



The Effect of Parachute Training on Running Speed in Football

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Keywords

Parachute Training;
Running Speed;
Foot-ball; Sprint

Abstract

This study aims to determine the effect of training using parachutes on the running speed of SSB PS Peraga U-17 players using the Two Group Pretest-Posttest Design. Speed is an important component in football that supports a player's sprint and acceleration abilities. Parachute training includes resisted sprint training which provides air resistance so as to increase the work of the leg muscles when running. The method of this study was a quantitative experiment with two groups, namely the experimental group that was given training using a parachute and the control group that was not given special treatment. The research sample was SSB PS Peraga U-17 players who were selected with a total sampling technique. The research instrument used a 40-meter sprint running test conducted before and after the treatment. The results showed that the experimental group experienced a more significant increase in running speed than the control group. Thus, training using parachutes has an effect on increasing the running speed of SSB PS Peraga U-17 football players.

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INTRODUCTION

Football is a branch of team games or team games, so a good, strong, and tough team is a team consisting of players who are able to organize a compact game, meaning having good teamwork (Anwar et al., 2025). All soccer players must have above-average physical fitness, because soccer is a sport that is played for 45 minutes x 2 or 90 minutes. So that to be able to survive in a good game, excellent physical fitness is needed. Football is one of the most popular sports in the world, including in Indonesia (Supriadi & Ghani, 2024). The game of football not only demands good technical and tactical skills, but also requires excellent physical condition. One of the very important components of physical condition in football is speed. Speed is a person's ability to perform movements in the shortest amount of time to achieve maximum results (Gualtieri et al., 2023). In modern football matches, players are required to be able to sprint repeatedly to chase the ball, open space, press, and defend the defensive area. Therefore, speed is an important factor that can affect a player's performance during a match (Bizas et al., 2026).

Speed is one of the biomotor elements that is very crucial and necessary in almost any type of sport. As a fundamental part of physical fitness, speed determines the extent to which an individual is able to perform an action in a very short period of time. In various sports, such as athletics, soccer, badminton, and other team sports, speed serves as a determinant of success in carrying out important movements such as running, chasing the ball, attacking, and anticipating opponents' movements. Speed plays a very important role in determining the effectiveness of an athlete's performance in various sports (Darussalam et al., 2023). This ability affects how an athlete can respond quickly and appropriately to game situations, both in offensive and defensive conditions. In attacking situations, speed allows athletes to get the ball faster, reach certain areas such as the base or goal line, and pass defenders more effectively (Damanik et al., 2024). This provides a tactical advantage because athletes can create greater chances to score points or goals. On the other hand, in defensive situations, speed is also a crucial factor in taking defensive actions such as chasing opponents, cutting passes, grabbing the ball, and blocking opponents' attempts to score (Arifin et al., 2025). Athletes who have high speed will be better able to anticipate and close the opponent's movement space so that it can reduce the effectiveness of the opponent's attack. In addition, a good reaction speed also allows athletes to respond to changes in game situations in a short period of time, such as changes in the direction of the ball or sudden movements of opponents (Darmawan et al., 2023). In football, one of the important components is running, but running is not just running, because in football running is used to pass the opponent's guard or to chase the opponent. In addition, running is also used to find empty spaces to attack (Rifky Arifin et al., 2025). To increase running speed, it is necessary to have the right training method and in accordance with the characteristics of the sport of football. One of the most widely used training methods is resisted sprint training (Revelation of the Word & Jatmiko, 2021). Resistance training is a run-ning exercise that is done by providing certain obstacles so that the muscles involved in the sprint movement work harder than regular running. Forms of prisoner training that are often used include sled towing, harness, and parachute training or training using parachutes. This method is considered effective because it can increase the strength of the leg muscles while maintaining a specific sprint movement pattern (Chaalali et al., 2022). Exercises will achieve optimal results if they are designed with careful and balanced attention to the elements of the exercise. These elements include quantity, difficulty, and density, which are interrelated and affect the quality and success of a training program. The number of exercises is the total total of the activities performed in a single session. This number can be measured by several indicators, such as the length of the session, the number of repetitions, the number of sets, or the distance traveled during the activity. The greater the amount of exercise done, the stronger the stimulus received by the body. However, increasing the amount should be done gradually to prevent excessive fatigue (Dimas Kurniawan Students S- et al., 2018).

Training using a parachute is a form of resisted sprint training that utilizes air resistance as a training load. When an athlete runs, the parachute attached to the back of the body expands creating resistance that the athlete must fight during the run. The resistance forces

the leg muscles to generate greater force while accelerating and maintaining speed (Furqan Rahman Usman et al., 2025).

