

Intensive Interval Training on Sprint Running Speed in Junior High School Extracurricular Activities

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ABSTRACT

This study aims to determine the effect of the intensive interval training method on sprint speed in the extracurricular activities of Atap Indralaya 4 Public Junior High School. This research is a type of quasi-experimental research using a design in the form of a pretest posttest one group design. With the independent variable in the form of intensive interval training and the dependent variable is the result of sprint running speed. The population used in this study amounted to 67 people and the research sample was 30 students using random sampling. The instrument used is a 60 meter sprint test. The treatment given to students is intensive interval training, the frequency is carried out 3 times a week and it is carried out for 6 consecutive weeks. In the data analysis and research results using the t-test statistic, a significant level $\alpha = 0.05$ obtained t_{count} (26.88) while t_{table} (1.701) then $t_{count} > t_{table}$ so that the hypothesis can be accepted, that using the intensive interval training method can increase the results of running speed student sprints in extracurricular activities at Atap Indralaya Middle School 4.

Keywords : Training, Intensive Interval, Speed, Sprint.

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INTRODUCTION

Athletics is a series of sports activities , in which there is movement experience as usual activities include throwing, kicking, walking, and running (Sukendro & Ely Yuliawan, 2019). Athletics is also called the mother of all sports. Because it has contributed to the basic movement of other sports, one of the most popular and popular athletics is the number running race, athletics seems to have the same age as human existence. Human activities that cannot be separated from movement activities cause the birth of equality between athletics and humans. The activity in question is the movement that humans do in everyday life, such as running, jumping, and throwing.

Athletics is special in every sport, because all Athletes in each sport in preparing for training can certainly make athletic movements, especially those related to preparing for optimal physical condition, and all sports use athletics such as *running ABC* (Giartama, 2018). According to (Ulfah, 2019) Athlon which means competition or competition, in English athletics is known as "athletics" which means outdoor matches and is carried out on the track. The definition of athletics according to KBBI is a sport that requires strength,

agility, and speed. Consists of running, walking, jumping and throwing numbers. Achievements in Athletics Sports are able to make the nation's name proud in international events (Aryatama, 2021). For example, for athletics, specifically the 100m run requires high speed and good reactions. This proves that athletics is very important to be nurtured from an early age and we cannot just ignore it because it plays an important role in realizing the ideals of national development. The Ministry of Education and Culture launched the agenda for the National Student Sports Competition (KOSN) for junior high school level athletics with a 60-meter running number which was carried out starting from the school, district or city, provincial and national levels (Mahendra, 2017). The Sports Competition held aims to provide motivation and develop interests and talents of junior high school students in the field of sports to continue learning, practicing, and conducting competition in a healthy manner and can become a coaching ground for students who will later excel at national and international levels in making their name proud. nation. (Bangun, 2016) many sports competitions are held at the junior high school level starting from O2SN, POPDA, and other competitions, with many sports including athletics, gymnastics, swimming, martial arts, and other sports. These competitions are really needed by both athletes and other school students to see the achievements of these students (Algifari, 2021). It is hoped that in the future there will be optimal improvements in terms of context and input so that later it will produce an achievement at the national level.

The achievements of several sports competitions at the school, regional and national levels are supported by school training, in the form of holding extracurricular activities. Based on the author's observations during the initial observation at Indralaya One Roof Public Middle School, the problems faced by students who took part in athletics extracurriculars in the running number branch were the low sprint results due to various factors. One of them is the leg muscle strength that is still weak and the student's body resistance is still low in order to be able to produce maximum running speed. To get maximum strength, flexibility and speed, students need to take part in intensive training by following a scheduled process starting from practicing and working with increasing the number of training loads repeatedly

(Pradipta, 2017) There are many leadership styles that each coach has, coaches often face problems, especially in the athletics branch of sprint numbers, namely that it is difficult to determine the right portion of training, little variation in training and difficult to determine training intensity to improve performance in sprint running, as well as in preparing effective and efficient training in accordance with the training objectives. Therefore, it is necessary to hold a variety of training programs to increase speed and to avoid boredom, reluctance and health (I Made Yoga Parwata, 2015).

