



## For High School Boys, The Effect of Explosive Power on the Long Jump (Tuck) Results

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### ABSTRACT

### ARTICLE INFO

**The purpose of the study.** This study aims to determine whether there is an effect between explosive leg muscle power and the results of the students' long jump (Tuck) style.

**Materials and methods.** This is due to the low physical condition of students so that they do not produce maximum explosive power of the leg muscles. This research was conducted using a correlational research design. Based on the results of research that has been carried out on students of Senior High School in Kampar Districts.

**Results.** the value of count =  $0.811 > t_{table} = 0.514$ . Obtained  $r = 0.811$  including very strong category. Significance test using the t-test Significance formula. From the calculation results, it is known that  $t_{count} = 5.006$  while  $t_{table} = 1.771$ . So  $t_{count} = 5.006 > t_{table} = 1.771$ . Thus, a conclusion can be drawn that: There is an effect of explosive power in the leg muscles with the results of the long jump squatting style for students of Senior High School in Kampar Districts.

**Conclusions.** Thus, a conclusion can be drawn that: There is an effect of explosive power in the leg muscles with the results of the long jump (Tuck) style for students.



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### INTRODUCTION

Sports are physical activities that take place in games, contests, and other physical activities with the purpose of recreation, triumph, and optimal achievement (Utama, 2011). Physical education and sports provided as part of the formal education curriculum must be able to make a positive and effective contribution to the development of basic human values (Lorger et al., 2012), which are the driving force for the development of the younger generation as the next generation of a better, more responsible, stronger nation. body and soul, more personality, so that they are more capable of filling and fostering the independence of the nation and state (A. Prasetyo & Henjilito, 2020).

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Sports achievement refers to an athlete's highest performance in a match or competition after undergoing various types of training and testing (D. E. Prasetyo et al., 2018). Every athlete's ambition is to reach high levels of performance in contests, nevertheless, high levels of performance in sports also have significant importance for the Indonesian people since they can instill a sense of national pride. Sports successes are the result of a concerted effort that is carefully examined during the coaching and nurturing process (Iykrus, 2019). Achievement in long jump athletics is one of them.

The long-jump is one of the athletic branches that is competed in the international arena. A long leap is a student number that is taught in school and consists of the following essential technical elements: a prefix, a pedestal, hovering in the air, and landing. (Ramanda & Rizky, 2020). To get a good long leap, one must acquire the proper long jump technique, which is aided by a variety of physical characteristics, one of which is leg muscular strength (Konz, 2016) (Meriyanto et al., 2016). Early on, good long jump basic methods must be instilled to produce good long jump athletes (Whiting et al., 2018), (Muchlis Choirudin, 2012). It is given at the primary school level as an early introduction. To get optimal outcomes, the basic techniques must be firmly instilled (Lotfi, 2018). The explosive power of the leg muscles is particularly important in the long jump. (Khoirul Huda, 2012). The legs should stride further towards the front when jumping. As a result, a jumper needs a lot of leg muscle explosive strength to jump. This is because the explosive power of the large leg muscles will help a jumper to be able to exert power when starting, accelerating, speeding, and maintaining speed to the pedestal (Wakai & Linthorne, 2005). Based on the author's observations at senior high school in Kampar Regency, it was discovered that students' ability to make long leaps was still below the average, which was determined to be 2-3 meters. This is due to students' inability to learn basic long jump techniques, their low physicality, which prevents them from producing maximum explosive power in their limb muscles, and their leg muscles' strength, which is still not at its maximum in its application (Bastian, 2020). Then there's the speed of running during training, which isn't often praised (Bridgett & Linthorne, 2006). Furthermore, some students' landing flexibility during the long jump exercise is still lacking, and their eye-foot synchronization is also lacking.

## MATERIALS AND METHODS

### *Study Participants*

The population in this study was senior high school in Kampar Regency.

### *Study Organization*

A correlational research design was used to perform this study. Correlation is a statistical method for comparing the measurement results of two independent variables to identify the degree of influence between them. (Arikunto, 2016). The X variable in this study was the explosive power of the leg muscles, while the Y variable was the squatting type long jump.

### *Testing Procedur*

The Explosive Power Test of the Limb Muscles was used to test and measure the samples. The following items are required to execute a standing board jump test: 1) a sand field, 2) a measurement tool (meter), and 3) a helper. The test is carried out as follows: 1) The test taker must warm up for 10 minutes before taking the test; 2) The test taker stands outside the sandy field's boundary line, bends his legs, and utilizes his arms and legs to jump horizontally as far as possible, then lands with both feet on the ground. 3) The assistant walks and records the distance from the edge of the sandpit for the athlete's closest impression in the sandpit, 4) The test taker does the test three times in a sandy court. The value used to estimate the participant's leg strength is the longest distance recorded.

