

Research Article

Levels of depression, anxiety, and stress of PPLP Gorontalo karate and pencak silat athletes facing the national sports week qualification round

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ABSTRACT

Background: Stress and anxiety are becoming more common and prone to occur among athletes, especially martial arts athletes in the pencak silat and karate, facing national or international level matches. One example of such a problem is during the National Sports Week Prequalification round. This condition blames the pressure from internal and external aspects (e.g., coaches) to win first place—the urgency to win the tournament results in an intensive training program. Karate and pencak silat are different martial arts, meaning that each has different stress, anxiety, and depression. Objective: The objective of this study is to explore the level of stress, anxiety, and depression between the two martial arts. Methods: This quantitative study relied on a comparative approach. As many as 35 Gorontalo PPLP athletes from Karate and Pencak silat were involved as the research population. Some were selected as the sample using the total sampling method. All data were retrieved using the depression anxiety and stress scale (DASS-42) by Lovibond and Lovibond. This questionnaire has been adapted into the Indonesian language. After the descriptive analysis of the data, the homogeneity and normality tests were performed as the data analysis prerequisite. Results: Following this test was a t-test to examine the hypothesis. The research results show no significant differences in the stress and anxiety levels of karate and pencak silat athletes. Interestingly, there are significant differences in the depression levels of karate athletes and pencak silat athletes. Conclusion: Reducing stress, anxiety, and depression in athletes is imperative to support martial arts performance.

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Introduction

Exercise is any physical development generated by skeletal muscles that require energy (Belval et al., 2019). Any exercise is done consistently, measured, and regularly to maintain health. It is a methodical and continuous development performed more than once. Afwardi (2011) further defines exercise as characterized by being planned and structured, being an activity involving repetitive bodily movements, not following a conservative energy consumption approach, and always being intended to improve or maintain one or more components of physical fitness, even if the participant is not continuously aware of it. Non-Exercise Activity Thermogenesis (NEAT) is all energy expenditure excluding sleeping, eating, and activity not intended to constitute a structured exercise period.

According to Law No.3 of 2005 about the National Sports System, achievement sports foster and improve sports people in a planned, tiered, and prolonged manner through competition. This aims to enable athletes to attain achievements with the needs of science and technology. With that in mind, structured, systematic, and tiered training is essential to produce superior athletes. This notion is underpinned by the need to conduct comprehensive coaching. The success or failure of coaching is subject to the quality and precision of training programs and regulations. A successful training program has three main components that are volume, intensity, and frequency (Rahadian et al., 2021). All three

components are integral and cannot be separated from one another. Some examples of sports that benefit from quality training programs are pencak silat and karate.

Pencak silat is a contemporary general term used in Indonesia, Malaysia, and other Southeast Asia countries to mention hundreds of traditional and modern martial arts performed by a solo player or a duel, with or without musical background (Hadiana et al., 2022). Pencak Silat is one of the fastest-growing martial arts in Indonesia (Patah et al., 2021). There are two determining aspects in achieving optimal performance: indigenous (Athletes) and exogenous. The physical condition of athletes, including strength, speed, agility, endurance, coordination, balance, flexibility, and reaction, influences Indigenous factors. Physical condition is the most critical part of meeting the set targets. If the physical condition of an athlete is not optimal, then the training target cannot be met.

The pencak silat kick technique is a series of movements with several elements strung together to produce an integrated movement (Doewes et al., 2022). Muscle strength is a physical fitness component athletes need during competition (Patah et al., 2021).

Other than channeling hobbies and recreation purposes, sports are also a means of achieving achievements that are competed in various events. To become an outstanding athlete, an individual must practice systematically, continuously, and thoughtfully. One of the sports that compete in major events is karate. Karate is a typical martial art in many sports competitions in Indonesia, both at local and international levels.

