

## Effectiveness of mental training to increase self-efficacy and reduce competition anxiety in athletes Efectividad del entrenamiento mental para aumentar la autoeficacia y reducir la ansiedad competitiva en deportistas

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**Abstract.** This research aims (1) to see the effectiveness of mental training in increasing self-efficacy, and (2) reducing competition anxiety among taekwondo athletes in West Sumatera Province. This research used quasi-experimental method with one group pretest-posttest research design which involved 20 subjects, 10 subjects conducted in Dojang HTC Fighter to measure self-efficacy and another 10 subjects to measure competition anxiety from Dojang Kodim Bukittinggi. The data were collected using a self-efficacy scale and a competition anxiety scale, to test the quality of the instrument a content validity test was used with professional judgement, while to see the reliability of the instrument using SPSS 19.0 for Windows with the Alpha Cronbach technique. The self-efficacy scale consists of 27 items with an alpha coefficient of ( $\alpha$ ) 0.925 and the competing anxiety scale consists of 12 items with a reliability coefficient value on the aspect of cognitive anxiety of 0.81, and somatic anxiety of 0.82. The research results show that the use of mental training is effective in increasing self-efficacy and reducing competition anxiety in taekwondo athletes.

**Keywords:** Mental training, Self-efficacy, Competition anxiety

**Resumen.** Esta investigación tiene como objetivo (1) ver la eficacia del entrenamiento mental para aumentar la autoeficacia y (2) reducir la ansiedad competitiva entre los atletas de taekwondo en la provincia de Sumatra Occidental. Esta investigación utilizó un método cuasiexperimental con un diseño de investigación grupal pretest-posttest que involucró a 20 sujetos, 10 sujetos realizados en Dojang HTC Fighter para medir la autoeficacia y otros 10 sujetos para medir la ansiedad competitiva de Dojang Kodim Bukittinggi. Los datos se recolectaron mediante una escala de autoeficacia y una escala de ansiedad competitiva, para probar la calidad del instrumento se utilizó una prueba de validez de contenido con criterio profesional, mientras que para ver la confiabilidad del instrumento se utilizó SPSS 19.0 para Windows con el software Alpha Cronbach. técnica. La escala de autoeficacia consta de 27 ítems con un coeficiente alfa de ( $\alpha$ ) 0,925 y la escala de ansiedad competitiva consta de 12 ítems con un valor de coeficiente de confiabilidad en el aspecto de ansiedad cognitiva de 0,81 y ansiedad somática de 0,82. Los resultados de la investigación muestran que el uso del entrenamiento mental es eficaz para aumentar la autoeficacia y reducir la ansiedad competitiva en los atletas de taekwondo.

**Palabras clave:** Entrenamiento mental, Autoeficacia, Ansiedad competitiva

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### Introduction

Taekwondo as one of the popular sport and has many followers in Indonesia. Taekwondo itself is a sport that originates from Korea, where in language the words Tae means crushing and kicking using the feet, Kwon means boxing, and Do means art (Orellana et al, 2023). In Indonesia, taekwondo is competitive sport stated by Sakti & Rozali (2015). While according to Alviani, Hendriadi, & Wibowo (2019) in current development taekwondo is not only done for self-defence but is also contested. It makes people have various motives to learn taekwondo like to maintain physical fitness, for self-defence, and even to achieve achievements. People who learn taekwondo to achieve an achievement known as an athlete.

As an athlete it required to achieve maximum performance in every competition that followed. One of the factors that often become an obstacle for athletes to achieve maximum achievement in competition is the psychological factors. It happens because both athletes and coaches only focus on improving the physical and technical aspects, and then forget about the psychological factors. While in research that conducted by Adisasmito (2007) said that psychological factors have an important role in achieving athlete high performance, where 80% from the winning factor of a professional athlete determined by their psychological factors. The previous research in line with James (Akbar et

al, 2024; Herman, 2011) said that 50% of competition results are determined by mental and psychological factors.

