



Influential Factors of Taekwondo Achievement in Regional Sport Competition

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Abstract

Endurance is one of the most influential factors in achieving high-performance athletes. The level of maximum oxygen volume or VO2Max describes endurance. VO2Max is the ability to consume oxygen during physical activity. This research examines the influential factors of Taekwondo achievement in regional sports competitions. The method used in this research is a survey to determine VO2Max levels. The research instrument operated is the Multi Fitness Test (MFT) to measure VO2Max levels. The sample in this study was 20 taekwondo athletes from Semarang City. Data results of the physical condition test are divided into five categories: Poor, Under Average, Average, Above Average, and Excellent. The results confirm that VO2Max level is the main factor in achieving the best athlete performance. Athletes who win gold medals have the VO2Max Above the Average category. The conclusion is that most taekwondo athletes in Semarang City have a VO2Max level in the Average Category. Increasing VO2Max training is required to achieve athletes' high performance.

Keywords: Physical Condition, VO2Max, Taekwondo

INTRODUCTION

Achievement is a measure of the success of a region's sports growth. A region will be considered successful in developing its sports achievements when winning the competition. The Semarang city is a parameter for good sports development in Central Java due to being the first winner of prestigious sports events such as PORPROV in continuing years. The Semarang City's Taekwondo Team won first place in 2009, 2013, 2018, and 2023. The leading sports in the Semarang City is Taekwondo. Semarang City Taekwondo was the first overall winner at PORPROV in 2013 and 2018. At PORPROV 2023, Semarang City Taekwondo won the third overall championship. Based on the results at PORPROV 2023, Semarang City Taekwondo experienced a decline in performance

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from several previous PORPROV events. The Semarang City taekwondo results at PORPROV 2023 require evaluation and follow-up to improve performance.

The decrease in medal tally by the Taekwondo athletes of Semarang City is presented in Table 1.

Table 1. Semarang City Taekwondo Medals in Regional Sports Competition (PORPROV) 2023

EVENT	GOLD	SILVER	BRONZE	TOTAL
Pre-Provincial Sports Week	6	1	5	12
Provincial Sports Week	3	2	6	11

Taekwondo is a martial arts sport from Korea that uses hands and feet, consisting of kyurugi, or fighting category, and poomsae, or art category. The dominant sport of Taekwondo requires physical conditions, especially endurance and explosive power (Wahyuni & Donie, 2020). Another source stated that Taekwondo requires endurance, speed, and power (Darmanto, 2015). Based on the research result, Taekwondo requires elements of physical condition, endurance, and explosive power to perform taekwondo motions optimally and improve competition performance.

Various factors influence sports performance, including psychological factors, infrastructure, and tactical and physical techniques. Elements that influence athlete performance are the state of infrastructure, match situation, psychology, athlete's skill level, athlete's physical condition, body condition, and state of tactical and strategic abilities (Effendi, 2016). Athletes' achievements are influenced by internal and external factors: facilities and infrastructure, coach competency, training programs, techniques, tactics, psychology, physical condition, environment, family, and friends (Maizan & Umar, 2020). In coaching and improving athlete performance, there are four basic components: Physical, Technical, Tactical, and Mental (Pujianto, 2015). According to several sources, factors influencing performance include physical condition. If the athletes have bad physical conditions, then good techniques will not work.

A study states that athletes with high achievements also have good physical condition (Ambara, 2017). Having excellent physical condition is a benefit and advantage, such as practicing new difficult movements, staying energized, completing training programs and matches without problems, and speeding up the recovery process after heavy training (HB & Sujana, 2006). Researchers emphasize that physical condition is the

main factor in achieving an athlete's excellent performance, without ignoring other factors that influence an athlete's performance.

Maximum Oxygen Volume or VO₂Max indicates a person's endurance level. Maximum oxygen volume is the fastest ability to apply oxygen during physical activity. The higher the VO₂Max level, the faster the recovery period after activity and the better the fitness (Widiawati, 2020). VO₂Max is a person's ability to use oxygen when working in ml/kg/minute units. Maximum Oxygen Volume or VO₂Max is a person's ability to consume as much oxygen as possible during physical activity to avoid fatigue, as seen in units of ml/kg/minute.

Based on several influential factors on sports performance, evaluating what influences the performance of Taekwondo athletes is necessary to evaluate Semarang City's taekwondo athletes' shortcomings to improve performance in the next period of Provincial Sports Week. The decline in the performance of Taekwondo athletes of Semarang City is partly due to physical condition factors, so it is necessary to explore the physical condition of Semarang City Taekwondo athletes. This research focuses on examining the influential factors in the performance of the Taekwondo team of Semarang City athletes in terms of physical condition.

METHOD

This research method is a survey to determine the physical condition of Semarang City's Taekwondo athletes, specifically the VO₂Max category. The research location was conducted at the Tri Lomba Juang Sports Hall, Semarang City. The population in this study was Taekwondo athletes from Semarang City. The sampling technique used was a total sample with a sample size of 20 athletes.

The test instrument in this study operated the Multi Fitness Test or Bleep Test. This examination is a test instrument used to determine endurance, described by the VO₂Max level or maximum oxygen volume. The data analysis used categorizes the results of the Multi Fitness Test or Bleep Test endurance test into five categories: Poor, Under-Average, Average, Above-Average, and Excellent. After analyzing the data, the endurance category of each Semarang City Taekwondo athlete will be observable. The result is evaluated information to determine the influential factor in the decrease in the athlete's performance.

RESULT

The result of examining the Multi Fitness Test or Bleep Test instrument is presented in Table 2.

