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The Effect of HIIT With Sprint 200 Exercises, High Knees, And Burpees On Increased VO2 Max In Men's Athletes Running Medium Distances 1,500 Meters of Young Star Club Years 2025

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ABSTRACT

The low VO2 Max ability and the lack of training variation are the reasons why athletes easily feel fatigued during competitions or endurance tests. This study aims to determine the effect of HIIT with sprint 200, high knee, and burpees training on increasing VO_2 Max in male athletes of the 1500-meter middle distance runners of the Bintang Muda club. The study used a quantitative approach with a quasi-experimental method, especially the one-group pre-test-post-test design. This study involved 6 athletes selected through purposive sampling techniques. Data collection was carried out through the Bleep test during the pre-test and post-test data analysis using a Paired sample t-test with the help of SPSS version 26. The results of the analysis showed that HIIT training with sprint 200, high knee, and burpees had a statistically significant effect on increasing VO_2 Max. This is shown by the comparison of the average VO_2 Max values before and after treatment, namely the average pre-test of 40.9 with a standard deviation of 3.20, and the average post-test of 45.6 with a standard deviation of 3.22. Thus, it can be concluded that HIIT training with sprint 200, high knee, and burpees has a significant effect on increasing VO_2 Max in 1,500-meter men runners from the Bintang Muda club in 2025.

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INTRODUCTION

Exercise is categorized as a form of physical activity that aims to maintain a person's physical fitness better, and if developed properly, can have an impact on aspects of daily life. Sports can also be done anywhere and anytime, without having to have expensive equipment or fancy places. Exercise is also excellent in improving a person's health and physical condition and can improve individual fitness. Movement is an activity carried out by certain individuals to carry out their daily activities. Movement is carried out in a structured or systematic manner that functions to improve the physical condition of the individual. Movement is one of the characterics of humans as living beings. By moving,

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humans can do activities to meet their life needs. One of the activities or activities carried out by humans in daily life is sports. In addition to being useful for improving physical fitness, exercise is also beneficial for affecting psychological levels and increasing social relationships or relationships with others. With various benefits that can be obtained by exercising regularly, it can help maintain the health of the body and prevent disease attacks. One of the oldest and often contested sports is athletics; therefore, it is not an exaggeration if history states that athletics is the mother of all branches of sport (Sports Mom)(Sehand, 2020). According to Dwi et al (2024), Athletics is one of the many sports that have been played for a long time. Athletics is a sport that uses basic movements such as walking, running, jumping, and throwing. Physical fitness abilities such as strength, speed, flexibility, and endurance are needed in all sports, so it's no surprise that athletics is considered the "mother of sport." In sports, athletics is one of the most complex sports because of the many athletic numbers that are contested. Especially, Indonesian athletics is a sport that competes in various events such as throwing, jumping, running, and walking (Himalaya et al., 2021). Running is an accelerated step that causes the body to tend to float, which means that both feet do not touch the ground at the same time. Based on the distance, running is categorized into three types, namely short-distance running, medium-distance running, and long-distance running.

Medium distance running is running on a track with a distance of 800 meters, 1,500 meters, or 3,000 meters. Medium-distance running requires technique in doing it, with a fairly long distance that requires the athlete to be able to manage stamina, speed, and breath while running. This medium-distance run is a little different from short-distance running. In short-distance running, an athlete is required to exert as much energy as possible and run as fast as possible until reaching the finish line, while in medium distance running athletes must be able to regulate breathing and speed that increases gradually so that athletes do not quickly experience excessive fatigue before reaching the finish line (Laksana et al., 2021).

According to Herawati et al (2022), High-intensity interval training (HIIT) is a type of exercise that increases cardiovascular endurance (VO2 Max). HIIT is a type of exercise that is performed at a high intensity of 80-100% VO2 max and combined with a short period. The Young Star Club (KBM) is one of the athletic clubs located in the city of Medan, which conducts training at the PPLP Athletic field (Student Sports Education and Training Centre), SMA N 15 street, Medan Sunggal District, North Sumatra. The Young Star Club belongs to Mr. Dumpang Parluhutan Siregar, S.Pd, AIFO, who is also the main coach of the Young Star Club (KBM), which has produced many outstanding athletes and won many championships in athletics, ranging from the Porwilsu, Porkot Medan, Kejurda and Student Athletic Champion (SAC) championships. Researchers have made initial observations at the Young Star Club training ground on November 14, 2024. The researcher saw that the endurance ability of male athletes running medium distances, especially in the 1,500 meters, was at a low level, marked by the results of the Bleep Test given by the researcher, and they got very low results. Because VO2 Max is important and has a great influence on the achievement of male athletes in the 1,500-meter middle-distance running, the researcher will provide