One of the psychological factors that should be developed by the taekwondo athlete is increasing their self-efficacy (Romero, et al. 2022). Self-efficacy is a person's belief in their ability to achieve goals and overcome the challenges that their face during competition. For an athlete, a high level of self-efficacy means that they have confidence in achieve a good performance and successful in competition. Meanwhile, low levels of self-efficacy lead to self-doubt, fear and poor performance. In a sport context, an athlete's level of self-efficacy is influenced by several factors, including previous experiences, feedback from coaches and teammates, and perception of their technical and physical abilities. When athletes face challenging situations, high self efficacy will help them to face with self-confidence and mobilize their efforts to achieve their goals. The previous research has shown a high relationship between high self-efficacy and good performance in sport. For example, a study that conducted by Moritz, Feltz, Fahrbach, and Mack (2000) found that higher self-efficacy was related to better performance in golf athletes. The same thing was also conducted by Prasetyo (2019) who stated that self-efficacy has positive relationship taekwondo athletes.

In Addition to increasing self-efficacy, athletes are also required to be able to reduce the level of their anxiety in

competition. The common symptoms of anxiety in competition that happened in athletes are a heart beats faster, anxiety symptoms, feelings of nausea and constipation as stated by Saniah et al. (2024); Davidson, Neale, and Kring (2004). Competition anxiety is a feeling of anxiety or nervousness experienced by athletes before, during, and after competing (Borges et al. 2020). The anxiety can arise due to pressure to perform well, high expectations from oneself or others, or fear of failure. It will disturb the focus, concentration, and the performance of athletes if it not handled properly. The importance thing for athletes is to know that anxiety is a normal feeling and it also can serves as a positive boost in their effort to achieve the achievement. When the anxiety of competing is excessive it can be a serious obstacles and it needs to overcome because a moderate level of anxiety can increase the athlete's alertness and focus. As stated by Woodman, Hardy, and Carrington (2003) excessive anxiety can disturb the concentration and decrease athlete performance in various sports.

The two factors (self-efficacy and competition anxiety) that stated above are the problems that occurred at Dojang HTC Fighter and Dojang Kodim Bukittinggi. Where in Dojang HTC Fighter faced self-efficacy as the main problems by athletes, while athletes in Dojang Kodim Bukittinggi faced the competing anxiety problems. In an effort to improve self-efficacy and reduce competition anxiety, one of the interventions that can be used is mental training. According to Sin, 2016; Firdaus, 2012 mental training is a long-term training with the aim of training on a scheduled and regular basis to develop an athlete's mental skills. The aim of mental training is to create a champions mentality, where the athletes have the characteristics of always wanting to progress, working hard, being persistent and responsible. Suryobroto (1993) said that there are three mental training techniques that need to be specifically focused and adapted to practical needs in coaching athletes, namely concentration, relaxation, and imagery.

## Methods

### Participants

The subjects in this experimental study are taekwondo athletes from Indonesia, specifically from Dojang HTC Fighter (n=15) who will have their self-efficacy measured, and from Dojang Kodim Bukittinggi (n=17) who will have their anxiety levels measured. They were selected based on the following inclusion criteria: (1) they are in the pre-junior class (12-14 years old), (2) they are in the junior class (14-17 years old), and (3) they have participated in competitions at either the regional or national level. From 27 taekwondo athletes, 20 were selected based on the inclusion criteria. Subsequently, all of them were placed in the experimental group.

### Research Design

This study is an experimental research on the effectiveness of mental training to improve self-efficacy and reduce

competition anxiety among taekwondo athletes. The type of research used in this study is a quasi-experiment with a one-group pretest-posttest design. According to Seniati, Yulianto & Setiadi (2005) this design is called the before-after design. In this design, at the beginning of the study, measurements are taken on the dependent variable that the subjects already possess. After the manipulation, measurements are taken again on the dependent variable using the same measurement tool as in the pretest.

