

Effect of PMR and AGR to Improve Mood States in Beginner Athletes

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Abstract The purpose of this study was to determine the effect of the Progressive Muscle Relaxation (PMR) program and also Autogenic Relaxation (AGR) on improving mood in high jump beginners. The design in this study is a pretest-posttest control group design, which is a design that has a pretest before being given treatment. The participants used were high jump beginner athletes with an average age of 17-20 years. The total participants were 38 people. Then they are randomized and divided into 2 groups (PMR and AGR). A total of 20 samples were in the PMR group and 18 samples were in the AGR group. The results of the study are based on the calculation of independent samples test. It is known that the value of Sig (2-tailed) is $0.000 < 0.05$, thus it can be concluded that there is a significant (significant) difference in effectiveness between the use of the PMR method and AGR to improve the mood states of athletes, high jump beginners. The results of the study stated that the significance value (Sig) on Levene's Test for Equality of Variances was 0.530 or > 0.05 . So, it can be concluded that the variance of the N-Gain data (%) for the PMR and AGR groups is the same (no difference). It was further explained that the value of the independent samples test of significance (Sig) (2-tailed) was 0.000 or < 0.05 . Thus, there is a significant (significant) effectiveness difference between the use of the PMR and AGR methods to improve the mood states of novice high jump athletes. Further research is recommended to

implement PMR and AGR programs with a longer period of time and allow them to be applied to individual sports and team sports to be able to determine the level of effectiveness.

Keywords Mood States, PMR and AGR

1. Introduction

Mood is a condition in which a good or bad mood is influenced by the interaction between individuals, so that it can make the individual happy, afraid, anxious, happy, even tired and can even result in prolonged stress and depression [1]. Boredom and boredom in doing daily exercise make athletes feel stressed, depressed and tired faster, resulting in a lack of enthusiasm for athletes in training. As a result, there is a decrease in motivation and emotions to practice, so that in the end they don't want to be an athlete [2]. Lack of daily competition tests and monotonous training procedures are the cause of increased burnout, boredom, and can increase overtraining, leading to injury as well as stress [3]. Mood disorders are one of the most common disorders and can affect human health [4].

Mood is different from emotion (it is temporary). Emotions are constantly responding to the various ideas

that exist as well as the social circumstances that we face throughout the day. Meanwhile, mood is a continuation of emotion behavior that lasts for some time, a few hours, even a few days [5]. The ups and downs of mood not only damage the individual concerned, but also cause unusual tensions in other people around him. It was further explained that mood (mood) is a form of emotional state [6]. The mood state of each individual can take place with different intensity and duration [7]. The difference between emergence and emotion is that they are often non-specific, not strong, and not always caused by a particular stimulus or event. Emotional instability and a person's mood will result in stress on himself, and even mental decline can affect other psychological functions and will ultimately affect achievement [8].

The psycho-physical theory of totality developed among experts and realized that people who experience mental disorders, because they feel difficult, anxious or hesitant to face something, actually affect their physical condition [9]. In sports activities, to achieve high achievements, certain psychological aspects are needed; For example, in archery, athletes must be able to focus well, calmly, confidently, and with high concentration despite noise and wind disturbances.

The highest achievement of an athlete is the ability to win a competition. But achieving this requires practice, hard work, hard work and prayer [10]. The quality of the trainers can be said to be very good; this can be seen from the establishment and design of training systems and training plans that are carried out continuously and correctly. Besides that, trainers and assistant trainers who excel in improving the quality of trainers have also been followed. trainer, as evidenced by a certificate. One of the functions of mood in athletes is to create enthusiasm in training. Because if the athlete's mood is not good then the mood will not make the spirit in training. This mood itself has two forms, namely positive and negative. Mood states can predict the success of an athlete's performance, namely the influence of a very high positive mood. However, this negative mood greatly affects the mental readiness of athletes. For example, during exercise the athlete's mood is not good, the athlete's mind is not on the field and there is chaos and the training is not optimal [11].

An athlete's mood should get more attention from the coach [12]. The coach must be able to distinguish when the athlete is in a positive mood or in a negative mood because, indirectly, this mood can provide good performance and can even give poor performance to athletes, so when the athlete's mood is in a bad condition, it can make the athlete tired, not enthusiastic and will even result in injury to the athlete [13].

Through the training process that has been programmed, continuous and measurable given by the coach to his athletes, an athlete will be able to master all movement techniques that have been trained properly. In addition,

the coach must also be able to make the training atmosphere as comfortable as possible for athletes to increase their enthusiasm in training [14]. Because psychologically, with relatively high training, it can indirectly provide an increase in the athlete's physical condition and a significant athlete's physical advantage [15].