According to Hammami et al. (2017), sprint training with obstacles has been proven to be able to improve acceleration and sprint speed in young football players. In addition, training using parachutes also has advantages because it is relatively easy to use, safe, and can be applied in football training programs without the need for complex facilities. The device is attached to the athlete's waist and then inflates while running to create air resistance, or air resistance. This obstacle increases as the athlete runs at a speed, thus increasing air resistance. During training, the use of a parachute is carried out with the aim of increasing the acceleration and final speed (Chandra et al., 2021). Parachute is a sports tool that has a function to create maximum acceleration which aims to increase the speed which works by doing progressive resistance and doing speed training with a longer distance (Arief Muhtasim et al., 2025).

In the 17-year-old age group, the development of speed skills is very important because at that age athletes are in an optimal phase of physical development. Increased neuromuscular capacity, muscle strength, and coordination of movements in adolescence allow players to obtain better training adaptations. Therefore, providing the right training program at this age can have a positive impact on improving the physical performance of players, especially sprint skills (Hermawan et al., 2025). Several previous studies have discussed the effect of prisoner training on football players' sprint abilities. However, research that specifically examines the effect of training using parachutes on running speed in SSB PS Peraga U-17 players has not been widely done. Therefore, this study is important to be carried out to determine the effectiveness of training using parachutes in increasing the running speed of 17-year-old football players (Saril et al., 2023).

Based on this description, the formulation of the problem in this study is whether there is an effect of training using a parachute on running speed in football in SSB PS Peraga U-17 players. The purpose of this study is to determine the effect of training using parachutes on running speed in football in SSB PS Peraga U-17 players. The results of this study are expected to provide theoretical benefits as an additional reference in the field of sports coaching science, and can practically be a reference for coaches in compiling training programs to increase the speed of football players. Based on the results of initial observations made at SSB PS Peraga U-17, it was found that the running speed of some players was still not optimal. This can be seen during practice and matches, where some players have difficulty winning sprint duels, chasing the ball, or making the transition from defending to attacking quickly. This condition shows that increasing running speed is still a need in the process of coaching players at SSB PS Peraga U-17.

METHODS

This research method is in the form of experiments, as for preparations that start first, starting from the preparation of instruments and methods of data collection. According to Sugiyono (2019), "Experimental research methods can be interpreted as research methods used to seek the influence of certain treatments on others under controlled conditions."

This research uses a quantitative method, in the form of numbers and using statistics (Sugiyono). The design or research plan used in this study is the Pretest and posttest Control Group Design. This study took samples from SSB Ps Peraga as many as 30 athletes. The binding variable of the 40-meter run was measured using the 40-meter run pre-test post-test.

Description:

T1 : Treatment Group during Pretest

T2 : Treatment Group during Posttest

K1 : Control group during Pretest

K2 : Control group during Posttest

X : Treatment

In this study, there is a difference between or both groups, where in the treatment group treatment is given, while in the control group no treatment is given at all.

RESULTS AND DISCUSSION

Table 1. Descriptive Test

Table Descriptive Statistic					
Group	N	Min	Max	Red	Std. Deviation
Pretest Treatment	15	5,42	6,11	5,6540	.19748
Posttest Treatment	15	5,17	5,67	5,3987	.15037
Control Pretest	15	5,53	6,24	5,8653	.22618
Posttest Control	15	5,17	5,67	5,3987	.15037

Based on the results of **table 1**. The results of the study were described using the following descriptive analysis: for pretest results, minimum values = 5.42 for treatment and 5.53 for the control group, maximum values = 5.17 for the treatment group and control group, mean = 36.42, with a standard deviation (std deviation) = 0.19748 for pretest treatment, 0.15037 for posttest treatment, 0.22618 for pretest control and 0.15037 for posttest control.

Table 2. Normality Test

Group	Sig. value (p-value)	Explanation
Pretest Treatment	.160	Normally Distributed
Posttest Treatment	.200	
Group Pretest Group	.200	
Posttest	.200	

Based on the results of **table 2**. The normality test is intended to find out whether the variables in the study have a normal distribution distribution or not. The calculation of this normality test uses the Shapiro-Wilk formula, with the processing using the computer assistance of the SPSS 22 program. The results are in the table as follows.

From the results of the table above, it can be seen that the Pretest and Post-test data have a value of p (Sig.) > 0.05 , so the variables are normally distributed. Since all data is normally distributed, the analysis can be continued. Full results can be seen in the appendix.