Table 2. Research Data Results

NAME	VO2Max	CATEGORY	MEDAL
DF	50	Average	Bronze
YG	50	Average	Silver
MV	55	Above-Average	Gold
WY	54	Above-Average	Gold
MY	46	Above-Average	Gold
SF	54	Above-Average	Gold
RK	47	Average	Non-Medal
DN	50	Average	Bronze
MARTA	44	Average	Bronze
OL	40	Average	Non-Medal
AN	49	Average	Non-Medal
YD	42	Average	Bronze
TL	45	Above-Average	Bronze
RN	45	Above-Average	Bronze
MR	43	Average	Bronze
UL	43	Average	Non-Medal
DR	47	Above-Average	Bronze
SN	43	Average	Non-medal
JS	47	Above-Average	Gold
AN	42	Average	Non-Medal
	47	Average	

Based on the research data above from a total of 20 athlete samples, 12 athletes are included in the average category, and 8 athletes are included in the Above-Average Category. The athlete with the lowest VO2Max is 42, the highest VO2Max value is 55, and the average VO2Max for Semarang City Taekwondo athletes is 47. This value means that the athletes have VO2Max capacity in the Average Category.

DISCUSSION

The average VO2Max level of Semarang City Taekwondo athletes was in the Average Category. The test result reveals that 12 athletes, or 60% of athletes, are included in the Average Category. It was found that 8 athletes, or 40% of athletes, were included in the Above-Average Category. Based on the interview results with 12 athletes

in the average category, the average consisted of 1 athlete who won a silver medal, 5 athletes who won a bronze medal, and 6 athletes who did not get a medal. Among the 8 athletes with the Above-Average VO2Max Category, 5 won gold medals, and 3 won bronze medals.

The 6 athletes who did not win medals are included in Average VO2Max Category, and the 5 athletes who won gold medals had Above-Average VO2Max Category. In Taekwondo, endurance is the basic physical component that should be mastered, with VO2Max level as the indicator. Good endurance will enable athletes to win matches (Wahyuni & Donie, 2020). The identical research result of Wibandoro (2017) also exposes that good endurance and speed are crucial to retaining performance. Endurance is essential for Taekwondo to support technique and improve performance, so a taekwondo athlete must have good endurance, indicated by a high VO2Max level.

Most of the VO2Max levels of Semarang City taekwondo athletes were in the Average Category; 6 athletes who did not get medals were also in the Average Category, and 5 athletes who won gold medals had VO2Max in the Above Average Category. This research result aligns with previous research stating that a good VO2Max level aligns with performance. A study concluded that the factor that influences achievement is endurance (Tanzila & Febriani, 2019).

By having good endurance, an athlete can keep on long training and competing compared to athletes with low VO2Max levels who easily experience fatigue (Nurokhan, 2019). Endurance is a basic ability that athletes must have to achieve high performance to implement all their techniques (Atradinal, 2018). Based on several previous studies regarding the importance of endurance in improving sports performance, Semarang City taekwondo athletes need increased endurance to achieve high achievements because good endurance or a high level is in line with high performance.

The sports coaching process will succeed with a good training program (Nugraha & Pratama, 2019). To achieve good performance, good physical, technical, mental, and infrastructure are required (Nugroho, 2017). It demands several interrelated and inseparable elements, such as physical, technical, tactical, mental, and infrastructure. Physicality is the most important factor influencing athlete performance, as well as strength, endurance, and flexibility (Maliki, Hadi, & Royana, 2017).

Maintaining excellent physical condition is an advantage and benefit, such as practicing new difficult movements, staying energized, completing training programs and matches without problems, and speeding up recovery after heavy training (HB & Sujana, 2006). The dominant aspect of physical condition that athletes must have is endurance; cardiac endurance is the most important element of physical condition in physical fitness (Ninzar, 2018). Endurance is when someone does activities for a long time without getting tired (Atradin, 2018). Endurance is an aerobic activity that requires oxygen for a long time, such as swimming, cycling, and running (Satria, 2019). Another source believes that endurance is an athlete's ability to control the level of fatigue when physical activity is carried out for a long time (Sepriadi et al., 2018). Endurance is divided into 2, specifically general endurance and special endurance. General endurance is heart and lung endurance, while special endurance is muscle (Umar & Fadilla, 2019). Based on these sources, it can be concluded that endurance is a person's ability to control fatigue when accomplishing physical activity for a long time, which consists of heart, lung, and muscle endurance.

Maximum Oxygen Volume or VO₂Max indicates a person's endurance level. Maximum Oxygen Volume is the fastest ability to use oxygen during physical activity. The higher the VO₂Max level, the faster the recovery period after activity and the better the fitness (Widiawati, 2020). VO₂Max is a person's ability to use oxygen when working in ml/kg/minute units. Based on several sources, it can be concluded that Maximum Oxygen Volume or VO₂Max is a person's ability to consume as much oxygen as possible when doing a physical activity so that fatigue does not occur, as seen in units of ml/kg/minute. High-intensity interval training is one of the best ways to increase VO₂ max. This type of training successfully increases VO₂Max because it will train the body to accept resistance training for a long period. Theoretically, any exercise can increase VO₂Max. However, training to increase VO₂Max requires extraordinary encouragement. Muscles, for example, will only grow if exposed to a challenging workload. The identical thing applies to VO₂Max.

CONCLUSION

The endurance level of Semarang City taekwondo athletes is mostly in the Average Category. It is one factor that influences the decline in the performance of Semarang City Taekwondo athletes. Some experts stated that increasing your endurance is important to achieve high performance. Good endurance can reduce fatigue, so athletes can follow the coach's instructions well, using all their abilities. However, if endurance is low, the oxygen supply to the brain will also decrease, reducing the athlete's concentration when competing at high intensity. For further research, researchers can compare several training methods to increase endurance and use them as recommendations for the most significant endurance training methods.

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