



### Increasing the Endurance of Futsal Athletes by Providing Green Bean Porridge

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#### ABSTRACT

This research aims to find out whether there is an increase in the endurance of futsal athletes through feeding green bean porridge. Experimental type of research. Experimental research is research that seeks to find the influence of certain variables on other variables under strictly controlled conditions. So the population of this study was all futsal athletes at SMA Negeri 9 Makassar. A sample of 10 people was obtained based on the criteria, namely males aged 15-17 years using a purposive sampling technique. The data analysis techniques used are descriptive tests, normality tests, and T-tests (hypothesis tests) using a computer via SPSS 16.0 with a sig level of 0.05. Based on data analysis, the results of descriptive tests with the group given green bean porridge obtained an average value (mean) of 37.61 with a standard deviation of 2.99 a minimum value of 32.90, a maximum of 41.10. The group without giving green bean porridge obtained an average value (mean) of 34.64 with a standard deviation of 3.49 a minimum value of 29.50 and a maximum of 39.90. The results of the data normality test were with a total of Asymp= 0.99 (pretest) and with a total of Asymp= 0.65 (posttest) where the value of sig 0.00 < 0.05. Hypothesis test results (T-test) data between the pretest and post-test have a mean difference of 92.97) so it can be concluded that there is an increase in giving 100 grams of green bean porridge to vo2Max in futsal athletes at SMA Negeri 9 Makassar.

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#### INTRODUCTION

Sport is physical activity or work that can help optimize body development through movements based on muscle movement (Wibowo, 2018). Sports can also train a person's body, not only physically but also spiritually (Nosa et al., 2019). Sport is a form of physical activity carried out deliberately to obtain pleasure and optimal performance (Cholik and



Maksum, 2007). So, the goals of sports vary according to the sport being carried out, but the goals of sports, in general, include maintaining and improving physical fitness (Mashud et al., 2019), maintaining and improving health, increasing people's interest in exercising as recreation (Kusuma, 2019) as well as maintaining and improving sports achievements as high as possible according to the sport of interest (Ashari & Adi, 2019).

Physical activity is a means of training to maintain and improve the degree of health and quality of life towards a state of complete prosperity by the healthy concept of the WHO (World Health Organization). Sport develops the quality of human resources through a physical aspect approach. This causes dynamic changes such as anatomical and physiological changes, as well as changes at the molecular biology level (Habibul Rasyd, Ahmad Atiq, 2019).

Sports have various types, all of which have different goals and functions, including educational sports, recreational sports, health sports, and achievement sports (Firmansah et al., 2019). Types of performance sports can be differentiated based on the number of players, both individually and in teams. Sports carried out individually include athletics, martial arts, and swimming, while sports carried out as a team include football, basketball, and futsal (Oman Hadiana, 2020).

Nowadays, sport has become a necessity for society. We see what is happening now with a dramatic increase in big cities such as Jakarta, Bandung, Surabaya, and even Makassar specifically in public participation in sports activities, whether just creative or maintaining fitness and maintaining health. The emergence of physical fitness centers, and six studios, shows us that public awareness of the importance of exercise for health has begun to increase (Afandi & Faisal, 2020). Implementation of health efforts has the aim of achieving the ability to live a healthy life for every human being (Solihin, 2020). Having the ability to live a healthy life is the main condition for creating an optimal level of health so that now people have recognized and felt, including those with high incomes, that the exercise they frequently do is exercise that aims to maintain and improve health (Festiawan, 2020). Health sports have several conditions that must be met, namely that the intensity and load are homogeneous and submaximal, and there must be no element of competition in it (Setiawan et al., 2021). The benefits of doing exercise regularly and programming according to training principles have been widely reported in various popular articles and health journals. Among these benefits, exercise can prevent obesity, diabetes, stroke, and hypertension. Sports, especially futsal, is a ball game played by two teams, each consisting of five people per team (Susilo & Bawono, 2021; Nasuki et al., 2021). The goal is to put the ball into the opponent's goal, each squad or team is allowed to have a reserve player. Currently, the development of futsal is very rapid, this is marked by the existence of the Makassar 9 State High School futsal club and many teams.

To play futsal, players must be equipped with good basic techniques (Agustan & Hidayat, 2021). Players who have good basic techniques tend to be able to play well (Novianto & Nugraheningsih, 2021). The appeal of futsal matches lies in the tactics and techniques displayed by players who compete with physical ability and endurance (Ishak et al., 2022).