## RESULTS

This study compares the results of students in SENIOR HIGH SCHOOL in Kampar Regency's long jump squat method to the effect of leg muscle explosive strength. A test was performed without a prefix to acquire data on the explosive power of the leg muscles (Standing Board Jump). Meanwhile, a long jump test was conducted to provide information on the results of the squat type long jump ability. The normality test of data is a statistical test used in research to determine if data received from study findings are regularly distributed or not. If the distribution is normal, parametric statistics can be employed to test the hypothesis in this study (in this case is regression analysis). The Lilies test is used to determine the normality of this data; if the probability is greater than the error level employed, the data is said to be normally distributed. It is known that the Explosive Power of the Limb Muscle =  $L_{0Max}$  0.141 and the data from

the squatting style long jump =  $L_{0Max}$  0.151, with Stable for both = 0.220, based on the results of the data normality calculation. Based on this, it is known that  $L_{0max} < L_{table}$ , thus it can be said that the data is normally distributed.

The frequency distribution of T scores in Kampar Regency was 5 class intervals with an interval class length of 25 when testing the Explosive Power of Limb Muscles in senior high school. In the first class with a range of 207-232 there were 4 students with a percentage of 26.67%, in the second class with a range of 233-258 does not exist in this interval, in the third class with a range of 259-284 there are 3 people or at a percentage of 20%, in the fourth class with a range of 285-310 there are 7 people or a percentage of 6.67%, in the fifth class with a range of 311- 336 there are 2 people or at a percentage of 26.67%.

Measuring the results of the long jump squatting style for senior high school. it was found that the frequency distribution of T scores was 5 class intervals with an interval class length of 15. In the first class with a range of 296-311 there were 5 people or with a percentage of 13.33%, in the second class with an in the range of 312-327 there are 3 people or with a percentage of 20.00%, in the third class with a range of 328-343 there are 2 people or a percentage of 20%, in the fourth class with a range of 344-359 there are 2 people or with a percentage of 33.33%, in the fifth class with a range of 360-375 there are 3 people or with a percentage of 20%.

## DISCUSSION

According to the findings of the study, there was a substantial relationship between explosive power muscular strength and the results of senior high school pupils in long jump squat technique. This is shown from the results of the significance test using the  $t_{test}$ , it is obtained that count is 5.006 which is greater than the probability value of  $= 0.05$ , which is 1.771 which means significant. According to the previously mentioned rationale, the explosive power of the limb muscles affects the results of the Squat Style Long Jump. Where Explosive Power Limb Muscles Play an Important Role As a result, students' limb muscles' explosive power has been maximized when making jumps in the squat style long jump sport.

The findings of this study show that the leg muscles' explosive power influences the results of the students' squatting style long jump. The stronger one's leg muscles'

explosive power, the better the squat-style long jump results; on the other hand, the worse the explosive power of a person's leg muscles, the worse the squat-style long jump results. One of the main aspects of leg muscle movement is leg muscle explosive power. Because this requires good leg muscles, it requires explosive power or explosive power when jumping and then landing. Sajoto (2017). Muscular strength is a person's ability to use the greatest strength in the shortest amount of time. The explosive power referred to in this study is the explosive power of the leg muscles or the explosive power of the leg muscles, namely the strength of the leg muscles in overcoming resistance or load in a complete movement at a short speed. In the research journal Yesi Emida (2016) Power is the product of strength and speed. Power is the ability of muscles to exert maximum power in a very short time (Harsono, 2013). According to Sajoto, (2017), muscle strength refers to a person's capacity to use the most force in the shortest possible time.  $\text{Muscle} = \text{strength} \times \text{speed}$  can be expressed in this example. Gunawan, (2013), Explosive power is the ability to move body weight in a short time while jumping (Joksimović & Al, 2018). Explosive power is an element of physical condition (Emam, 2019), especially human motor ability, which can be increased to a certain extent by performing certain activities (El-Ashker et al., 2019). According to Senior High School ryati, (2018), the ability of an athlete to overcome an obstacle with a fast contraction rate is known as explosive power. This explosive power is required in various acyclic activities, such as throwing, high kicks, and long kicks, as well as in sports (Pardilla & Husnayadi, 2020). The athlete's capacity to overcome opposition with a rapid rate of contraction is also referred to as explosive power.

From the results of testing the hypothesis that there is a relationship between the explosive power of the leg muscles and the results of the long jump, the squat style is influenced by the explosive power of the leg muscles. As a result, it can be said that a player's long jump results will increase if he first increases his muscle explosive power and other physical conditions. Thus the hypothesis "it is suspected that leg muscle explosions have a beneficial effect on the results of the long jump squat style of high school students in Kampar Distirics" can be accepted.

**CONCLUSION**

Based on the results of research that has been carried out on students, the value of  $\text{count} = 0.81 > t_{\text{table}} = 0.514$ . Obtained  $r = 0.811$  including the very strong category. Significance test using the t-test Significance formula. From the calculation results, it is known that  $t \text{ count} = 5,006$  while  $t_{\text{table}} = 1,771$ . So  $t \text{ count} = 5.006 > t_{\text{table}} = 1.771$ . As a result, the following conclusion can be drawn: There is an effect of explosive leg muscular power on the results of the long jump squatting style senior high school pupils.

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## APPENDIX

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