Karate is originally from Japan. This martial art is rooted in Okinawa, first known as Tote, which means "Hand of China." Karate comprises two kanji characters: Kara (empty) and Te (hand), which means empty hand. Karate athletes dominate the number of athletes in Indonesia, signifying that the country has the potential to produce talented individuals (Castelo & Telles, 2021).

Karate is a martial art involving foot and hand movements, such as punching, parrying, and kicking. Two movements competed in the sports events: kata and kumite (Venkatraman et al., 2019). According to Zago et al. (2017), karate covers the combination of all basic techniques, i.e., parrying, punching, stomping, and kicking, assembled in such a way in a definite form. Meanwhile, Kumite is "a battle of two people facing each other while displaying techniques."

One contributing factor to mental health problems in karate and pencak silat is mental health (Moore et al., 2020). Mental health has remained one of the significant health problems worldwide, including in Indonesia, especially in Gorontalo Province. This concern has drawn the attention of many researchers to formulate solutions to stress, anxiety, and depression, especially in sportspeople. Such is underpinned by the pressure (internal and external) of the athletes in facing competition. Other causes of mental health disorders involve pressure from coaches and excessive expectations from supporters and teams. This leads to poor performance, thus hindering athletes' achievement (Croom, 2014).

Stress can be interpreted as an interconnection between the individual and the environment where someone feels pressured by specific conditions (Biggs et al., 2017). Stress is associated with anxiety and depression (Petito et al., 2016). Anxiety refers to a disorder recognized by symptoms where a person feels worried about small things that are irrational. This response tends to be excessive with the stressors an individual faces. Depression, anxiety, and stress in a severe phase result in harmful intentions, such as suicidal thoughts (Syafitri, 2017).

Gorontalo Province has many outstanding athletes in martial arts. Based on the observations and interviews with pencak silat and karate coaches, martial arts athletes PPLP Gorontalo have mastered basic techniques yet need to enhance physical conditions. Such a condition blames problems, such as rapid fatigue during training, hindering the attainment of optimum training. This was seen during the Gorontalo Provincial Sports Week held in December 2022. At the beginning of the first round of the match, karate and pencak silat athletes were aggressive, attacking and reacting quickly to their opponents. However, in the second match, the athletes seemed less aggressive due to fatigue, fear of

a stronger opponent, anxiety, nervousness, and sudden urination and defecation towards the end of the match.

Previous research conducted by [Moore et al. \(2020\)](#) suggests that there is support for martial arts training as an efficacious exercise-based mental health intervention to improve well-being and reduce symptoms associated with mental health internalization. In addition, research conducted by [Jalil & Kahar \(2022\)](#) showed that the martial arts athletes in this study showed quite good attitudes and behavior, as seen from their self-confidence, stress management, and good emotions. Research on anxiety levels during competition has been conducted by [Hardiono \(2020\)](#), [Kumbara et al. \(2018\)](#), and [Soleh & Hakim \(2019\)](#). [Hardiono's research \(2020\)](#) was to face regional-level matches, while the other two studies should have been mentioned. In this study, the level of stress, anxiety, and depression of athletes in facing national-level matches is measured, so it is suspected that the level of anxiety will be influential. In addition, the level of anxiety in individual sports is higher than in team sports.

The above conditions are more likely due to mental health disruption in athletes and low motivation to compete. These factors are impactful when athletes compete for three rounds for a specific duration. Moreover, lack of training in preparation for the Pre-Provincial Sports Week match is another mental health problem factor. Gorontalo is a province that strives to produce national and international athletes. This is the foundation for research to formulate the prevention of early symptoms of mental health disorders such as depression, anxiety, and stress. As a result, athletes can recognize and avoid more severe disorders, especially days before the competition.

This research is expected to help athletes prevent the risk of harm due to the impact and symptoms caused by depression, anxiety, and stress. This notion rationalizes the need to research these mental health problems in karate and pencak silat athletes in PPLP Gorontalo.

