

## EFFECTIVENESS OF EXERCISE PROGRAM ON ABDOMINAL MUSCULAR ENDURANCE AND 20 METERS RUNNING SPEED DURING COVID-19 PANDEMIC

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### Abstract

This study aims to reveal the significance of changes in the abilities of athletic athletes at the Student Sports Training Center in the Special Capital Region of Jakarta. The study was carried out during the pandemic for 5 months with a quantitative approach, descriptive and inferential analysis was carried out using the normality test method and the paired sample T-Test significance test. The results showed normal research data with no significant relationship between abdominal muscular endurance variables and 20m running speed physical test results after and before the treatment was carried out. The results of the paired sample T-test showed no significant correlation between the variables studied, with the results of  $n=9$  the calculation of paired sample correlations  $p=0.194$  on sit-ups 1 and 2 data, and  $p=0.083$  for 20m running speed data at a significance level of  $=0.05$ . The results of the paired sample test showed that there was no significant difference between the abdominal strength variables and the 20m running speed, with the data showing  $p= 0.28$  for the sit-ups T-test results and  $p=0501$  for the paired 20m running speed T-test results at  $=0.05$ .

**Keywords:** Muscular endurance, 20m Running speed, Training methods, Covid-19 impact, Sports performance

## **INTRODUCTION**

Athletics is a sport that consists of dynamic and harmonious movements such as walking, running, throwing, and jumping (Djumidar in Ramadan & Sidik, 2019). Athletics itself is a translation of the word track and field which consists of running track and road numbers (Setiawan, 2013). Athletics has a character that requires excellent physical condition and requires the players to exert all their physical abilities in carrying out motion tasks that are under certain match numbers. The running numbers are divided into 3 categories, namely short distance running, middle distance running and long-distance running. One of the race numbers in athletics that has many enthusiasts is sprinting. Short distance running (sprint), is a race activity by running at full speed along with the distance that must be covered (Arifin, 2018). Short distance running itself is categorized as an anaerobic sport because the process of burning energy in the body to carry out these activities is approximately 10-15 seconds. Physical activity itself is very beneficial for one's fitness and health (Yudho, Rahadian, Aryani, Ramdan, & Pratama, 2020). To get the maximum speed, it takes efficiency obtained from

strong and fast contractions of the muscles, which will then be converted into smooth and smooth movements (Purnomo and Dapan, 2011: 32) in (Sari, 2015). Many factors affect the success or failure of an exercise and performance during a match, one of the factors that has an important role is motivation (Yudho & Nugroho, 2021).

Apart from that, the athlete's running concentration factor in carrying out competitive activities is also very important. Beginner runners tend to make common mistakes where they spend energy at the beginning of the run and lose momentum and energy when they reach the end of the finish line (Zuhdi, 2013). The physical condition of the athletes is absolutely a major concern in participating in competitions and training programs. Athletes who are prepared to compete at a certain level are usually members of a training center organized by the region or country participating in the competition, whether it is a single event or multi-event. One of the components of physical condition that greatly affects the performance of short distance running is muscle strength in the core and abdominal parts, where the strength of the abdominal muscles itself is a factor that plays an important

role in supporting the stability of the body to remain stable (Piyana, Subekti, & Santika, 2007). 2020).

This study is intended to see how much influence the treatment and exercise that has been carried out by the coach of the athletic team where the samples have been training has had, as well as material for evaluating future training programs. Several factors cause the lack of success in the soccer game training process, namely the limited resources used by the coach to support the training process and the limited ability of the coach himself (Adityatama, 2017). When this research was conducted, the reduced volume and intensity due to the current pandemic situation could be external factors that also affect the results of the exercise during the research period.

**METHOD**

This study uses a quasi-experimental quantitative research approach by comparing the results of the pretest and posttest of the samples after receiving training treatment during the period from January to May 2021, or for 22 weeks 44 meetings. The exercise was carried out in conditions of the COVID-19 pandemic so that it could only be carried out 2 times a week, every

Tuesday and Thursday. The physical exercise treatment performed is written in the exercise unit program table below.

**Table 1. Micro cycle exercise program**

Sessions	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Warmng Up		Dynamic stretching - Running ABC		Dynamic stretch - Running ABC - Stabilization 13 Item x 20"			
Morni ng	HEES PULL SQUAD W/RUBBER SWING ARM 3 POIN SIT UP BULGARIAN R BULGARIAN L MOUNTAIN WALK W/RUBBER DEEP / / T E H H N I I K		H E A A D D C C O O A A C C H H / / T E H H N I I K	WEIGHT TRAINING 3 SET STRENGTH LOWER SNATCH CLEAN DEADLIFT SWING W/BAR	H E E A D D C C O O A A C C H/	H E E A D D C C O O A A C C H/ T E H H N I K	R E E S T
Cooling Down		it Up/Push Up/Back Up x @100Rep Static stretching		Sit Up/Push Up/Back Up x @100Rep Static stretching			
Warmng Up		Dynamic stretching - Running ABC					
Evening	HEES PULL SQUAD W/RUBBER SWING ARM 3 POIN SIT UP BULGARIAN R BULGARIAN L MOUNTAIN WALK W/RUBBER DEEP / / T E H H N I I K	CONDITIONING	R E S S T	CONDITIONING	H E E A D D C C O O A A C C H/	R E E S T	R E E S T
Cooling Down		it Up/Push Up/Back Up x @100Rep Static stretching		Sit Up/Push Up/Back Up x @100Rep Static stretching			