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a variety of HIIT exercises to 1,500-meter middle-distance runners to improve their VO2 Max ability. Based on this problem, the researcher is interested in carrying out a study titled The Effect of HIIT with 200 Sprint Exercises, High Knees and Burpees on the Increase of Vo2 Max in Male Athletes Running the 1,500 Meters Medium Distance Young Star Club.

VO2 Max is an indicator of the body's capacity to use oxygen, which is expressed in litres per minute or millilitres per minute per kg of body weight (ml/minute/kg BB). All the body's cells need oxygen to convert food into ATP (adenosine triphosphate), which can be used for cell activity. Muscles that are in contraction need a greater amount of ATP than muscles that are at rest, so muscles that are active during exercise require more oxygen intake and produce more carbon dioxide. According to Stuart & Stuart (2022), VO2 *Max* is an important factor for an athlete in supporting their physical performance. VO2 *Max*. It has become a common and often applied concept in the world of sports. In simple terms, VO2 *Max* measures the extent to which our body can absorb and utilise oxygen during physical activity. Higher VO2 *Max*, the better our endurance, as seen in various sports, for example is running.

In the research that will be carried out on the Effect of *High Intensity Interval Training* Variations on VO2 *Max* Increase in male athletes of the Medan City Youth Star Club in 2024. Here are some studies that are relevant to the authors:

1. Based on research by Septiaji, Yusuf, and Marzuki Ismail (2021), with the title The Effect of High Intensity Interval Training on Increasing VO2 *Max* Udikma Futsal Athlete of the Year 2020. In which researchers used one or more treatment conditions on one or more experimental groups and compared the results with one or more control groups that did not receive the treatment (Setyanto, 2013). For the design of this study, one pretreatment and post-treatment group was designed. The pretest results showed an average cardiovascular endurance value (VO2Max) of 41.7455, with a minimum of 35.70 and a maximum of 48.70, with a standard deviation of 4.84310. The results showed that high-intensity interval training (HIIT) had a significant effect on increased cardiovascular endurance (VO2Max). This study used a variety of high-intensity interval training (HIIT), whereas previous research did not.
2. Based on research by Khapipudin et al (2022), titled Influence of *High-Intensity Interval Training* (HIIT) Against Vo2 Increase *Max* Futsal athletes of SMA N 1 Gerung in 2021. The purpose of this study is to see if HIIT exercises can be used and have an effect on increasing VO2 *Max* futsal athletes of SMA N 1 Gerung. This study uses a design with an experimental model. For this study, the researcher used one pretest-posttest group that did not have a control group. One of the advantages of this design is that the researcher conducts tests before and after treatment, which makes it possible to accurately know the difference in results between the treatments given. According to the results of the t-test score, the null hypothesis (Ho) was rejected and the alternative hypothesis (Ha) was accepted. The results show that "There is an Effect of High Intensity Interval Training (HIIT) on the Increase of VO2 Max of SMAN 1 Gerung futsal athletes in 2021". Facts on the ground during the study show that Intensity

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Interval Training (HIIT) training can have a significant influence on increasing VO2 Max. The difference with the research to be studied is that this study uses HIIT variations and is intended for athletic athletes, especially the number 1,500 meters, while the previous study did not use HIIT variations and was intended for football athletes.

3. Based on research, Alfarizi et al (2024) entitled Contribution of High-Intensity Interval Training Against VO2 Max This study aims to test the effect of High Intensity Interval Training (HIIT) training on increasing VO2Max in volleyball athletes at Mts Al Amin. Using quantitative methods with a design: Pretest-Posttest Control Group. HIIT has been shown to significantly increase the aerobic capacity of participants. The study concluded that the HIIT method was effective in increasing VO2Max in volleyball athletes, although to understand the long-term impact, further research with a longer duration is needed. The difference with the research to be studied is that this study uses the influence of exercise High-intensity interval training while previous research used the contribution of exercise High-intensity interval training (HIIT).