Method

Research Design

The present work is quantitative research where all data are in the form of numerical data [Creswell \(2009\)](#) and then statistically analyzed. The present work is comparative, non-experimental research. Comparative research is intended to identify the difference between contributing factors of more than one variable. This study identifies and explores the differences in depression, anxiety, and stress in Karate and pencak silat athletes at PPLP Gorontalo.

Research Instrument

Instruments of the research refer to tools for retrieving data. The present work employed a DASS-42 (depression, anxiety, stress scale) by [Lovibond & Lovibond \(1995\)](#). This instrument was adapted from the research by Lovibond and Lovibond from 1979 to 1990. As many as 35 athletes were selected as the research sample. While testing the depression and anxiety scales, a new factor emerged from analyzing constant anxiety and depression items. This test also covered difficulty relaxing, nervous tension, irritability, and restlessness.

Further, items were tested to explore the limits of these factors, leading to the development of a new stress scale based on the similarity of items characterized by symptoms of tension or stress. On that ground, the instrument is called the depression anxiety stress scale. The depression, anxiety, and stress scales were measured using a Likert Scale of 4, rated 0 to 3. The DASS scale consists of 5 categories of answers for the three variables, which have been formulated by [Lovibond & Lovibond \(1995\)](#).

This measurement is crucial to assess the structure derived from several factor analysis groups using exploratory and confirmatory factor analysis. This questionnaire comprises 42 items related to depression, anxiety, and stress. The reliability of the instrument is represented by scores: depression

0.91, anxiety 0.84, and stress 0.90. In other words, the instrument is considered reliable (Lovibond & Lovibond, 1995). Provided in the following Table 1 is the indicator of each variable.

Table 1. DASS 42 Instrument

No.	Aspect	Indicator	No. Item
1	Depression	Dysphoria	13, 26
		Despair	10, 37
		Self-humiliation	17, 34
		Devaluation of life	21, 38
		Lack of interest	16, 31
		Anhedonia	3, 24
		Inertia	5, 42
2	Anxiety	Automatic passion	2, 4, 19, 23, 25
		Skeletal muscle effect	7, 41
		Situational anxiety	9, 30, 40
		The subjective experience of feeling anxious	15, 20, 28, 36
3	Stress	Difficulties to relax	8, 22, 29
		Life passion	12, 33
		Agitation	1, 11, 39
		Irritability	6, 18, 27
		Impatient	14, 32, 35

Of the 42 statements, respondents were asked to choose a response from 0 to 3 according to their feelings over the last weeks. Respondents' answers will determine their level of depression, anxiety, and stress. Table 2 is predetermined norms of the measuring instrument to categorize a person's level of stress, anxiety, and depression:

Table 2. M Norm of DASS 42 (Lovibond & Lovibond 1995)

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Highly Severe	28+	20+	34+

Data Analyzed

All data were analyzed to test the distribution of data measuring one variable. This analysis aims to explore the results from the research sites. The interpretation of this data description is in the form of each variable's mean (average), maximum, and minimum value. Percentage analysis was performed to obtain each research variable's response rate. To determine whether there is a difference, a t-test was conducted.

$$P = \frac{\sum X}{N} \times 100\%$$

Description:

$\sum x$ = total data of each variable

N = number of samples

Results and Discussion

Result

The description of the subjects in the study serves as an illustration of the research data. The description of the research data includes empirical averages and hypothetical averages. Furthermore, the average empirical and hypothetical scores were from the DASS-42 scale. The level of each variable can be seen by paying attention to the average empirical score. Such scores are based on calculating the highest and lowest scores divided by six deviation units.

