

## The Effect of Tabata Training and High-Intensity Interval Training on Agility Improvement



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**ABSTRACT :** The main goal of every athlete is to reach the highest peak of achievement or become the first champion in every sporting event. However, one of the most supportive factors to become a champion in every match is an excellent physical condition, for that it takes the proper training according to the target, such as Tabata Training and High-Intensity Interval Training which is the appropriate form of exercise to improve the components of physical condition. This study aimed to analyze the difference in the effect of more effective exercise on increasing agility. This study uses a "randomized group pretest and post-test design". The population in this study were male students of the 2016 PKO FIO UNESA Study Program, amounting to 100 people. The sampling technique used random sampling with a sample of 30 people, divided into three groups, namely the Tabata Training group, High-Intensity Interval Training and the control group. This type of research is quasi-experimental, with a quantitative approach. Data were collected by measuring technique using a side step test tool to measure agility. Data were analyzed using the MANOVA technique, using 0.05. The results showed that the effect of Tabata training on increasing agility with a value of  $p = 0.000$ , then the effect of high-intensity interval training on increasing agility with a value of  $p = 0.000$ . The two exercises turned out that high-intensity interval training was better than Tabata training in increasing agility.

**KEYWORDS:** Tabata Training, High-Intensity Interval Training, Agility

### INTRODUCTION

The development of sports in Indonesia every year must experience changes with the addition of new sports such as petanque, hang gliding, aeromodelling, and so on; these sports require extra energy and require maximum concentration and physical condition. There are various factors to produce ultimate physical condition: Tabata training and high-intensity interval training. In this case, Sumpena (2017) explains that the Tabata Training method is a method that utilizes the ratio of exercise and rest (pause with high intensity). As for implementing this training method, the details are 20 seconds of exercise activity and 10 seconds of rest, which is repeated until the 4 minutes has run out for one type of movement. Meanwhile, Embert (2013) states that by practising using the Tabata Training method, it is highly recommended to do it 2-3 times a week with a gap of 48 hours to 72 hours between sessions.

Therefore, Tabata training is a method that is expected to impact increasing anaerobic and aerobic abilities significantly and significantly reduce fat levels in the human body. In addition to Tabata training, other exercises can improve maximum physical condition, namely high-intensity interval training. According to their research (Pinillos, Hermoso, and Roman, 2016), training based on High-Intensity Interval Training conducted 2 to 3 sessions per week showed an improvement in the performance of running athletes due to increased endurance and VO<sub>2</sub>max. High-Intensity Interval Training can improve the heart's performance, which has an impact on the body's metabolism, which also increases sharply.

Metabolism is concerned with the body's ability to convert fat into energy. In addition to increasing metabolism during exercise, it also increases so that the body remains in a condition of burning fat in a resting state. In line with that, High-Intensity Interval Training is very effective in improving one's VO<sub>2</sub>Max capacity. According to Sheykhlovanda et al. (2016), a 3-week low-volume High-Intensity Interval Training (approximately 6 or 9 minutes per session) was associated with increases in VO<sub>2</sub>Max, VO<sub>2</sub> Max volume, and percentage VO<sub>2</sub> Max. According to Miramonti et al. (2015), within four weeks, High-Intensity Interval Training can increase Physical Working Capacity at Fatigue Threshold or physical performance capacity at one's fatigue threshold. Another advantage of High-Intensity Interval Training is that, in addition to increasing fat burning, High-Intensity Interval Training can maintain muscle mass so that muscle is not lost along with burning fat. High-Intensity Interval Training is very suitable for those who are running a cutting fitness program.

High-Intensity Interval Training is very effective to improve the performance of the desired physical components. In addition, one of the other advantages of High-Intensity Interval Training is the problem of training time. One training session of High-Intensity

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Interval Training is enough to spend 20-25 minutes. In contrast to endurance training which can take twice as long as that. Another study conducted by Roy (2013) entitled High-Intensity Interval Training: Efficient, Effective, and a Fun Way to Exercise: Brought to you by the American College of Sports Medicine revealed research data showing that the accumulated time spent in high-intensity exercise determines the physiological benefits. So besides being physiologically beneficial for the body, High-Intensity Interval Training is also suitable for people who are busy and don't have much time to exercise outside the home or go to a sports centre, because High-Intensity Interval Training can be done at home and not at home. It needs to take a long time.

### METHOD

This type of research is quantitative while in terms of the objectives of this research, including applied research. In contrast, in terms of the methods used in this research, including quasi-experimental research (quasi-experimental), the treatment group was measured by providing training methods in the form of Tabata Training and High-Intensity Interval Training to increase agility.