The difference with the research to be studied is that this study uses HIIT variations and is intended for athletic athletes, especially the number 1,500 meters, while the previous study did not use HIIT variations and was intended for football athletes. The purpose of this study is to find out the effect of HIIT with 200 *Sprint* Exercises, High *Knees* and *Burpees* on the Increase of VO2 *Max* in Male Athletes Running 1,500 Meters Medium medium-distance young Star Clubs. This research can add knowledge and experience in increasing VO2Max for readers. The results of this research can be used as reference material for future research.

According to Bompa (1999:82), the type or form of exercise can determine the level of intensity. While weightlifting intensity can be evaluated in kilograms (kg), speed training is measured in meters per second of movement execution, and team sports are focused on the rhythm or tempo of the game.

Table 1.
Exercise intensity scale

Maximum Performance	Level
30-50%	Low
50-70%	Intermediate
70-80%	Keep
80-90%	Sub Maximum
90-100%	Maximum
100-105%	Super maximum

Exercise known as HIIT) It is an exercise that combines moderate or low intensity with high-intensity training. In other words, HIIT uses the repetition of relatively short to Long high-intensity training sessions that are alternated with a recovery period of either low-intensity training or rest (Ross et al., 2016). This exercise is done in a relatively short time, which can spur the heart to work harder so that it can increase the ability of VO2 max and can improve the body's metabolic system (Khapipudin et al., 2022). *High-Intensity Interval Training* (HIIT) is an efficient exercise to improve physical abilities that includes strength, aerobic and anaerobic endurance, flexibility and coordination in a training session

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(Festiawan et al., 2020). According to the definition of High Intensity Interval Training (HIIT) above, HIIT training is a method of body training with basic movements that can stimulate muscles well. This means that the muscles will respond better to this workout because the body will burn fat within a few minutes while doing HIIT movements, and the fat burning will continue for 24 hours after the workout is complete.

HIIT workouts consist of several stages and a short or medium, or light time. HIIT includes three stages, namely warming up, maximum intensity training and cooling down. The installation lasted for 3 minutes, followed by 6 stages. Each stage consists of a maximum intensity workout lasting 2 minutes with a workout intensity of 80%-90% of the workout pulse. This exercise is carried out with three minutes of cooling down exercises. Many activities can be done in HIIT, namely, Sprint, Mountaineer, Jumping Jack Squat, Reverse Lunges, Push Up, Kneeling Push Up, and High Knees (Education et al., n.d.).

HIIT is a short, high-intensity workout followed by a comparable, lower, or even longer rest time (Iván et al., 2016). The HIIT method is recognised as one of the exercises to improve cardiorespiratory fitness and prevent lifestyle diseases such as hypertension, obesity, and coronary heart disease (Soltani, Bahmanbeglou, & Ahmadizad, 2020). In recent years, HIIT has become a popular exercise due to its exciting, efficient, and time-saving method of training to improve health and well-being. In a study that combined 45-minute low-interval and high-intensity exercises, the exercises consisted of a 4-minute intensity period of 60 to 70% of the maximum heart rate (HR), followed by a 90 to 100% of maximum HR intensity period of 1 minute per set, for a total of 9 sets. HIIT training is one of the endurance exercises that has been around for a long time and is now popular. Its short time has become the choice of many trainers to include this exercise in their athletes' training programs.

METHODS

This research was carried out in the PPLP Athletics field (Student Sports Education and Training Centre), SMA N 15 street, Medan Sunggal District, North Sumatra. The researcher conducted the study in April 2025. For 18 meetings (6 weeks) starting from 16.00-18.00 WIB with a training schedule of 3 meetings a week, namely Tuesday, Thursday, and Saturday.