The study was conducted over three weeks, with the following stages: (1) Pretest, in the pretest phase, the initial procedure involved building good rapport with the athletes and coaches. After that, informed consent and psychological scales were provided to measure the self-efficacy and anxiety of the athletes. Then, the athletes were given a briefing on what mental training is and an overview of the research that would be conducted. (2) Intervention Implementation, The next step was to provide mental training intervention for 3 weeks, with 2-3 sessions each week in 30 minutes. (3) Posttest, This stage was the completion phase. After the intervention was given, the same psychological scales used in the pretest were administered again. This allowed for the assessment of whether there was a difference in scores between the pretest and posttest after the mental training was provided. The research design can be seen in the following picture:



Figure 1. Research Design

### Research Instruments

The instrument that used by the researchers to measure athletes self-efficacy was developed by the researchers, with used an alpha reliability coefficient on the scale of self-efficacy equal to ( $\alpha=0.925$ ). Meanwhile, the instrument used to measure the competition anxiety used the CSAI-2R (Competitive State Anxiety – 2 Revised) developed by Marten and Collegues (2003) with a reliability coefficient value for the cognitive anxiety aspect of 0.81 and somatic anxiety of 0.82

### Statistical Analysis

This research uses paired sample t-test analysis data technique by finding the differences in the mean of pre-test and post-test. This analysis was used to see the effectiveness of mental training to increase taekwondo athletes' self-efficacy in Dojang HTC Fighter and decrease the competition anxiety of taekwondo athletes in Dojang Kodim Bukittinggi. This study looked for differences between pre-test and post-test then using SPSS for paired sample t-test (Seniati, et al. 2005).

## Results

Based on the results of research on taekwondo athletes in Dojang HTC Fighter, the score of self-efficacy before and after carrying out the experiment (mental training) can be seen in table 1.

Table 1.

The mean score of Pretest, Posttest, and Gainscore of Self-Efficacy				
No.	Kelompok	Mean Pretest	Mean Posttest	Gain score
1	Eksperimen	74	87,10	12,5

Table 1 showed that in general there has been an increasing self-efficacy. After doing mental training, this can be seen from the increase in the mean score on the post-test, where at the pre-test the mean was 74.60 increasing to 87.10 when the post-test was carried out. It can be concluded that the score of self-efficacy increased by a difference of 12.5 points.

Meanwhile, the results of research regarding competition anxiety on taekwondo athletes in Dojang Kodim Bukittinggi before and after carrying out the experiment (mental training) can be seen in table 2.

Table 2.

The mean score of Pre-test, Post-test, and Gain score of Competition Anxiety				
No.	Kelompok	Mean Pretest	Mean Posttest	Gain score
1	Eksperimen	29,30	21,50	7,8

Table 2 showed that the mean score between the pre-test and post-test decreased from 29.30 to 21.50 with a gain score of 7.8. It can be concluded that competition anxiety decreased by 7.8 after mental training was carried out.

Further data analysis used the paired sample t-test. This data analysis technique compares gain score (difference) pre-test and post-test, this method is also useful to see whether there are differences or influences between two paired samples (Seniati, et al 2005). However, before carrying out a paired sample t-test, an assumption test is first carried out in the form of a normality test to determine whether the data distribution is normal or not. The following is a normality test for the two data (self-efficacy and competition anxiety) which are presented in table 3 and table 4.

Table 3.

The Result of Pretest-Posttest Normality Test for Self-Efficacy Scale			
	Test Of Normality Kolmogorov-Smirnov <sup>a</sup>		
	Statistic	Df	Sig.
Pre-Test	,236	10	,122
Post-Test	,211	10	,200*

Table 4.

The Result of Pretest-Posttest Normality Test for Competition Anxiety Scale			
	Test of Normality Kolmogorov-Smirnova		
	Statistic	Df	Sig.
Pre-Test	,170	10	,200
Post-Test	,158	10	,200*

Tables 3 and 4 present the results of the normality test

by using Kolmogrove-Smirnov statistical analysis on pre-test-posttest self-efficacy (table 3) and pre-test post-test competition anxiety (Table 4). Both data, self-efficacy and competition anxiety, have a significance score greater than 0.005, from that it can be concluded that the distribution of self-efficacy and competition anxiety data in this study is normally distributed.

The results of the assumption test above showed that the data is normally distributed and meets the requirements for parametric analysis using paired sample t-test technique to test the hypothesis. This data analysis technique compares gain score (difference) pre-test and post-test, this method is also useful for seeing whether there are differences or influences between two paired samples (Seniati, et al 2005).

Based on the following data it can be concluded that there are significant differences between pre-test mean and post-test on self-efficacy and competition anxiety. The following are the results of statistical analysis using paired sample t-test techniques on the self-efficacy data presented in table 5.