To get good performance from an athlete, the training program must be planned. The intensive interval training method is a training method that can affect an athlete's sprint running speed. (Hermawan et al., 2020) in physical condition training, it is explained that one of them is intensive interval training which has longer breaks with fewer repetitions and has been determined regarding intensity, reps, number of sets and rest. Intensive interval training

can increase speed, power, automatic movement techniques, endurance and leg muscle strength in order to get maximum running results so as to increase student achievement. This exercise also provides a variety of exercises that are covered at the distance that is done . by students in line with the training objectives . So variations This can provide a challenge , as well as increase a high sense of enthusiasm so that students can avoid boredom in taking part in sprint training in extracurricular activities. The type of exercise that is generally used is interval training only, but has not used intensive interval training.

Based on a background in above it is necessary to do research with the title Intensive Interval Training on Sprint Running Speed in Extracurricular Activities at Indralaya One Roof Middle School 4". The purpose of this study was to determine the effect of intensive interval training on sprint speed in extracurricular activities at Indralaya One Roof Public Middle School 4. The limitations in this study are the number of samples that are not too many and cannot fully control the training activities carried out outside extracurricular activities.

METHOD

This study used the quasi- experimental method using test techniques as a systematic and objective tool or procedure to obtain the desired data and information. This research is a quasy experiment type using the " pretest and posttest one group " method , namely conducting pretests and posttests on all samples in one training group .

Population and research sample

Research Population

The population in this study were all students who took part in extracurricular activities at Indralaya One Roof Middle School 4. The population of this research was 67 students .

Research Sample

The sample is part of the population (Indarto et al., 2018). The sample in this study was 30 male students , so the sample taken was 30 students.

Research Instruments

Research instruments are facilities/tools used by researchers to collect data so that it is easier and to get good results , in the sense that it is careful, complete, and systematic so that it is easy to process. *The 60 meter* sprint was the test instrument used in this study. The validity of the 60 meter sprint test with *a face validity* and reliability of 0.94 is based on research conducted (Ridwan & Irawan, 2018). (Purba et al., 2021), so that the data we obtain becomes valid and reliable data, we need an instrument or what is commonly referred to as a good measuring instrument.

The initial measurement (*pretest*) is carried out before being given treatment or training to students, after the results of the test are obtained then after that they are given treatment in the form of intensive interval training namely exercises carried out between phases of work interspersed with periods of rest. Intensive interval training is given to students for 6 weeks with a training frequency of 3 times a week where the implementation location is held at the

Indralaya One Roof Public Middle School 4 track, after the exercises are carried out then a final test (pretest) will be carried out in the form of a 60-distance *sprint* . meters.

RESULTS AND DISCUSSION

Results

This study aims to determine the effect of intensive interval training on the speed of running a short distance of 60 meters in extracurricular activities at Indralaya One Roof Public Middle School 4. The duration of the exercise is 6 weeks with a frequency of 3 times a week and 18 practice meetings, with 4 sets of exercises. The intensity of the exercises in this study was 80% to 90%, with a rest period of 90 seconds to 180 seconds per set.