In the opinion of Sugiyono (2020) Explains population is a general area consisting of subjects or objects with a certain quantity and characteristics that are chosen by researchers to study and then make conclusions. Therefore, in this study, the population is all male athletes running 1,500 meters in the young star club, totalling 9 people. According to Hidayat (2021), the sample is part of the population to be studied or part of the number of the same characteristics that the population has. The sampling technique in this study uses *the intended sampling.* Purposive sampling *technique* means sampling techniques based on the researcher's belief that the respondent can provide relevant data that is appropriate to the researcher's goals. Therefore, the sample in this study is 6 people who have met the following requirements: (1) Athletes registered as a young star club, (2) Men's athletes, (3) Have participated in club

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training for at least 2 months, (4) the number one athlete in the 1,500 meter run, (5) Active in training, and (6) Willing to participate in research from start to finish. Of the total 9 athletes, 3 did not participate in the exercises, so the total sample used was 6 athletes.

The research method used by the researcher in this study is experimental. The experimental method is a method used to identify the effect of a treatment on other variables in the controlled condition. In an experiment or study, a certain treatment will be given by the researcher to a group of samples to obtain the results of the treatment given to that group of samples (Sugiono, 2020). In this study, two tests will be given. The first test is a *pre-test* or initial data test on the entire sample. Furthermore, all samples will be given a training program for 16 meetings, and then the final data will be taken or *Post-Tests* to see if there was any effect of the exercise on the sample.

The research design that was adopted was the design of *Pre-tests* and *Post-Tests* One Group Design, one group as the methodology used. The implementation was in 18 training sessions or 6 weeks, and the volume of training was carried out in 3 sessions 1 week. When performing data capture, *Pre-tests* are then given treatment (*Treatment*) and end with data retrieval *Post-Tests*. Sugiyono (2008:110) describes this design, namely:

Table 1.

Research Design (Pre-Test and Post-Test One Group Design)

Pre-Test (01)	Treatment (X)	Post-Test (02)
Initial Test	Variations of HIIT Workouts	Final Test

A research instrument is a form of test, or often called a test instrument, that is carried out during the initial test and in the final test. Purpose: This instrument is to measure the ability and find out whether there is an influence of exercise variation, High-Intensity Interval Training against increased VO2 Max, in the men's athletes, the 1,500-meter medium distance run of the Athletics Dumpang Club. In this study, the instruments used are the Bleep Test (Multistage Fitness Test). The beep test is a back-and-forth running test with a distance of 20 meters.

Table 2.

Design Structure of One Group Post-test and Pretest Design

Group	Pre-Test	Treatment	Post-Test
Experiment	01	X	02

Data collection techniques refer to the methods or methods used by researchers to obtain information or data needed for research. This technique includes a variety of procedures and tools used to collect relevant, precise, and trustworthy data according to the research objectives. Data collection in this study will be carried out for 6 weeks (3 months), with a frequency of 3 times a week, which includes a total of 18 meetings, including 1 pre-test, 16 treatment and 1 post-test. Reras et al. (2024) stated that the treatment was carried out in 16 meetings, and after going through the training process, the research subjects could be considered trained because there had been permanent changes. After completing 16 meetings according to the training schedule, the final data collection (post-test) will be carried out.

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The data analysis techniques used in this study involved a pre-test and post-test, which aimed to find out if there was a significant difference in the sample being tested. Data was obtained from the results of the beep test, which was calculated as an individual score. In addition, statistical techniques are also applied to verify the validity of the hypotheses proposed in this study. To test the hypothesis, several statistical procedures must be performed, which refer to statistical methods (Sudjana, 2022).

RESULTS AND DISCUSSION

Result

Description of Research Data

The data obtained was based on measurements through a multistage fitness test on 6 samples, namely male athletes running the 1,500-meter medium distance of the Young Star club. The study has been carried out for 18 meetings (including *pre-test* and *post-test*), where each meeting is 120 minutes with the HIIT training method. Initial data collection or pre-test is carried out before the administration of training or treatment for one day, to ensure the initial ability or endurance (VO2 *Max*) of the athlete. After 16 HIIT training treatments were given, at the end of the meeting, final data or post-tests were taken to determine the endurance ability of athletes. Therefore, from the results of the final data or post-test, it will be seen and known the effect of HIIT training on increasing the VO2 *Max of* male athletes running the 1,500 meters medium distance of the Young Star club.