Table 3. Description of the Measurement Results

	Hypothetic Score				Empirical Score			
	Min.	Max.	Mean	SD	Min.	Max.	Mean	SD
Karate Athletes	0	126	63	21	8	82	45.8	14.6
Pencak silat Athletes	0	126	63	21	2	93	49.2	20.1

The values of the research results are seen in Table 3. The empirical average of karate athletes is less than the hypothetical average. Such a finding is similar to pencak silat athletes, whose practical value is smaller than the hypothetical value. Simply put, the depression levels of karate athletes and pencak silat athletes are considered mild. Meanwhile, in the comparison between the mean of the empirical score of the experimental group, the empirical score of the control group of the karate athletes has a smaller mean than the pencak silat athletes' empirical score. After identifying these results, the scores of all 35 subjects are categorized using the following norms.

Table 4. The Category of the DASS 42 Measurement Results in Karate Athletes

Karate Athletes	Stress		Anxiety		Depression	
	Frequency	%	Frequency	%	Frequency	%
Normal	7	43.8	3	18.8	12	75.0
Mild	4	25.0	1	6.3	2	12.5
Moderate	4	25.0	5	31.3	1	6.3
Severe	1	6.3	3	18.8	1	6.3
Highly severe	0	0.0	4	25.0	0	0.0
Sum total	16	100	16	100	16	100

Based on the measurement results in Table 4, there are several athletes, both karate and pencak silat, experiencing stress, anxiety, and depression in both mild, moderate, and severe scales. The results of individual interviews with each athlete who experienced these symptoms stated that the stress, anxiety, and depression experienced were due to their concerns about match preparation, both physically and mentally. These results align with the research of Simon and Marten (Hardy et al., 1999), who found that competition anxiety is higher in young athletes in individual sports compared to team sports and higher in individual contact sports compared to individual non-contact sports. Furthermore, according to Komarudin (2016), competition that runs tightly can bring anxiety to athletes, and athletes need to be carefully prepared to face intense competition. The coach can directly prepare strategies, techniques, and tactics in the match, but if anxiety comes, it cannot go well. This needs to be considered in terms of the mental development of athletes.

The category of the DASS 42 measurement result in Pencak Silat athletes (Table 5) shows that there are still some athletes who experience stress, anxiety, and depression. However, the number is less than normal. This is likely due to athletes being too fixated on their technical abilities, and the athlete's mind will be significantly influenced by the satisfaction that is subjectively felt within him. Furthermore, the emergence of external demands and expectations makes athletes doubt that this factor affects the emotional intelligence of pencak silat athletes.

Table 5. The Category of the DASS 42 Measurement Results in Pencak Silat Athletes

Pencak silat Athletes	Stress		Anxiety		Depression	
	Frequency	%	Frequency	%	Frequency	%
Normal	11	57.9	7	36.8	5	26.3
Mild	3	15.8	1	5.3	5	26.3
Moderate	3	15.8	7	36.8	6	31.6
Severe	1	5.3	2	10.5	3	15.8
Highly severe	1	5.3	2	10.5	0	0.0
Sum total	19	100	19	100	19	100

In addition, factors that can affect anxiety, especially for novice pencak silat athletes, one of which is the lack of training portions in developing the four aspects that exist in pencak silat, namely martial aspects, sports aspects, artistic aspects, and mental-spiritual aspects (Kriswanto, 2015). By mastering these four aspects, an athlete or fighter can manage his anxiety to face the match well. To become a true fighter or pencak silat athlete, one must master all four aspects well.

Table 6. Results of Normality Test of DASS 42

	SD	Mean	K-SZ	Asymp Sig (2-tailed)	Description
Karate Athletes	7.258	11.56	0.104	0.200	Normal
Pencak silat Athletes	8.027	12.70	0.107	0.164	Normal

Based on Table 6, the p-value of Karate athletes is 0.200, or $p > 0.05$, indicating that the distribution in the variables of depression, anxiety, and stress is normal. Meanwhile, the p-value of Pencak Silat athletes is 0.164, or $p > 0.05$, which indicates that the distribution in the variable of depression, anxiety, and stress is also normal.