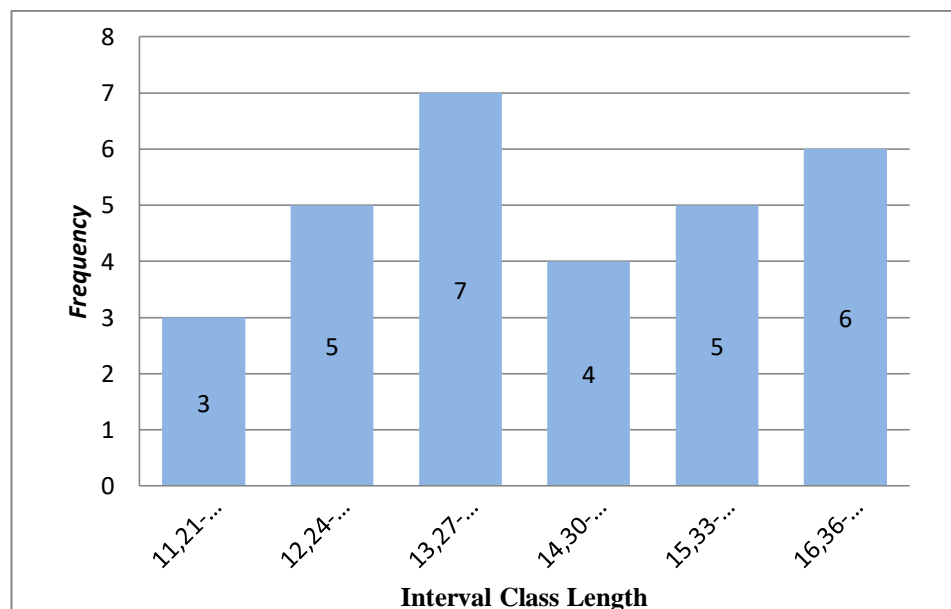


Figure 1. Histogram *Pretest*

Based on the data in Figure 1, the highest sprint = 11.21 seconds , the lowest sprint = 17.33 seconds , range = 6.12, class = 6, class length = 1.02.

a. Range (R) = largest data – smallest data = 6.12

b. Number of classes = $1 + 3.3 \log n$
 = 5.88 (rounded 6)

c. class length (c) = $\frac{\text{range}}{\text{Many Classes}}$
 = 1.02

Table 1. Distribution of *pretest* instrument data

No	Test Result	Frequency	Middle value	x ²	fi.xi	fi.xi ²
		(f)	(x)			
1	11,21-12,23	3	11,72	137,36	35,16	412,0752
2	12,24-13,26	5	12,75	162,56	63,75	812,8125
3	13,27-14,29	7	13,78	189,89	96,46	1329,219
4	14,30-15,32	4	14,81	219,34	59,24	877,3444
5	15,33-16,35	5	15,84	250,91	79,2	1254,528
6	16,36-17,38	6	16,87	284,60	101,22	1707,581
Total (Σ)		30	85,77	1244,65	435,03	6393,56

Based on table 1 , the results obtained are frequency = 30, median value (x) 85.77, total x² 1,244.65 , total fi.xi s = 435.03, fi.xi² = 6,393.56.

Based on Figure 1 Histogram *Pretest* obtained test results 11.21 – 12.23 = 3 people, 12.24 – 13.26 = 5 people, 13.27 – 14.29 = 7 people, 14.30 – 15.32 = 4 people, 15.33 – 16.35 = 5 people, 16.36–17, 38 = 6 people. Here are the ways to find the person coefficient :

a. mean

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i} = 14.501$$

b. Mode (M₀)

$$M_0 = L_0 + \frac{\Delta_1}{\Delta_1 + \Delta_2} c = 13,17$$

c. Standard Deviation (S)

$$S = \sqrt{\frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n(n-1)}} = 1,716$$

d. Person Coefficient (Km)

$$Km = \frac{\bar{x} - M_0}{s} = 0,77$$

Based on the analysis above, the Km result of the initial test data for the experimental group = 0.77. and is on (-1) And (+1) so the data from the initial test of the experimental group is normally distributed .

Table 2. Distribution of *Posttest* instruments

No	Test Result	Frequency	Middle Value	x ²	fi.xi	fi.xi ²
		(f)	(x)			
1	9,38-10,39	4	9,885	97,71	39,54	390,8529
2	10,40-11,41	8	10,905	118,92	87,24	951,3522
3	11,42-12,43	5	11,925	142,21	59,625	711,0281
4	12,44-13,45	5	12,945	167,57	64,725	837,8651
5	13,46-14,47	5	13,965	195,02	69,825	975,1061
6	14,48-15,49	3	15,035	226,05	45,105	678,1537
Total (Σ)		30	74,66	947,483	366,06	4544,358

The highest *sprint* result = 9.38 seconds , the lowest sprint = 15.47 seconds

- range (R) = largest data – smallest data = 6.09
- many classes (B) = $1 + 3.3 \log n = 5.88$ (rounded 6)
- class length (c) = $\frac{\text{Rentang}}{\text{Banyak Kelas}} = 1.01$

Based on The results of the distribution of *posttest* instrument data show that frequency = 30, mean value (x) 74.66, x^2 947.483, the number of $f_i \cdot x_i = 366.06$ and $(f_i \cdot x_i)^2 = 4,544,358$. Based on the *Posttest* distribution table then it can be described :