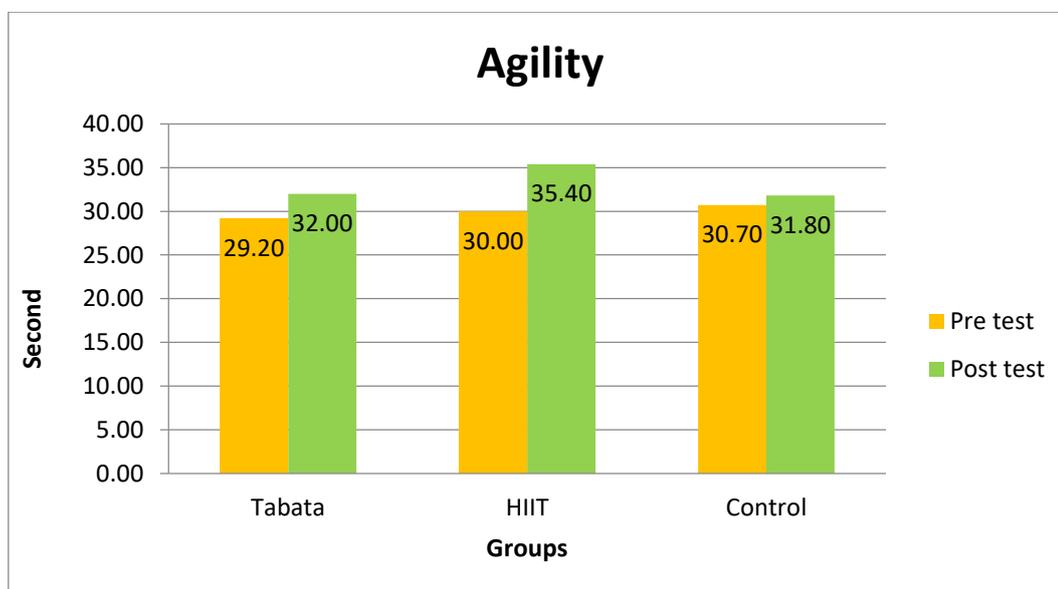
### RESULT AND DISCUSSION

The results of the agility measurement test data with the number of samples  $n = 30$  were carried out before and after treatment (Tabata training and High-Intensity Interval Training). The description of the results of the average and standard deviation (SD) data can be seen in the table as follows:

**Table 1 Description of agility test results (multiple)**

Variable	Average $\pm$ SD (multiple)		
	Tabata	High Intensity Interval Training	control
Pretest	29,20 $\pm$ 5,96	30,00 $\pm$ 6,32	30,70 $\pm$ 5,81
Post test	32,00 $\pm$ 5,98	35,40 $\pm$ 5,19	31,80 $\pm$ 5,16

The description of the results of agility measurement data in the table shows the pretest results in the Tabata Training group of  $29.20 \pm 5.96$  times, the High-Intensity Interval Training group of  $30.00 \pm 6.32$  times and the Control group of  $30.70 \pm 5.81$  times. Then after the treatment (exercise), a post-test was carried out, and the results obtained increased in the Tabata group by  $32.00 \pm 5.98$  times, the High-Intensity Interval Training group by  $35.40 \pm 5.19$  times and the Control group by  $31.80 \pm 5.16$  Times. For more details, a description of the power variable is presented in the following figure.



**Figure 1: Average Agility before and after treatment in the Tabata, High-Intensity Interval Training and Control groups.**

### 3. Post Hoc Test

After the Manova test was carried out, a post hoc test was carried out using the LSD test on the strength and speed variables. The results of the post hoc test can be seen in the following table.

Table 3. The results of the post hoc test of the agility variable.

Dependent Variable	(I) Group	(J) Group	Sig.
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<b>Agility</b>	<i>Tabata (K1)</i>	<b>K2</b>	0,000
		<b>K3</b>	0,000
	<i>High-Intensity Interval Training (K2)</i>	<b>K3</b>	0,000

**P<0.05, there is a significant difference**

The results of the LSD test on the agility variable showed that there was a significant difference between the Tabata group and the High-Intensity Interval Training group (p=0.000), the Tabata group and the Control group (p=0.000), the High-Intensity Interval Training group and the Control group (p=0.000).

Furthermore, the results of the LSD test on the speed variable showed that there was a significant difference between the Tabata group and the High-Intensity Interval Training group (p=0.000), the Tabata group and the Control group (p=0.000), the High-Intensity Interval Training group and the Control group (p=0.000).

### CONCLUSION

Based on the results of data analysis of research, there is a significant effect between Tabata training and high-intensity interval training on increasing agility. The exercise that is more effective in increasing agility is high-intensity interval training compared to Tabata training.

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