Abdominal muscle endurance was measured using a 60-second sit-up test (Ahmed, 2015) were performed from the supine position, with knees flexed 90°. One complete sit-up entailed curling the trunk from the supine position to

touching the elbows to the knees and returning to the start position with a reliability test  $r=0.83$ , while the running ability of the samples was measured using a 20m running test with a good level of reliability, with a mean coefficient of variation of 1.7% and an intraclass correlation coefficient of 0.94 (Alikhajeh, Rahimi, Fazeli, & Fazeli, 2012).

The posttest and pretest data were then processed using descriptive and inferential statistical methods. Paired samples T-Test. Through the normality test of Saphiro-Wilk's data.

### Findings and Results

The results of the research description analysis showed that the minimum number of sit-ups pretest results was 41 repetitions, a maximum of 127 reps, with an average value of 73.22, and an SD of 24.68. The results of the sit-ups posttest showed a minimum value of 42 reps, a maximum of 99 reps, an average value of 64.44, and an SD of 18.48. The results of the 20 m running pretest showed a minimum value of 3.05 seconds, a maximum of 3.86 seconds, an average of 3.31, and an SD of 0.24. The results of the 20m run posttest showed a min result of 2.82 seconds, a max of 4.06

seconds, an average of 3.40 seconds, and an SD value of 0.44.

**Table 2. Descriptive Analysis**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Sit Ups	1	0.219	9	.200*	0.908	9	0.304
Sit Ups	2	0.160	9	.200*	0.943	9	0.616

  

Descriptive Statistics					
		Sit Ups 1	20m Speed 1	Sit Ups 2	20m Speed 2
N	Valid	9	9	9	9
Mean		73.22	3.31	64.44	3.40
Median		67.00	3.30	62.00	3.36
SD		24.68	0.24	18.48	0.44
Min		41.00	3.05	42.00	2.82
Max		127.00	3.86	99.00	4.06

**Table 3. Tests of Normality**

The results of the normality test of research data using the Saphiro-Wilk

method showed that the normal data values were  $p = 0.304$  for the sit-ups pretest data and  $p = 0.616$  for the posttest results at: 0.05.

**Table 4. Test of normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
20m Speed 1	0.218	9	.200*	0.861	9	0.098
20m Speed 2	0.187	9	.200*	0.919	9	0.387

The results of the normality test of the research data showed that the value of the normal data results was  $p = 0.098$  for the 20m run pretest data and  $p = 0.387$  for the 20m run posttest data at: 0.05.

**Table 5. Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 Sit Ups 1 & Sit Ups 2	9	0.477	0.194
Pair 2 20m Speed 1 & 20m Speed 2	9	0.607	0.083

The results of the paired sample T-test showed no significant correlation between the variables studied, with the results of the calculation of paired sample correlations  $p=0.194$  on sit-ups 1 and 2 data, and  $p=0.083$  for 20m running

speed data at a significance level of = 0.05.

**Tabel 6. Paired Samples Test**

Pair	V2	V1,	Sig. (2-tailed)
Pair 1	Sit Ups 1 – Sit Ups 2		0.28
Pair 2	20m Speed 1 - 20m Speed 2		0.501

The results of the paired sample test showed that there was no significant difference between the abdominal strength variables and the 20m running speed, with the data showing  $p= 0.28$  for the sit-ups T-test results and  $p=0.501$  for the paired 20m running speed T-test results at =0.05.

**CONCLUSION**

The results of statistical data showed that there was no significant correlation between the abdominal strength variables pretest and posttest and 20m running speed pretest and posttest. The results of the paired samples T-test also did not show a significant difference between the sit-ups and 20m speed running variables. These results show that there is no significant difference produced by the Exercise program that runs during the period January to May 2021, so it is necessary to evaluate the program and treat athletes who run the integrated

Exercise program so that the exercises carried outreach the previously set targets. However, the graphs of the pretest and posttest results show an increase in the average value of the physical abilities of the athletes sampled in this study. The pandemic situation that occurred during the research was also considered to have a major influence on the absence of a significant effect between the Exercise program on the athlete's achievement, although in the average value there was a difference between the results of the pretest and posttest on these variables. The obligation and demand of a coach are to make an exercise program for his athletes (Rumini, 2015). As has been done by athletes in athletic sports, every coach provides an exercise program, and the coach should provide a written training program to athletes so that athletes train in a focused and programmed manner. Some coaches and athletes are constrained by policies in a pandemic situation, so it becomes a problem if the coach is unable to attend for some reason. Exercise that is not carried out regularly every day of the week is also a separate obstacle experienced by athletes.

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