Table 7. Results of Homogeneity Test of DASS 42

Pencak Silat and Karate Athletes		Levene Statistic	df1	df2	Sig.
Stress	Based on Mean	0.083	1	33	0.775
Anxiety	Based on Mean	0.002	1	33	0.965
Depression	Based on Mean	0.680	1	33	0.415

From Table 7, the variables of stress, anxiety, and depression of both karate and pencak silat athletes are homogenous, with the p-values at 0.775, 0.965, and 0.415, respectively ($p < 0.05$).

Table 8. T-Test Result

Hypothesis	t-count	Significance	α	p	Decision
1	0.077	0.939	0.05	$0.039 > 0.05$	H ₀ = Rejected H _a = Accepted
2	1.201	0.238	0.05	$0.238 > 0.05$	H ₀ = Rejected H _a = Accepted
3	2.838	0.008	0.05	$0.008 < 0.05$	H ₀ = Accepted H _a = Rejected

The results of the T-test of the three hypotheses (Table 8) show that only the third hypothesis, H₀, is accepted, while the first and second hypotheses, H₀, are rejected. This means that only the depression variable significantly differs between karate athletes and pencak silat athletes.

Discussion

The present work aims to explore the differences in the depression levels of karate athletes and pencak silat athletes. Table 4 and Table 5 reveal that the stress levels of karate athletes and pencak silat

athletes are categorized as moderate at 25% and 15.8%, respectively. Based on the t-test analysis, the t-value reaches 0.077 with a significance of 0.939 compared to $\alpha = 0.05$. In other words, H_0 is rejected, and H_a is accepted since significant $> \alpha$ ($0.939 > 0.05$). This indicates no difference in stress's effect on karate and pencak silat athletes. Both karate athletes and pencak silat athletes experience stress.

Stress experienced during training before the match and after the match is marked by unstable emotions due to something trivial, overreacting, difficulties relaxing, getting annoyed easily, being quickly exhausted, impatient, temperament, irritability, restlessness, inability to tolerate anything that gets in the way, and feel easily agitated.

This result corresponds to the one seen (Everly & Lating, 2019), reporting that individual reactions to stress include alarm reaction, in which stress stimulates the body's physiological signs from the hypothalamus to glands and organs to prepare for potential self-defense, resistance, through fight, flight, or freeze behavior, and fatigue. All of these are common in negative responses to stress.

Several contributing factors that cause stress among final-year athletes are failure to adjust, accumulation of course load, financial conditions, lack of self-efficacy, relationships with friends and partners, future career, and lack of time management. Some factors that cause stress in early-generation athletes are an adaptation from the school environment to the university environment, living far from parents, and an inconducive environment (Agusmar et al., 2019).

The higher the stress level, the more likely a person is to suffer from mental illness. Based on the research results on stress levels and their relationship with education levels, athletes at levels I, II, and III experience moderate stress. For young athletes, working on a thesis is a cause of stress, fear, frustration, and even suicide. Other factors include academic pressure, such as too many assignments and exams (end-of-block or practical exams) with tight deadlines (Adryana et al., 2020). Athletes in organizations experience mild to severe stress (Fatningsaliska et al., 2015). Insomnia is also common in pencak silat athletes who are stressed (Muldianto et al., 2015).

Athletes' anxiety falls under the moderate category, with a percentage of 31.3% and 36.8% for karate athletes and pencak silat athletes, respectively. The t-value reaches 1.201 with a significance of 0.238 compared to $\alpha = 0.05$. In other words, H_0 is rejected, and H_a is accepted since significant $> \alpha$ ($0.238 > 0.05$). This indicates no difference in stress's effect on karate and pencak silat athletes.

Anxiety responses can be seen in several ways: dry lips, shortness of breath, pain in feet, the tendency to escape from anxiety-inducing situations, excessive sweating, feeling scared for no apparent reasons, increased heart rate, fear of being held back by unaccustomed tasks, feeling worried about embarrassing oneself and trembling.

