The effectiveness of thigh lift exercises using rubber on the ability of acceleration on sprint runs

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Abstract. Many forms of exercise to improve the quality of leg muscles, both strength and power. One of them is the practice of detainees using rubber assistive devices. Based on these exposures, the author wants to try to apply the form of exercise that is applied to the children who participate in athletic clubs in school age, especially running numbers. The purpose of this study is to find out the effectiveness of thigh lift exercises using rubber with the ability to accelerate sprint running. In this study, the authors used experimental research methods. The population used was all children participating in the athletic club with a total of 40 people. The author uses population research, with the reason the writer wants to examine all children who are elements of the population. To get objective data, the author uses a measuring instrument in the form of a 30 meter acceleration test. Based on the results of research and statistical calculations on the data obtained in this study, the authors can conclude that: Thigh lifting exercises using rubber have a significant effect on the ability of sprint acceleration.

1. Introduction

The problem in this study arises when faced with the weakness of good training aids and supporting achievement for athletic school students. One example is in sprint athletes at Pajajaran Athletics School (SAP). In the sprint run number there is an acceleration phase in it. Athletes are very experienced lack of good technical coordination, power and speed in the acceleration phase. In fact the acceleration phase is very influential on the achievement of speed during a sprint run. According to the results of research by Caspersen et al. [1]. Explain that, acceleration takes place the first 0-30 meters or to about 3-4 seconds from the start of a sprint. After approximately 30 meters acceleration turns into maximum velocity and top speed is hit. Running techniques are built by coordination exercises, power training and speed for acceleration built using coordination exercises using prisoners, so that acceleration will occur when coordination, power and speed are good. Therefore the author tries to implement ABC Running coordination training using rubber for acceleration ability on sprint runs. Mooren and Volker Explain, Why include dexterity, balance and coordination training in your training program can make you a more rounded athlete and help improve your running ability [2]. ABC Running is a coordination exercise and when using prisoners in the form of rubber it will be better to support the speed and power.
The purpose of this study was to find out the effect of thigh lift training using rubber acceleration ability on sprint running on pajajar an athletic school students (SAP). The focus of this research is only on the effectiveness of using rubber on students when they do ABC Running.

2. Method
Referring to the above objectives, the authors determine the method used in this study is an experimental research method. Experimental research is research that is used to look for differences in certain treatments against others in controlled conditions. The controlled conditions in the intent are the results of the research converted into numbers, for the analysis used by using statistical analysis [3]. The implementation of this experimental research was carried out by giving an exercise program to pajajaran athletic school students. The experimental design used in this study was "Pre and Post Test Design" Adapted from Fraenkel and Wallen [4], the subjects in this study were a number of pajajaran Athletic School Students (SAP) with a total of 40 people, and an average age of 10-11 years. The test used is a test of a 30 meter sprint acceleration.

3. Result and discussion
Coordination is a method of training to improve running techniques, which is to correct steps and improve the position of the boob to get used to being straight. In addition coordination has the aim to control the motion appropriately in order to achieve a specific physical task [5]. Through a combination of movements of two or more joints, which are interrelated with each other can produce an effective and efficient movement. With this coordination training, runners will be able to increase the speed of acceleration towards maximum speed.

ABC Running coordination movement is a program to improve running techniques, where the activities are: (1). The "A" Skip (short knee lift) movement in place, followed by the A "skip" movement moved forward. (2). The movement "B" Skip (lift the knee high) in place, followed by the movement B "skip" moving forward. (3). The "C" Skip movement in place, followed by the C "skip" movement moves forward. (4). The "D" Skip movement in place, followed by the D "skip" movement moves forward. ABC Running Training with this resistance is done in a flat place and uses special tools or means, such as rubber. The rubber used is 5 cm in diameter and 2 m in length. The following is a picture of rubber that is used as a coordination training aid.

Figure 1. Rubber for coordination training.

After the data is obtained in this study, the next step is to process and analyze data, so that the data gives meaning or gives meaning, especially in testing hypotheses. The average value of the standard deviation of each test, can be seen in table 1 below:
Table 1. Results of calculation of average value and standard deviation of 30-meter running tests.

| Test Group   | Average | Standard Deviation |
|--------------|---------|--------------------|
| Initial Test | 14.85   | 0.88               |
| Final Test   | 12.83   | 0.79               |
| Enhancement  | 2.02    | 0.24               |

3.1. Data normality test results

Data normality test used by the author is Liliefors statistical test. Each data from each test result, the author informs in table 2 below:

Table 2. Results of normality test for 30-meter running test data.

| Test Group   | L$_{hitung}$ | L$_{table}$ | Results   |
|--------------|--------------|-------------|-----------|
| Initial Test | 0.075        | 0.220       | Normal    |
| Final Test   | 0.195        | 0.220       | Normal    |

Based on the table above, it can be seen that for L count (L0) is smaller than L table at the real level of 0.05, which means that the data is normally distributed.

3.2. Hypothesis testing results using t test

Because the data from each test is normally distributed and both variants are homogeneous, then to test the hypothesis using a two-party test (t test). In testing the hypothesis, the author determines the criteria for the value of t based on the t value distribution table. The results can be seen in Table 3 below:

Table 3. Results of hypothesis testing using t test.

| Test Group | t$_{count}$ | t$_{table}$ | Results  |
|------------|-------------|-------------|----------|
| Teste      | 33.667      | 1.761       | Significant |

Based on the list of tables above, it can be seen that the calculated value of group A at the 0.05 level is outside the t table interval limit (t value > t table = 33.667 > 1.761). Then from the data it is known that there is a significant difference in the sample group after being given coordination training.

The description above shows that running techniques greatly support runner's achievement. It is important for a runner to achieve optimal results from each exercise, so that the expected achievement can be achieved even better.

4. Conclusion

Based on the results of the improved data in this study, it was shown that coordination exercises using rubber resistance had a significant effect on the increase in the acceleration of the speed of sprint running for students in the pajajaran (SAP) athletic school. This is indicated by an increase in the average value and improvement of the initial test and the final test. This is proof that coordination exercises using rubber tools not only help coordinate training and improve running techniques but can increase power and sprint acceleration in students.

References

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