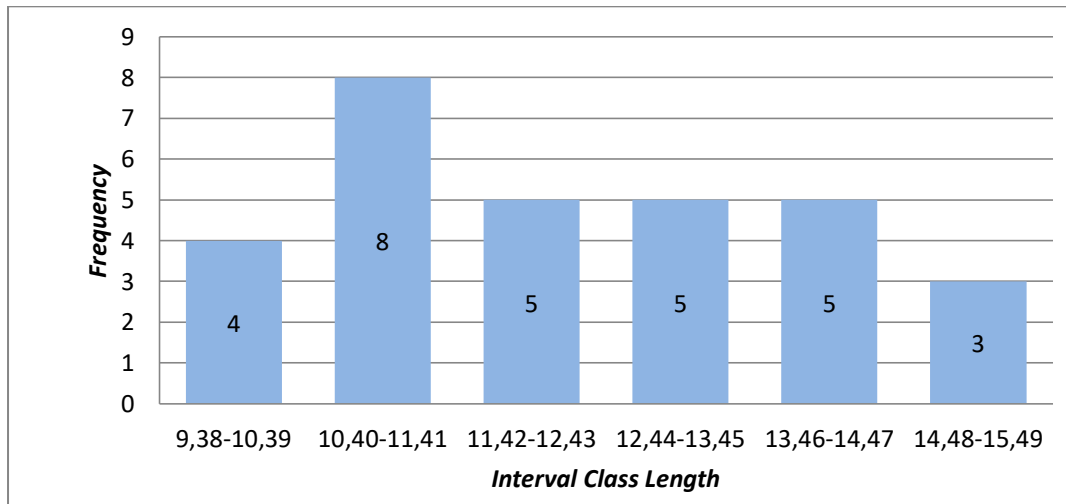


Figure 2. Histogram *Posttest*

Based on Figure 2 , the *posttest histogram* is obtained , the test results are 9.38 – 10.39 = t 4 people, 10.40 – 11.41 = 8 people, 11.42 – 12.43 = 5 people, 12.44 – 13.45 = 5 people, 13.46 – 14.47 = 5 people, 14.48 – 15, 49 = 3 people. Here's how to find the person coefficient :

- Means

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i} = 12.2$$

- Mode (M_0)

$$M_0 = L_0 + \frac{\Delta_1}{\Delta_1 + \Delta_2} c = 10,47$$

- Standard Deviation (S)

$$S = \sqrt{\frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n(n-1)}} = 1,74$$

- Person Coefficient (Km)

$$Km = \frac{\bar{X} - M_0}{S} = 0,99$$

Based on the above analysis, then get the value of $K_m = 0.99$, the value of $K_m = 0.45$ is between (-1) and (+1) so the data is normally distributed .

Table 3. Comparison of *Pretest* and *Posttest* Results

No	Test Results	n	Speed	Speed	Mean	Ascension	Modus	Standard
			Highest	Lowest		Mean		Deviation
1	<i>Pretest</i>	30	11,21	17,33	14,501	2,301	13,17	1,716
2	<i>Posttest</i>	30	9,3	15,47	12,2		10,47	1,64

Hypothesis test can be searched for the calculated t value in the hypothesis test with the following steps:

$$a. \quad Md = \frac{\sum d}{n} = 2,04$$

$$b. \quad t_{cal} = \frac{Md}{\sqrt{\frac{\sum(xd)^2}{n(n-1)}}} = 23,61$$

From the statistical calculation of the "t test" the result of t_{count} is 23.61 , $T_{table} = 1.701$ obtained from the T distribution table with dk $(30-2) = 28$ & 95% confidence level ($\alpha = 0.05$) listed in the table . Based on the criteria for testing the hypothesis $t_{count} (23.61) > t_{table} (1.701)$ it can be concluded that intensive interval training has an effect on increasing students' sprint running speed .