Table 5.

Paired Sample T-Test for Self-Efficacy Test						
	N	Mean	Std. Deviasi	T	Df	Sig.
Pretest	10	74,60	3,71	-13,927	9	0,000
Posttest	10	87,10	4,89			

Based on the table above, it can be seen that the average subject score at the time of pre-test was 74.60 and the average score of the subjects at the time of post-test namely 87.10. While the mean post-test score higher than pre-test. Two-sided significance score or sig. (2 tailed) of 0.000. This score is smaller than 0.05 at the 95% confidence level, this shows that there is an increase after mental training is carried out so that the hypothesis that mental training is effective for increasing self-efficacy is accepted.

The result of paired sample T-Test on the competition anxiety variable can be seen in the table 6.

Table 6.

Paired Sample T-Test for Competition Anxiety						
	N	Mean	Std. Deviasi	T	Df	Sig.
Pretest	10	29,20	5,92171			
Posttest	10	21,90	4,81779	5,473	9	0,000

In table 6 you can see that the average score of respondents during the pre-test was 29.20 and the average score at post-test was 21.90. Where the mean post-test score is lower than the pre-test, this shows that there is a decrease in competition anxiety after mental training with a two-sided significance level (sig2 tailed) of 0.000 where this score is smaller than 0.05. Thus, it can be concluded that the hypothesis that mental training is effective in reducing competition anxiety is accepted.

## Discussion

This research proves that mental training is effective to increase self-efficacy and reduce competition anxiety in taekwondo athletes. This can be seen from the significant

difference between the pre-test and post-test score after being given mental training. The result of this research supported by the opinion of Gauron (1984) who states that the benefits of mental training being able to control attention that makes the athletes are able to concentrate, control emotions, overcome their tension, develop their self-confidence, restructure their positive thinking and to recover their psychologically. In line with this research, Xiong (2012) explained that mental training is useful for reducing the competition anxiety and tension of the athletes, eliminating athletes fatigue and increasing the quality and collaborative abilities of the athletes.

The aims of this research is to determine how effective mental training to increase self-efficacy and reduce competition anxiety in taekwondo athletes. One type of mental training that is effective to increase self-efficacy and reduce anxiety in athletes is mental training that combines three psychological intervention techniques, namely concentration, relaxation and imagery training that are focused specifically and tailored to practical needs in coaching athletes who will or are facing a competition (Setyobroto, 1993).

Mental training involving these three types of interventions that will be more effective because it has the advantages: 1) Being able to control attention, athletes can concentrate or have full focus on a certain point or on things to do. 2) Emotional control, athletes can master or be able to control anxiety, fear, and anger in order to overcome tension and can move normally. 3) It can make athletes try to recover psychologically. 3) The body awareness, the athlete's understanding of the state of his body that with it the athlete is able to control and overcome tension in the body. 4) It will increase the athlete's self-confidence. 5) It will creating subconscious or mental imagery in the sense that athletes can make movements or design playing techniques before the game. 6) The athletes can reorganize thinking in the sense that athletes can change their thinking to be more positive (Gaouron 1984).

After the athletes who participated in the experimental research were given mental training intervention, significant differences were obtained between the pre-test and post-test scores. Where self-efficacy scores increase and the competition anxiety scores decrease, this means that mental training is effective for increasing self-efficacy and decreasing athletes' competition anxiety. The result of this research supported by Xiong (2012) who explained that mental training is useful to decrease anxiety and tension of the athlete, eliminating athletes fatigue and increasing the quality and collaborative abilities of the athletes. It also stated in Donie, Aulia & Argantos (2017) research where the mental imagery training is effective to reduce anxiety in athletes PPLP in West Sumatera. In addition, a research conducted by Prawitama & Aulia (2019) also showed that proper mental training can increase the athletes' confidence. Furthermore Astuti et al (2024) also said that with mental training can improve the overall performance of athletes.

## Conclusions

Based on the research it can be concluded that mental training consisting of concentration, relaxation, and imagery training is effective to increase athletes' self-efficacy and reduce their competition anxiety in taekwondo athletes.

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