This finding aligns with a study by Nurmina et al. (2021). In their study, depression, anxiety, and stress are detrimental to individuals and society, leading to negative consequences, including school dropout, suicidal thoughts, poor relationships, impaired ability to work effectively, burnout, and other health problems. Therefore, greater attention to psychological well-being is essential to improve the quality of life of athletes. Excessive anxiety among athletes results in overthinking, hindering the athletes from controlling their emotions and impacting their tension and sleep patterns (Hastuti et al., 2016).

Severe anxiety experienced by athletes is caused by culture shock. This mental problem is recognized by a decline in athletes' focus, thus hindering them from identifying the root of the problem. Even though athletes can interact, for example, with chat discussions via social networks or e-mail, they feel isolated or left behind in social-physical interaction in distance learning. This situation results in culture shock. In addition to culture shock, the burden of learning, training, and competition is also a factor causing anxiety in athletes.

The level of severe anxiety is characterized by restlessness, physical tension, withdrawal from interpersonal relationships, and avoidance of problems. Such conditions reduce the ability to

concentrate during distance learning. A decline in learning concentration negatively impacts the athletes' cognitive response, which leads to severe anxiety (Hastuti et al., 2016).

Josefsson et al. (2014) define depression as a primary mood disorder or affective disorder that disrupts affective, cognitive, physiological, and behavioral components. The result identifies a difference in the effect of depression on karate athletes and pencak silat athletes; the t value reaches 2.836 with a significance of 0.008 compared to $\alpha = 0.05$. In other words, significant $> \alpha$ ($0.008 > 0.05$) means that H_0 is accepted and H_a is rejected. This indicates a difference in the effect of depression on karate athletes and pencak silat athletes. The average stress score of pencak silat athletes (13.58) is higher than karate athletes (7.44). This condition is also the same in the moderate and mild categories at 31.6% and 12.3%, respectively.

In this study, the athletes experienced moderate depression characterized by negative feelings about themselves, feeling weak, pessimistic, sad, losing interest in everything, feeling worthless, not enjoying favorite activities, feeling hopeless and sad, having no enthusiasm about anything, and having problems taking the initiative. These depressive manifestations are by the diagnostic criteria for depressive symptoms in the Guidelines for Classifying Diagnostics of Mental Disorders III (Abdallah & Gabr, 2014). According to the guidelines, depressive symptoms include depressive affect, losing interest and excitement, fatigue, decreased activity, concentration and attention, lack of self-confidence, feeling guilty and useless, pessimism, self-harm intention, disturbed sleep, and poor appetite.

Depression is a change in feeling characterized by feeling sad and useless, being withdrawn from the environment, and losing sexual desire and interest in something (Anti et al., 2021). People with depression have low self-love. Those who are depressed tend to think about things that are not their priority and look down on themselves.

Maladaptive coping is the main topic of independent determinants of stress, anxiety, and depression in athletes (Mahmoud et al., 2012). One of the factor's causing depression is psychosocial factors, involving psychological and social aspects. Cognitive distortions are also one of the psychological causes of depression. A cognitive distortion is a negative view of oneself, experience, and future. One form of cognitive distortion is comparing oneself unfairly with others. Social media can lead to an individual comparing himself or herself with others.

Conclusions

The results of this study are expected to provide an overview of the level of stress, anxiety, and depression of karate and pencak silat athletes, especially athletes and coaches. Based on the results of this study, coaches and athletes can manage, overcome, or reduce their anxiety levels, especially when approaching the Provincial Pre-Sports Week selection. In addition, it can be used as input or consideration to improve mental training for athletes so that they can overcome stress, anxiety, and depression disorders that can affect athlete performance in participating in matches.

Authors' contributions

HH is responsible for data compilation and analysis, article conception, writing, and revision. MH and N is responsible for article conceptualization as well as strict and critically revised manuscripts. All authors read and approved the final manuscript.

Competing interests

The authors declare no competing interests.

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