Based on the above and the results of the measurement of endurance ability (VO2 *Max*) through *bleep test* in male athletes running the 1,500 meter medium distance of the Bintang Muda club for the collection of preliminary and final data (*pre test* and *post test*) during the study can be seen based on the following Table 3:

Table 3

VO2 Max pre-test and post-test data after high-intensity interval training in male athletes running the 1,500-meter medium distance of the young star club

No	Name	Multistage Fitness Test				
		Pre-test	Category	Post-test	Category	Difference
1	Rahman	37.1	less	41.5	Keep	4,4
2	Fardan	42.9	Keep	45.8	Good	2,9
3	Dino	38.2	Less	43.6	Keep	5,4
4	Receipt	39.6	Keep	45.2	Good	5,6
5	Sea	45.5	Good	51.1	Excellent	5,6
6	One	42.6	Keep	46.5	Good	3,9
	Sum	**245,9**		**273,7**		
	Average	**40,9**		**45,6**		
	Standard Deviation	**3,20**		**3,22**		

Data Description Pre-Test VO2 Max

The results of the pree test data obtained will be described using descriptive statistical analysis with the results or values obtained are as follows: minimum value

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(37.1), *Maximum value* (45.5), mean value (average) is (40.9), median value is 41.1 and standard deviation (standard deviation) is 3.20.

Descriptions of pre-test results can be made in frequency, i.e. by the way the largest data point minus the smallest data point. Its description can be seen in the following table:

Table 4
Description of VO2 Max Pre-test Results

No	Score	Category	Frequency	Percentage (%)
1	<38.4	Less	2	33,3%
2	38,4 - 45,1	Keep	3	50,1%
3	45,2 – 50,9	Good	1	16,6%
4	51,0 – 55,9	Excellent	0	0%
5	>55.9	Superior	0	0%
Sum			**6**	**100%**

The *pre-test* results can also be displayed in graphic form, as shown in the following image.

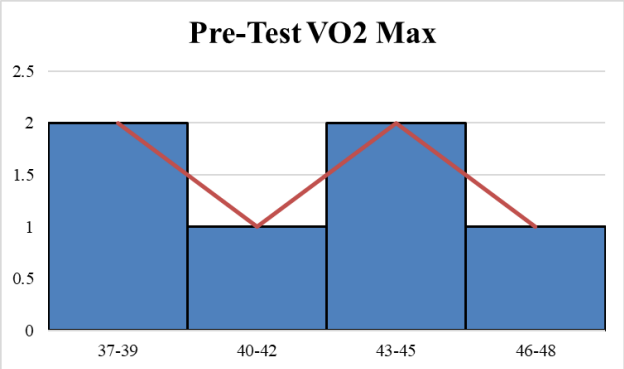

Figure 1.
VO2 Max Pre-Test Result

Description of VO2 Max Post-Test Result

In the results of the final data research or *post test* using descriptive statistical analysis with the results of the min value (41.5), the max value (51.1), *the mean* (average) is (45.6), the middle value/*median* is (45.4), and the standard deviation is (3.22). The description of the results of the post-test research can be seen in the following Table:

Table 5.
Description of Post-test Research Results

No	Score	Category	Frequency	Percentage (%)
1	<38.4	Less	0	0%
2	38,4 - 45,1	Keep	2	33,3%
3	45,2 – 50,9	Good	3	50,1%
4	51,0 – 55,9	Excellent	1	16,6%
5	>55.9	Superior	0	0%
Sum			**6**	**100%**

Post-test results can also be displayed in graphic form, as shown in the following image.

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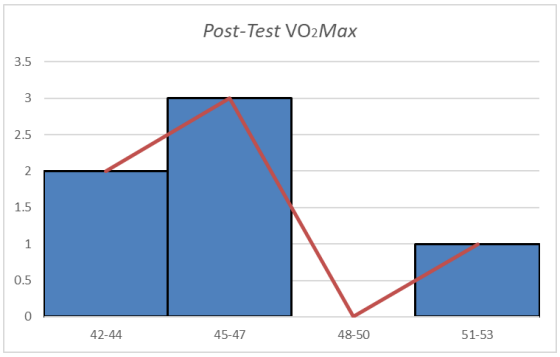

Figure 2.
VO2 Max Post Test Results

The difference in measuring VO2 Max results in male athletes running the 1,500-meter medium distance of the young star club before and after being given high-intensity interval training for pre-test and post-test data can be seen as shown in the graph below:

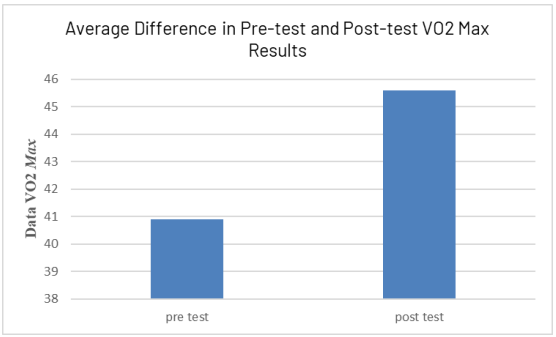

Figure 3.
Average Difference in Pre-test and Post-test VO2 Max Results

Normality Test

The normality test is carried out to find out whether the variables have a normal distribution of data distribution or not. In this study, the normality test was carried out on the data from Pre-tests and Post-Tests bleep-test results using HIIT training in male athletes running 1500 meters at the Medan City Young Star Club.

The normality of the sample was tested using the Shapiro-Wilk test with the help of SPSS version 26. The normality of Shapiro-Wilk is used because it has a higher power, especially in small samples. The Shapiro-Wilk test is more sensitive in detecting deviations from the normal distribution. The results can be viewed based on the following Table:

Table 6.
Shapiro-Wilk test results

Data		Results (*Shapiro-Wilk*)	Normal Criteria	Information
Durability	Pre-tests	0,730	P>0.05	Usual
Durability	Post-tests	0,754	P<0.05	Usual

Based on Table 6 of the normality test *of the Shapiro-Wilk test*, it can be seen that the significance value of each data has a significant value greater than 0.05. If the probability value is greater than 0.005 or (P>0.05), then the data from the pre-test and post-test are normally distributed.

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Homogeneity Test

Homogeneity test is a test that is carried out to find out that two or more sample data groups come from a population that has the same variance (homogeneous). This test is a requirement before conducting the t-test. This test is used to ensure that the data groups are indeed from homogeneous populations. The basis for decision-making is:

1. If the Sig value > 0.05, then the data distribution is homogeneous
2. If the Sig value is < 0.05, then the data distribution is not homogeneous

The test results can be seen in the table below:

Table 7.

Homogeneity test results

Data	Standard Deviation	Lavene Results Statistics	Sig Results	Homogeneous Criteria	Conclusion
Pre-test	3.20	0.237	0.637	P>0.05	Homogeneous
Post-test	3.22			P<0.05	Homogeneous

Based on Table 4.5 above, it can be seen that the significance value of the Test Homogeneity Of Variances for the athlete's pre-test and post-test values is greater than 0.05 (p > 0.05), so that it can be concluded that the data is homogeneous.

Discussion

Based on the results of the study, it is known that there is an increase in the average VO2 Max in 1,500-meter middle-distance runners of the Young Star club after being given HIIT Training. The average VO2 Max value at *the pre-test* was 40.9 and increased to 45.6 at the *post-test*. Thus, there was an increase of 4.7% in the results of the statistical test using *the paired sample t-test*, showing that the significance value (*Sig. 2-tailed*) was 0.000, which was smaller than the value of $\alpha = 0.05$. Thus, it can be concluded that there has been a statistically significant increase. HIIT training is performed over 16 sessions, with a frequency of 3 times a week. On Tuesday, Thursday and Saturday, the training was held at 16.00-18.00 WIB. Coupled with 1 *pre-test* and 1 post-test. Where all samples were determined by the researcher increased. HIIT training has been given a treatment to the sample, and an increase in VO2 Max was found in male athletes running the 1,500 meters medium distance of the Medan City Youth Star Club in 2025. This is because the provision of a systematic and programmatic exercise program can help the sample increase VO2 Max.

The study has three forms of exercise variations, namely Sprint 200, High knees, and Burpees, which are designed to increase VO2 Max. From the three forms of exercise variation, the results showed that there was a significant influence, which was marked by Ho being rejected and Ha being accepted, from the results of the hypothesis test. Factors that can affect the increase in VO2 Max ability in male athletes running the 1,500 meters medium distance Medan City club include regular training, time discipline, selection of training programs such as training intensity and training duration in running the training program well and several other supporting factors can increase the VO2 Max ability in male athletes running the 1,500 meter medium distance club of the Medan City Youth Club 2025 in this study.

