16 with the bivariate person correlation test to determine the relationship between height and weight on agility.	Research on the relationship between height and weight on the body agility of kabaddi athletes found no significant relationship between size and weight on skill.
4	Zulfah R, Defriani D, Iswanelly M, Eva Y, Kasmiyetti (2019)	I am using an analytical method with a cross-sectional design.	This research was conducted in July 2019 at the West Sumatra Student Education and Training Center (PPLP), with the subject being all game sports athletes.	This study found a significant relationship between the intake of macronutrients and the physical fitness of athletes.

5	Desiani RP, Nadila DW, Nazhif G (2021)	When taking samples, I use a quantitative observational study method with a cross-sectional design and purposive sampling.	There are 70 subjects, namely kyorugi taekwondo athletes.	The study used primary data from the subject's characteristics, food consumption, weight, height, body composition, and quadriceps muscle endurance. Interviews used a 24-hour food recall questionnaire three times a row to obtain food consumption data. The average result of each intake is divided by the need calculation according to individual taekwondo athletes' energy and nutritional needs. Weight, height, and composition Body weight (percent body fat and percent muscle mass) was measured using a digital scale equipped with bioelectrical impedance analysis (BIA). Quadriceps muscle endurance data by measuring the duration of endurance in doing the wall sit test. And these statements show that there is no relationship between energy intake and muscle endurance.
6	M Abdullah, Heni DP (2017)	The type of research used is non-experimental quantitative with the cross-sectional method.	The data collected was in the form of the respondent's identity (name, address, contact, education, and gender) intake of energy, carbohydrates, fats, and protein which was then averaged and converted into nutritional units.	The low energy intake in soccer athletes is not only caused by soccer athletes not being quarantined but also influenced by the family's economic situation. Based on the study's results, nutritional status was not significantly related to endurance in soccer athletes. Still, based on statistical results, it was found that there was a tendency for a relationship between nutritional status and endurance athletes.

7	Dian IA, Putu RA (2014)	Observational research, cross-sectional	The samples obtained in this study were 78 people using the hypothesis formula for two portions which was carried out using proportionated stratified random sampling on three batches of students at the Unila Faculty of Medicine who met the inclusion and exclusion criteria.	Intake of immune nutrients, namely protein, zinc, and iron, was obtained through a food recall questionnaire 3 x 24 hours taken at 2 weekdays and one day on weekends. Immune status was assessed by counting the number of lymphocytes obtained from the peripheral blood smear (ADT) results by calculating the diff count in the laboratory. The nutritional status of research subjects is mainly classified as average/good dietary status, namely: As many as 52 people (66.67%), while the rest are classified as nutritional status less as many as eight people (10.26%), and over nutritional status as many as 18 people (23.08%). From some of these statements, it can be determined that this study obtained results where nutritional status and zinc intake had no significant relationship with immune status.
8	Iin M, Ismail Ab, Sulistyo P (2019)	This type of correlational research uses a cross-sectional study design.	Primary data was obtained directly from soccer athletes through food intake data obtained through interviews using a food recall form 2x24 hours, not in a row, and fitness data measured from the VO2Max value obtained through a running test measurement sheet using the Yo-yo Intermittent Recovery Test Level 1 method. Secondary data used in this study came from SSB Harbi, books, and other reading sources containing data reports and opinions related to research to support the contents of the writing.	If we look at energy intake and fitness, we get the result that the greater the athlete's energy intake, the greater the fitness (VO2Max) of young athletes in SSB Harbi. There is a significant relationship between age, energy intake, protein intake, and carbohydrate intake with fitness (VO2Max), and only fat intake is not statistically related to wellness (VO2Max).

9	Sopyan H, Achmad Alvian S (2020)	They used a qualitative method based on secondary and primary data, and the researcher collected data in the form of information related to the object that the researcher chose.	In designing this immune system information media, researchers used computer software that collaborated with Adobe animate or flash software and Adobe Illustrator to create pictures and illustrations. The structuring of paintings and the layout process is continued in Adobe Animate so that the graphics and layouts designed have an attractive appearance and composition in terms of images, colors, and illustrations. So that the audience or users easily understand it.	The results of this study are expected to help science, especially in the field of health or medicine, to develop information about the Human Immune System.
10	Akhmad Mustofa, Nanik Suhartatik (2020)	The method used is in the form of counseling and offline and online discussion.	First, preliminary meetings (FGD) were held with village officials such as the Village Head and the Karang Taruna Chair. In this FGD, it was agreed to hold online meetings in the Karang Taruna WhatsApp group and offline with the Karang Taruna core management. The evaluation was then carried out through various discussions in the WhatsApp group to determine the level of understanding of the participant's activity	Providing understanding to the younger generation in the Kedunggupit Sidoharjo Wonogiri area in the form of good discussions offline and online have had a good and significant impact, with the realization of a change in awareness of Clean and Healthy Life Behavior (CHLB).

DISCUSSION

From the ten journals used as material for the preparation of literature review articles by the author, it was found that energy intake is most likely to significantly affect the speed, agility, and endurance of an athlete. However, in Nur Amin's article, Yanesti Nur AL in 2019 stated that the level of adequate intake of macro and micronutrients was not mainly related to the speed performance of hockey athletes. Excess of macro and micronutrients.

Energy is essential for humans every day, especially athletes or athletes. In 2019 In M, Ismail Ab, and Sulistyo P conducted a study on adolescents at SSB Harbi using the correlation method. This research, conducted with interviews that included a food recall formula, found that the greater the energy intake of athletes, the greater the fitness (VO2Max) of adolescent athletes at SSB Harbi.

CONCLUSIONS

From several comparisons that the authors of the ten articles have analyzed, it can be concluded that the effect of energy intake on the performance and endurance of athletes can be significantly related depending on the type of sport performed by athletes.

RECOMMENDATION

Suggestions that the author for further research can convey are being able to develop every research method and taking advantage of technology already sophisticated today to make research activities easier.

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