Table 3. Homogeneity Test

Research Variables	Value Sig. (p-value)	Explanation
Treatment Group	.582	Homogeneous
Control Group	.126	Homogeneous

Based on the results of **table 3**. It is seen that all significance p -values (sig. p) are greater than 0.05, which indicates that the data are homogeneous. Since the data is homogeneous, the data analysis can be continued with statistics.

Table 4. T-Test

Group	Average	T-test for Equality of means				
		t ht	t tb	Sig	Difference	%
Treatment Group	3,84	12,815	0,05	0.000	80,98	4,51
Control Group	0	5,685			87,98	0

Based on the results of **Table 4**. The results of hypothesis testing using the t-test showed a t-count value for the Treatment Group of 12.815 and the Control Group of 5.685. Both statistical values of the calculation are much greater than the t-table value ($\alpha = 0.05$) which is 0.05 (or if the value of 0.05 in the table is a visualization of the error rate, the calculation value shows strong significance). Through this comparison, where $t\text{-calculates} > t\text{-table}$, the

decision taken is to reject H_0 . This emphasizes that the difference in achievement or outcome between the Treatment Group and the Control Group does not occur by chance, but due to the influence of the treatment given.

The results of the study showed that training using parachutes had a significant influence on increasing the running speed of U-17 football players at SSB PS Peraga. Based on the results of the t-test in **Table 4**, the t-count value of the treatment group was 12.815, while the control group was 5.685. The value indicates that $t_{\text{calculates}} > t_{\text{table}}$ at a significance level of 5% ($\alpha = 0.05$), so that H_0 is rejected and H_a is accepted. Thus, the hypothesis that "There is an effect of training using a parachute on running speed in U-17 football at SSB PS Peraga" is acceptable.

In addition, the treatment group showed an average improvement of 3.84 with a percentage increase of 4.51%, while the control group showed no significant improvement. These results indicate that the provision of training using a parachute is able to increase the player's sprint ability more optimally than ordinary training without using a parachute.

The increase in running speed that occurs in the treatment group is caused by the air resistance generated by the parachute when the player sprints. This obstacle makes the leg muscles work harder so that there is an increase in muscle strength and explosiveness (power). The physiological adaptation that occurs as a result of this exercise is able to increase the player's acceleration ability, step frequency, and running efficiency. When the resistance is released, the player will have an easier time reaching maximum speed because the muscles have become accustomed to working with greater loads.

The results of this study are in line with the research conducted by Usman, Arimbi, and Sulaeman (2025) which examined the effect of sprint running training using a parachute on the running speed of football players. The study used a pretest-posttest control group experimental design with a sample of 30 players divided into an experimental group and a control group. The results showed that the group that received training using a parachute experienced a better increase in running speed than the control group with a significance value of $0.001 < 0.05$. The findings support the results of this study that training using parachutes is an effective method to increase the running speed of football players.

The results of this study are also supported by the research of Sulistiyono et al. (2024) which states that speed is one of the very important biomotor components in the game of football. Speed plays a big role in various match situations such as accelerating, chasing the ball, pressing, making offensive and defensive transitions, and winning one-on-one duels. Therefore, increasing speed through parachute training is one of the right efforts to improve the overall performance of soccer players.

In addition, this study is also in line with the research of Setiawan et al. (2025) regarding the effect of speed chute training on the dribbling speed of football players. The results of the study showed that training using a parachute was able to increase the speed of movement of players which had an impact on improving dribbling skills. These findings suggest that the benefits of parachute training are not only limited to increasing running speed, but can also support technical skills in football games that require speed and agility.

Based on the results of the study, the theory of resisted sprint training, as well as support from previous research, it can be explained that training using parachutes is an effective training method to increase the running speed of 17-year-old soccer players. The increase occurs because parachute training provides stimulus in the form of resistance that is able to increase leg muscle strength, explosiveness, acceleration, and sprint motion efficiency. Therefore, training using parachutes can be recommended as one of the physical training programs to improve the speed performance of soccer players at SSB PS Peraga.

CONCLUSION

Research conducted on parachute running training with the SSB Ps Peraga U-17 team revealed significant differences between the treatment group and the control group over the course of 16 sessions; as shown in **Table 4**, the treatment group recorded a value of 12.815, while the control group recorded 5.685. These results lead to the conclusion that parachute running

training is superior to running training without a parachute. Consequently, parachute training can be incorporated into training programs to enhance speed.

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