Endurance training is an exercise that stimulates the body's performance to move optimally for a long time (Widiyono et al., 2022). This causes muscle glycogen levels to decrease so that muscle energy sources are reduced which can cause fatigue in athletes (Imam et al., 2022). Fatigue can reduce the productivity of muscle work ability so that muscle strength decreases (Salmawati, 2022). From observations on the field and in matches, when futsal players carry out training activities or compete, their endurance is very poor. Including the trainer's lack of knowledge about giving vitamins or supplements

to athletes which results in the athlete's endurance being reduced so that they are physically unable to train or exercise. This mistake is common among sports achievers, where in preparing a program, especially the load, frequency and intensity of training, it is not done well. Another thing that reduces athletes' endurance is monitoring nutrition and giving vitamins or supplements. Athletes who eat green bean porridge before or after heavy exercise recover more quickly than those who consume sports drinks or energy drinks. The simpler green bean porridge food turns out to be a more effective and delicious choice for athletes to restore energy after exhausting physical exercise. By consuming green bean porridge, the water reserves in the body can last longer. More than that, green bean porridge can help restore the muscles used during exercise because green bean porridge contains a lot of protein. With vitamin B1, carbohydrates and protein

Athletes must try hard to achieve high achievements, and to achieve achievements requires relatively long preparation. One of these preparations involves preparing for physical condition. Athletes must be physically trained and improved before taking part in actual matches, so that the players are ready to face the pressures that arise in matches, both mental pressure and physical pressure such as endurance. To train endurance, the body needs a lot of stamina, so now many players can be found consuming nutrition or milk.

## METHODS

The variables in this study are two visible variables, namely the independent variable and the dependent variable. These two variables will be defined in this study as follows: the independent variable is green bean porridge while the dependent variable is: the endurance of futsal athletes. This research was conducted on July 21 2019 as long as it did not interfere with the learning of SMA Negeri 9 Makassar students and the place of research was carried out at SMA Negeri 9 Makassar. Population is a generalization area consisting of objects/subjects that have certain qualities and characteristics that are determined by researchers to be studied and then draw conclusions (Sugiyono, 2012: 215). Meanwhile, the population used in this research are futsal athletes at SMA Negeri 9 Makassar. Samples can be said to be taken or a portion of the population obtained using the Purposive Sampling technique (Non-Probability Sampling), which means the technique of determining the sample with certain considerations.

According to Iztok Kavcic<sup>1</sup> et al. (2012:18), the bleep test is a continuous running test between two lines 20 meters apart as long as a recorded beep sound is heard, this test is a test that is considered valid, safe, cheap, and reliable to be carried out by a group or many people.

Data analysis techniques are a very important part of research. With data analysis, the validity of the hypothesis can be tested and then conclusions can be drawn. The data obtained in this study was the endurance of futsal athletes at SMA Negeri 9 Makassar before and after receiving green bean porridge.

## RESULTS AND DISCUSSION

### Result

Descriptive statistical analysis is intended to obtain a general picture of the research data. The results of the descriptive analysis include the average, standard deviation,

variance, maximum data, minimum data, and the effect of giving green bean porridge on the endurance of futsal athletes at SMA Negeri 9 Makassar. Next, the requirements are tested, namely the normality test and hypothesis testing using the T-test to see The effect of giving green bean porridge on the endurance of futsal athletes at SMA Negeri 9 Makassar.

**Table 1**

Results of analysis of the effect of giving green bean porridge on the endurance of futsal athletes

Variable	N	Mean	SD	Min	Maks	SUM
Pre Test	10	34.64	3.49	29.50	39.90	346.40
Post Test	10	37.61	2.99	32.90	41.10	376.10

### Data Normality Test

The data normality test is used to determine whether the samples taken are normally distributed

**Table 2.**

Results of the green normality test on the endurance of futsal athletes

Variable	Absolut	Positive	Negative	KS-Z	Asymp	Information
Pre Test	0.11	0.11	-0.10	0.37	<b>0.99</b>	Normal
Post Test	0.23	0.13	-0.23	0.73	<b>0.65</b>	Normal

### Hypothesis test

To find out the effect of giving green bean porridge on the endurance of futsal athletes at SMA Negeri 9 Makassar, the data was analyzed using the T-test, a summary of the results of the data analysis can be seen in the table as follows:

**Table 3.**

T-test results

Variable	Difference	(p) Sig.(2 tailed)	Information
Pre-test - Post-Test	2.97	0.00	<b>Significance</b>

### Discussion

In the world of sports, the term VO<sub>2</sub>max is no longer foreign. VO<sub>2</sub> max is the maximum volume of O<sub>2</sub> processed by the human body when carrying out intensive activities. This O<sub>2</sub> max volume is a level of body capability expressed in liters per minute or milliliters/minute/kg body weight. A person or athlete who has a high VO<sub>2</sub> max has good endurance and fitness. If a soccer athlete's VO<sub>2</sub> max decreases, the athlete will quickly experience fatigue, which will affect the athlete's performance when competing.