The causes of the mood itself also vary. There are factors from the weather, food, home atmosphere and even the surrounding environment [16]. Because everyone has a different heart feeling, an incident that accidentally offends someone can make his mood bad [17]. Likewise with an athlete, for example, when a badminton athlete is training and suddenly his favorite racket breaks and makes him not in the mood for training that day. This requires a coach to provide solutions and indirectly make athletes less moody and down with unnecessary actions [18].

Mood is very important to the athlete for two reasons. First, it has been established that certain mood patterns are very beneficial for athletes' performance in training. For example, performance is successful if the athlete's mood is positive with an above-average strength score of that athlete, and the athlete's negative mood score is below average. Second, mood is a very common and very important self-regulation process in the individual daily life of an athlete. By understanding the nature of an athlete's mood, it may be possible to help athletes achieve maximum performance [19].

One form of improving the mood of athletes that we often read about is by implementing Progressive Muscle Relaxation (PMR) and Autogenic Relaxation (AGR) programs. PMR is a relaxation therapy using tightening and relaxing movements of the muscles in certain body parts given to athletes with physical disorders due to illness, or functionally in the form of decreased daily activities and insomnia [20]. However, AGR is an exercise with more emphasis on a calm and comfortable mind [19].

Sleep is one of the PMR programs that is seen as very important for recovery for athletes in the game, and muscle relaxation. This is a relaxation strategy to compensate for the psychological (cognitive) and physical (somatic) stressors experienced by athletes. There is some evidence for the use of PMR in the general population as a moderately effective treatment for sleep problems. But there is little evidence supporting the use of PMR for athletes [21]. The PMR technique has been used by experts since the early 1920s. PMR is used as a recovery process (managing stress, reducing tension and anxiety) [22].

Recovery is defined as the rebuilding of psychological and physiological resources to enable future use [23]. These different performance contexts involve different mental and physical stresses in each athlete's training. This form of PMR exercise is also believed to affect important organs in the body such as the

hypothalamic-pituitary-adrenal (HPA) axis, the secretion of the stress hormone cortisol, especially activated when the body responds to stress [24]. Recovery process for training and performance standards must be maintained [25]. The mood of an athlete can last in two periods of time, namely in the short term and in the long term [26].

2. Materials and Methods

The use of this research design is adjusted to the research aspects and the main problem to be disclosed. On this basis, the design used in this study is a pretest-posttest control group design, which is a design that has a pretest before being treated. Thus, the results of the treatment can be known more accurately, because it can be compared with the situation before being treated.

Table 1. Pretest-posttest control group design

Group	Pretest	Treatment	Posttest
Experiment (PMR)	O ₁	X ₁	O ₂
Control (AGR)	O ₃	X ₂	O ₄

2.1. Participants

The participants were high jump beginner athletes with an average age of 17-20 years. The total participants were 38 people. Then, a random method is used, and the sample was divided into 2 groups (PMR and AGR). A total of 20 samples were in the PMR group and 18 samples were in the AGR group. Prior to the implementation of the study, each sample was given an approval sheet to be a sample in the research to be carried out.

2.2. Instrument

The instrument that will be used in data collection uses the Mood State Scale [27], [28]. Respondents were faced on a five-point scale (1 = not at all, 2 = a little, 3 = moderate, 4 = quite a bit, 5 = very).

2.3. Research Procedure

The study was conducted on beginner high jump athletes. The research process was carried out separately between the PMR and AGR groups. This was done to reduce the occurrence of program and data confusion in this study. The research was carried out for 9 meetings.

Basically, AGR is a program that pays more attention to the state of mind, soul and feelings. By imagining such a beauty, a calm atmosphere, and the rhythm that follows. However, PMR is a form of relaxation that emphasizes more on the muscles in a person's body [19]. The success in this study lies in the focus of the sample and also the instructions given by the trainers/instructors.

Prior to implementing the treatment program (PMR and AGR), each sample was given an initial questionnaire

(mood states). Before filling out the questionnaire (pretest), the sample was asked to jump on the high jump field. After that, the sample was asked to fill out the test questionnaire that had been provided. In the instructions for filling out the questionnaire, the sample was emphasized to express his state/mood while doing the high jump. Filling out the questionnaire is in a room that has a temperature of 25-30°C. After completing the initial questionnaire, each group carried out the program that had been given. Exercise each session is done 30-60 minutes. After the program (PMR and AGR) was completed, the sample was directed to perform high jump exercises. Practice starts at the basic level to a higher level. Each group carried out the series of activities for 9 meetings. After all programs were completed, the sample was asked to complete a questionnaire (posttest). The questionnaires were administered to the same group, but participants were separated from each other (PMR and AGR) to avoid interaction and possible influence on each other [19].