CONCLUSION

Based on the research results, the following conclusion can be drawn: There is a significant effect of HIIT with Sprint 200 Exercises, High Knees, and Burpees on Increasing VO2 Max in Male Athletes Running Medium Distances of 1,500 Meters of the Young Star Club in 2025.

REFERENCES

Ahadi, G. D., & Zain, N. N. L. E. (2023). Pemeriksaan Uji Kenormalan dengan Kolmogorov-Smirnov, Anderson-Darling dan Shapiro-Wilk. Eigen Mathematics Journal, 6(1), 11–19. https://doi.org/10.29303/emj.v6i1.131

Ahmad Avin Prasetya, I. S. (2022). Pengaruh Latihan ABC Running Terhadap Peningkatan Kecepatan Lari Pemain Akademi Sepakbola Triple'S Ku-14 Tahun. Jurnal Prestasi Olahraga, 5(6), 72–78.

Alfarizi, R. A., Saleh, M., Jasmani, P., & Sukabumi, U. M. (2024). Kontribusi High Intensity Interval Training Terhadap Vo2Max : Studi Eksperimen Dalam Permainan Bola Voli. 1(2), 162–168 10 Maret tahun 2024.

Amansyah, A. (2019). Dasar Dasar Latihan Dalam Kepelatihan Olahraga. Jurnal Prestasi, 3(5), 42

Astuti, R. D., Hasanuddin, & Hudain, M. A. (2019). Survei daya tahan VO2Max pada atlet karate lemkari Sulawesi Selatan. Fik Unm, 1–7. https://core.ac.uk/download/pdf/222783618.pdf

Dikdik Zafar Sidik. (2019). Prinsip latihan Dalam Olahraga. Wordpress. Com.

Dwi, A., Sekolah, P., Keguruan, T., Pendidikan, I., & Ngawi, M. (2024). Pt. Media Akademik Publisher Tingkat Pengetahuan Siswa Kelas Vii Terhadap Pembelajaran Lari Jarak Pendek 100m Di Smp Pesantren Temulus. Jma), 2(2), 3031–5220.

Fawaid, A. Y., & Puriana, R. H. (2024). Pengaruh Latihan Burpee Pass Dan Box Jump Terhadap Power Otot Tungkai Pemain SSB UNTAG ROSITA U-16 Surabaya The Effect of Burpee Pass and Box Jump Training on Leg Muscle Power of SSB UNTAG ROSITA U-16 Surabaya Players. Jurnal Ilmiah ADIRAGA, 10(1), 57–68. https://doi.org/10.36456/adiraga

Festiawan, R., Suharjana, S., Priyambada, G., & Febrianta, Y. (2020). High intensity interval training dan fartlek training: Pengaruhnya terhadap tingkat VO2 Max. Jurnal Keolahragaan, 8(1), 9–20. https://doi.org/10.21831/jk.v8i1.31076

Herawati, I., Purwaningsih, I., Abkhoir, S. T., Saputri, N. D., & Kurniasari, F. (2022). Edukasi High Intensity Interval Training Untuk Meningkatkan Daya Tahan Kardiorespirasi (Vo2Max) Pada Komunitas Sepeda Guyup Rukun Dukuh Trembono Gunungkidul DIY. Jurnal Abdimas Indonesia, 2(3), 429–433. https://doi.org/10.53769/jai.v2i3.325

Himalaya, F., Dimyati, A., & Achmad, I. Z. (2021). Tingkat Pemahaman Siswa Pada Atletik Nomor Lari Kelas XI SMK Insan Sempurna Pendidikan Karawang. Riyadhoh : Jurnal Pendidikan Olahraga, 4(1), 18. https://doi.org/10.31602/rjpo.v4i1.4059

Idayani, D. (2020). Perbedaan Prestasi Akademik Mahasiswa Berdasarkan Nilai Tes Masuk dan Latar Belakang Pendidikan. Jurnal Ilmiah Soulmath : Jurnal Edukasi Pendidikan Matematika, 8(1), 59–72. https://doi.org/10.25139/smj.v8i1.2536