Discussion

Researchers carried out several stages in this study consisting of three stages, namely planning, implementation, and reporting. In the planning phase the researcher observed the state of the school at Indralaya One Roof Public Middle School and the students who would be targeted for research and the fields to be used for conducting research, then the researcher conducted interviews with the extracurricular trainer concerned and consulted with the supervisor, and found problems occurs where students' *sprint* results are still relatively slow due to poor body endurance and leg muscle strength which is still relatively weak due to the ability of students who are less trained, so the author is interested in conducting research at Indralaya One Roof Middle School 4. then the researcher prepares the required measurement instruments and tests. Continuing with the implementation stage, the researcher conducted an initial test on 30 students in the form of a 60-meter sprint, and obtained the initial test results for the experimental group, namely with a highest speed of 11.21 and the lowest speed results, namely 17.33 and with a mean of 14.50, the initial test data mode is 13.17 and the deviation is 1.716 with a slope of 0.77. After the *pretest* , then the sample did intensive interval training which took 6 weeks and was given an exercise intensity of 80% - 90% which was carried out 3 times a week. (Permana & Pratama, 2021) The results of this study indicate that there is a significant effect on student sprint results using the circuit training training model, several other forms of training can affect running speed.

After the intensive interval training which was carried out for 6 weeks was completed, the experimental group samples carried out the final test in the form of a short distance run with a distance of 60 meters. From these tests, the results of the final test were obtained with the highest speed of 9.38 and the lowest result of 15.47, the mean was 12.2 with the final test data mode of 10.47 and the deviation was 1.64 and the slope of the curve was 0.99. Based on the results of this study, it can be seen that there was an increase in *the pretest* and *posttest* after being given intensive interval training, in line with research conducted by (Syamsuramel et al., 2019) that 30 meter interval training can increase speed, in self-defense activities, training activities carried out for 6 weeks by doing *a pretest* at the first meeting, and the end of the practice by carrying out *a posttest*. (Pardiman & Rahmat Tanjung, 2020) research results state that interval training is a form of exercise that has a good effect on student running speed so from the results of this study it can be recommended to teachers that this interval training can be given to increase 100 meter running speed in another student.

The next stage is reporting the results of *sprint running speed* students after being given treatment in the form of intensive interval training, where The students again took the test in the form of a final test, namely running with a distance of 60 meters. Furthermore, from these results, the slope of the initial test curve = 0.77 and the slope of the final test curve = 0.99, so the data is normally distributed, which is between (-1) and (+1). And from the statistical calculation of the "t test" it is obtained that the t_{table} is 1.701 obtained from the T distribution table with $dk (30 - 2) = 28$, the confidence level reaches 95% ($\alpha = 0.05$). The results are acceptable because $t_{count} (23.61) > t_{table} (1.701)$ from these data there is a considerable difference, so that the conclusion is obtained " There is an effect of intensive interval training on increasing sprint speed of 60 meters in students at SMP N 4 One Roof Indralaya. In accordance with these results, the effect of speed training given for eight weeks with a frequency of three times a week can increase the ability to run 60 meters in male students of SMP No. 3 Tondano (Fik, A. P., Sukadana, B., & Sondakh, 2021). (Iyakrus, 2019) Physical education is generally carried out to help teachers, coaches, and sports trainers so that they can apply their concepts and skills in an effort to improve athlete performance and training specifically is to prepare an athlete's ability to achieve peak performance.

(Mamesah, 2019) this can be seen from a comparison of the initial test (pre-test) and the final test (post-test). With the number of athletes 5 people in the initial test the lowest VO2 Max capacity achieved was 42 and the highest was 56. In the final test there was an increase in VO2 Max capacity, namely the lowest achieved 53 and the highest 63 Thus VO2 Max can be increased by using the extensive interval training method (Lengkana & Sofa, 2017). Thus it can be concluded that there is a significant effect between the extensive interval training method on increasing VO2 Max in athletic athletes. In order for the training objectives to be achieved as desired, the training principles must be followed and implemented so that the training objectives are met in accordance with the hope. The principle of practice is very important for the psychology and physiology of athletes. This principle must be understood to improve quality in training and can also prevent athletes from injuries caused during training (Fahrizqi et al., 2021)

After the researchers carried out the intensive interval training method given to students at Indralaya One Roof Public Middle School 4, the results obtained a significant impact from increasing the speed of the students' *sprint results*. It is hoped that this training method can be carried out on an ongoing basis to support achievement in Indralaya One Roof Middle School 4 students.

CONCLUSION

Results obtained a significant impact from increasing the speed of the students' *sprint* of Indralaya One Roof Public Middle School 4, so that a conclusion can be drawn that using the intensive interval training method can have a significant effect on sprint running speed.

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