From the data above, it can be seen that there is an effect of giving green bean porridge on the endurance of futsal athletes at SMA Negeri 9 Makassar, where the sig value is  $0.00 < 0.05$ , with a difference of 2.97.

VO<sub>2</sub> max is a predictor that can describe an athlete's fitness in terms of cardiorespiratory capacity. One sport that requires optimal VO<sub>2</sub> max is football because it requires physical strength and endurance during competition. During a match, a soccer player has a high level of physical activity intensity, so he needs to regulate nutritional intake in terms of quantity, quality and timing of administration. An athlete's VO<sub>2</sub>max can be optimized through carbohydrate intake.

In this case, improving performance in the sport of football in the future requires providing good and correct training methods. When discussing training issues, it is closely related to the energy that contributes to each series of movements. The movements carried out during exercise require energy. Where this energy can be

sourced from sports drinks and the ingredients in fruit which of course contain carbohydrates. Carbohydrates are the main source of energy used in the body apart from fat and protein. During exercise, carbohydrates can be broken down as energy through aerobic and anaerobic mechanisms.

Athletes who eat green bean porridge before or after heavy exercise recover more quickly than those who consume sports drinks or energy drinks. The simpler green bean porridge food turns out to be a more effective and delicious choice for athletes to restore energy after exhausting physical exercise. By consuming green bean porridge, the water reserves in the body can last longer. More than that, green bean porridge can help restore the muscles used during exercise because green bean porridge contains a lot of protein. With the presence of vitamin B1, carbohydrates and protein, eating arrangements for athletes need to be carried out during training and preparation for competition. Foods containing carbohydrates consumed before exercise can prevent fatigue. Food in liquid form can be given to athletes who will compete because it leaves the stomach more quickly so it is quickly absorbed by the body and used as an energy source. Food before the match aims to provide energy during the match, for example, to form muscle and liver glycogen.

This aims to prevent hunger and gastrointestinal disorders so that it will prevent fatigue during competition. The food provided must contain high carbohydrates, low fat and fibre. An example of a food that can be given is green bean porridge. Brown sugar contains a lot of carbohydrates, this substance functions to provide energy intake to the body. Eat brown sugar when you feel weak and lethargic because the glucose contained in it is quite easy to digest.

Based on the results of this research, green bean porridge can be used as an ingredient to create functional food to prevent fatigue or used to replace doping which has the function of protecting physical and psychological conditions, this is an important finding for athletes. Abandoning doping and switching to using natural foods to support athletes' performance (speed, strength, endurance (VO2Max), and flexibility) can be accepted by athletes who usually use doping in the form of drugs or supplements as energy enhancers. The natural foods used in James et al's research were apples, oranges, kiwi, and bananas as well as vegetables which are believed to have a healthy effect on athletes so that these foods can replace the function of doping.

Beans are one of the most important crops in Indonesia. Its position is third after soybeans and peanuts (Soeprapto, 1993). Green beans contain 4.2 g protein, 3.4 g carbohydrates, 1.0 g fat, 47 g calories, 9.2 g water, and 15 g vitamin C. Green beans are also a source of nutrition, especially vegetable protein, the nutritional content of green beans is quite high and their composition is complete (Rahmat, R, 1998).

Based on the amount, protein is the second main constituent after carbohydrates, green beans contain 20-25% protein. The protein in raw green beans has a digestibility of around 77%. The low digestibility is caused by the presence of anti-nutritional substances such as antitrypsin and tannin (polyphenols). In green beans (Made A, 2009).

## CONCLUSION

Based on the results of the data and discussion, the results of this research can be concluded that there is a significant effect of giving 100 grams of green beans on the endurance of SMA Negeri 9 Makassar.

Based on the results of data analysis and the conclusions of this research, several things can be suggested or recommended:



1. Further research is needed on green beans with a larger number of research subjects.
2. To coaches and sports teachers so that the results of this research can be used as reference material in teaching or coaching.
3. As input material for sports institutions and health institutions such as KONI, BKOM and other regional institutions.

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