2.4. Analysis

The data is calculated to see the distribution of values in each program and look for the minimum, maximum and average values. In the next stage, calculations are carried out to see the normality and homogeneity of each data. The final calculation will calculate the N-Gain Score in the PMR and AGR groups. This calculation aims to test the effectiveness of the use of a particular method or treatment in a one group pretest-posttest design study. The N-Gain score test was carried out by calculating the difference between the pretest and posttest scores. By knowing the N-Gain, we can find out whether the use or application of a certain method can be said to be effective or not. And the last calculation in this study is to do the Independent Sample t Test of the N-Gain value. Test Independent Sample t Test is used to test whether or not there is a difference in the average value (score) of two groups of data that are not paired with each other. The type of data used in the Independent Sample t Test is generally in the form of interval or ratio scale data.

3. Result

The results of the research that has been carried out by implementing the PMR and AGR programs for each group and carried out for 9 meetings with the average age of the participants are 17-20 years. Table 2 shows the results of the N-gain score test calculation. It shows that the average N-gain score for the PMR group is 47.8659 or 48% is included in the less effective category with a minimum N-gain score of 4.35% and a maximum of 70.37%. Meanwhile, the average N-Gain score for the AGR group is 22.5613 or 23%, which is included in the ineffective category with a minimum N-gain score of 3.33% and a maximum of 40.91%.

Table 2. Description of PMR and AGR hasil results

		Descriptives					
		Class	Statistic	Std. Error			
NGain_Percent	PMR	Mean	47.8659	3.29730			
		95% Confidence Interval for Mean	Lower Bound	40.9385			
			Upper Bound	54.7933			
		5% Trimmed Mean	49.0333				
		Median	48.0000				
		Variance	206.572				
		Std. Deviation	14.37261				
		Minimum	4.35				
		Maximum	70.37				
		Range	66.02				
		Interquartile Range	15.56				
		Skewness	-1.310	.524			
		Kurtosis	3.879	1.014			
		AGR	AGR	Mean	22.5613	2.44071	
				95% Confidence Interval for Mean	Lower Bound	17.4336	
					Upper Bound	27.6890	
				5% Trimmed Mean	22.6102		
Median	21.6216						
Variance	113.184						
Std. Deviation	10.63882						
Minimum	3.33						
Maximum	40.91						
Range	37.58						
Interquartile Range	19.05						
Skewness	.228			.524			
Kurtosis	-.697			1.014			

Table 3. Normality calculation results

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
NGain_Percent	PMR	.165	19	.184	.894	19	.038
	Control	.118	19	.200*	.961	19	.594

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Thus, from the results of the calculations in table 2, it can be concluded that the use of the PMR method is less effective in improving the mood of high jump beginner athletes. Meanwhile, the use of the AGR method is also less effective in improving the mood of the novice high jump athletes. Thus, the requirements for using the independent sample t test for the N-gain score are met and can be continued on the Independent Samples t Test.

Based on table 3 of the Test of Normality output above, it is known that the significance value (Sig.) in the Kolmogorov-Smirnov test for the N-Gain Percent value in the PMR group is 0.184 and the AGR group is 0.200. Since the value of Sig. both groups are greater than 0.05, it can be said that the data is normally distributed. Thus, the requirements for using the independent sample t test for the N-gain score are met and can be continued on the Independent Samples Test.

Table 4. Calculation results of N_Gain

Group Statistics					
	Class	N	Mean	Std. Deviation	Std. Error Mean
NGain_Percent	Experiment	19	47.8659	14.37261	3.29730
	Control	19	22.5613	10.63882	2.44071

Table 5. Independent Samples Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
NGain_Percent	Equal variances assumed	.403	.530	6.168	36	.000	25.30460	4.10235	16.98465	33.62455
	Equal variances not assumed			6.168	33.171	.000	25.30460	4.10235	16.95993	33.64927

Refers to the category of interpretation of the effectiveness of N-Gain [29]. Based on table 4 of the output group statistics above, it is known that the average value (Mean) of NGain_Percent for the PMRsebasar group is 47.8659 or if it is rounded it becomes 48%. Based on the category of interpretation of the effectiveness of the NGain value (%), it can be concluded that the use of the PMR method is less effective in improving the mood states of high jump beginners.

Meanwhile, based on the output group statistics table above, it is known that the average value (Mean) of NGain_Percent for the AGR group is 22.5613 or if rounded it becomes 23%. Based on the category of interpretation of the effectiveness of the NGain value (%), it can be concluded that the use of the AGR method is not effective in improving the mood states of beginner high jump athletes.

Based on table 5, it is known that the significance value (Sig) on Levene's Test for Equality of Variances is $0.530 > 0.05$, so it can be concluded that the variance of the N-Gain data (%) for the PMR and AGR groups is the same. Thus, the independent sample t test for the N-Gain score is guided by the Sig value. contained in the table Equal Variances assumed.