Kadir, S. (2020). Evaluation Of Vo2Max Atlet Karate In The Covid-19 Pandemic Era. Jambura Journal of Sports Coaching, 2(2), 42–52. https://doi.org/10.37311/jjsc.v2i2.7058

Khapipudin, K., Yusuf, P. M., & Susilawati, I. (2022). Pengaruh Latihan High Intensity Interval Training (Hiit) Terhadap Peningkatan Vo2Max Atlet. Gelora : Jurnal Pendidikan Olahraga Dan Kesehatan IKIP Mataram, 8(2), 20. https://doi.org/10.33394/gjpok.v8i2.4921

Kuncoro, W. P., Sugiharto, S., & Kinanti, R. G. (2020). Hubungan Antara Volume Oksigen Maximal (O2 Max) Dengan Heart Rate Maximal (Hr Max) Pada Mahasiswa Jurusan Ilmu Keolahragaan. Jurnal Sport Science, 10(1), 32. https://doi.org/10.17977/um057v10i1p32-41

Laksana, A. A. N. P., Adnyana, I. W., & Jenaru, K. J. (2021). Kemampuan Gerak Dasar Lari Jarak Menengah Pada Siswa Sekolah Menengah Pertama. Journal Coaching Education Sports, 2(2), 163–176. https://doi.org/10.31599/jces.v2i2.720

Nurba'id, A. R. C., Nafilah, Z., Magdalena, M., Nisyak, H. K., Lailatul, S., Mutmainah, R., Ghurri, A., Andriana, L. M., & Ningsih, A. W. (2024). Artikel Review: Penerapan Paired t-test pada Penelitian Farmasi. Jurnal Farmasi Dan Farmakoinformatika, 2(2), 146–153. https://doi.org/10.35760/jff.2024.v2i2.10072

Patel. (2019). Faktor-faktor nilai kebugaran jantung paru (VO2Max). 9–25.

Pendidikan, J., Kesehatan, O., Yunus, M., Pratama, M. H., & Wahjuni, E. S. (n.d.). Meta Analysis Study : The Effect of HIIT Training on VO2Max Improvement of Football Athletes Studi Meta Analisis : Pengaruh Latihan HIIT Terhadap Peningkatan VOMax Atlet Sepak Bola. 6(2), 319–333.

Ross, L. M., Porter, R. R., & Durstine, J. L. (2016). High-intensity interval training (HIIT) for patients with chronic diseases. Journal of Sport and Health Science, 5(2), 139–144. https://doi.org/10.1016/j.jshs.2016.04.005

Rustiawan, H. (2020). Pengaruh Latihan Interval Training Dengan Running Circuit Terhadap Peningkatan Vo2Max. Jurnal Wahana Pendidikan, 7(1), 15. https://doi.org/10.25157/wa.v7i1.3108

Septiaji, A., Yusuf, P. M., & Marzuki, I. (2021). Pengaruh Latihan High Intensity Interval Training (HIIT) Terhadap Peningkatan VO2Max Atlet Futsal UNDIKMA Tahun 2020. Sportify Journal, 1(1), 1–8. https://doi.org/10.36312/sfj.v1i1.2

Setyawan, R. (2016). Mengenal Pelatihan Kondisi Fisik Level Dasar. Sukabumi CV Haura Utama

Serah, B. (2020). Pengembangan Pembelajaran Lempar Lembing Menggunakan Media Roket. Jurnal Tunas Pendidikan, 3(1), 111–121. https://doi.org/10.52060/pgsd.v3i1.400

Sugiono. (2020). Pdf-Metode-Penelitian-Kuantitatif-Kualitatif-Dan-Rampampd-Sugiyono-2020_Compress.Pdf.

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Susila, L. (2021). Pengaruh Metode Latihan High Intensity Interval Training (HIIT) dalam Meningkatkan Power Otot Tungkai dan kelincahan pada Permainan Bola Voli. Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan), 2(3), 230–238. https://doi.org/10.54371/ainj.v2i3.86

Vandika, F. A., & Syafi'i, I. (2022). . Pengaruh Latihan Small Sided Games Terhadap Peningkatan Vo2Max Pemain Sepakbola U-16 Di Sekolah Sepakbola Pogres Kabupaten Pacitan. Jurnal Prestasi Olahrag, 5(6), 114–119.