Based on the Independent Samples Test output table, it is known that the value of Sig (2-tailed) is $0.000 < 0.05$. Thus, it can be concluded that there is a significant (significant) difference in effectiveness between the use of the PMR method and AGR to improve mood states.

4. Discussions

The primary function of relaxation is to overcome competitive anxiety and promote recovery, but relaxation has also been reported to be used to treat anxiety associated with athlete states [30]. More physical (for

example, muscle relaxation) and the type of mental relaxation are used to deal with competitive anxiety. While mental (for example, meditation) is also more than the type of physical relaxation used in relation to dealing with anxiety.

The results of the research that have been carried out state that, in fact, there are differences in the results of the exercise between the PMR and AGR programs. However, these results are still considered less effective in improving the mood state of beginner athletes in the high jump. This is actually slightly different from the results of previous studies, which stated that there was a difference between PMR and AGR [19], [31]. The results of this study more or less have different characteristics in their application. The research carried out more targeting individual or individual sports, while previous research was related to team sports. Actually, the PMR training is a measurable and systematic technique in order to overcome and relax the muscles [32]. Meanwhile, in another study, it was explained that there was no effect of progressive muscle relaxation exercises on the respondent's stress value (p value 0.363). [33].

However, in AGR, a form of exercise aims to improve sports performance. This form of exercise can be done by taking a position when the situation allows the practice to take place safely and well, such as a clean, comfortable and free from crowds [34]. Because this situation can interfere with the athlete's concentration during training. There are also relaxation exercises with this AGR technique such as: 1) Listening to your favorite song to please the heart and calm the soul; 2) relax somewhere that makes him comfortable. Exercises like this are carried out during practice or before a match that makes the athlete focus on his activities. In the AGR group, based on the category of interpretation of the effectiveness of the use of this method, it is also not effective in improving the mood of the high jump beginner athletes.

It is possible that there is no relationship or influence due to the intensity and duration of exercise that are not optimal for athletes. In addition, novice athletes still do not know how to use the PMR and AGR methods, so they cannot maximize their training process. Participants can interact with each other and generate mood benefits for training and as much as possible the athletes and coaches make the training atmosphere as comfortable as possible [35].

It is very important that this exercise program runs optimally, because with relaxation the athlete feels relaxed, has an impact on performance, concentration, and pleasure, and the effect is positive (impacts on the results of relaxation exercises) [30].

This exercise is very necessary for athletes because anxiety as a negative emotion can affect perceptions in sports, where most athletes consider anxiety to weaken performance and can result in decreased performance [36]. Meanwhile, in postoperative women, PMR is one of the most effective techniques to use in order to obtain a deep level of relaxation [37]. In burn athletes, this relaxation exercise is a fairly effective way to reduce anxiety and stress levels [38].

This progressive muscle relaxation exercise has a positive effect on a very positive mood in Malaysia and Iran [39]. Athletes in these countries prefer to use this relaxation training technique because their muscles are more relaxed and their minds are more open. As a result of this, the training of athletes in Malaysia and Iran has significantly increased [39].

PMR is a very effective tool for regulating the state of the athlete's mood. Not only mood, but also anxiety and stress can be regulated through this PMR. For example, volleyball players were randomized into experimental groups to measure anxiety and showed decreased anxiety results [21]. The relaxation exercise shows that the technique can also provide an alternative offer (reducing addiction to nicotine, alcoholic beverages and drugs) that is very easy to learn. [40]

5. Conclusion

The results of this study can be concluded that the effect of PMR and AGR to improve mood in high jump beginner athletes has a difference in doing relaxation exercises. Relaxation exercises are used to improve the athlete's mood. This method can also be applied as a form of warm-up exercise or by relaxing the muscles in the body. The results of these exercises are expected to have an impact on mood and reduce stress and muscle anxiety. Athletes can start training from the lower body and work their way up, or vice versa. That way athletes can feel the order that is very easy to follow. This progressive muscle relaxation exercise has a positive effect on very positive moods in Malaysia and Iran. This relaxation exercise

technique is indeed very widely used by athletes in various countries. Therefore, athletes should record the duration of this exercise as an effective tool for regulating mood states. Not only mood, but also anxiety and stress can be managed through this exercise.

Recommendations for further researchers are that this study should be carried out for 9 meetings and was less effective or less significant in improving mood states for novice high jump athletes. Therefore, further research is recommended to implement the PMR and AGR programs with a longer period of time. Then this PMR and AGR may have an influence on other variables. And the last is recommended for PMR and AGR programs in individual sports and team sports to determine the level of effectiveness.

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