

The Effect of Jacobson's Progressive Muscle Relaxation Method On The Competitive Anxiety Level Of Jordanian Muay Thai Athletes

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Abstract

Competitive anxiety has an impact on an athlete's performance development because it decreases the ability to concentrate before an upcoming event or competition. It is very important to find strategies to overcome the anxiety of an athlete. Thus, the aim of this paper is to examine the effect of Jacobson's progressive muscle relaxation method (PMR) on the competitive anxiety level of Jordanian Muay Thai athletes. A sample of 20 Muay Thai athletes participated in the study, then they were divided randomly into experimental group (n=10) and control group (n=10). The experimental group was exposed to a three-week PMR intervention consisting of 3 sessions per week. Sport Anxiety Scale-2 was used to measure the competitive anxiety level pre and post intervention for both experimental and control groups. The SPSS package was used to analyze the data. Results revealed no significant differences in the level of competitive anxiety after applying the intervention, the level of anxiety was decreased by (13.6%) which means that this method had little but no significant effect on decreasing the anxiety level of Muay Thai athletes. As the present study adopted a three-week intervention, in contrast with most of the previous studies that implemented interventions extended for longer periods, future research may shed light on the effect of the psychological intervention period on the significant effect of PMR on anxiety.

Keywords: Progressive Muscle Relaxation, Anxiety, Tension, Residual Tension, Muay Thai.

Introduction

The method of progressive muscle relaxation (PMR) was initially proposed by Edmund Jacobson (1938) who developed a physiological method of combating tension and anxiety. He concluded that tension arose from the effort manifested in the shortening of muscle fibers and that this tension occurred when a person reported "anxiety" [4]. Jacobson found that even if the individual might lie on a couch for hours, he could be sleepless and nervously restless, and might experience signs of mental activity, organic excitement, anxiety, or other emotional disturbance, in addition to other physical symptoms like breathing irregularly, with restless movements of the eyes, fingers or other parts, or experiencing an impulse to unnecessary speech. He justified that by referring to the "residual tension", which means that the relaxation is incomplete, and the essential feature of the PMR method is doing away with residual tension. And that doesn't happen in a moment, even in the practiced person [9].

PMR method involves specific tensing and relaxing of the major muscle groups, thus helping the performers learn the difference between states of tension and relaxation. Alternating tensing and relaxing muscles bring a state of relaxation [15].

Over time, PMR has been modified extensively to better diagnose minute muscular tension levels and teach performers how to let go of this tension. Tension is built up gradually, held for 5-7 seconds, then released all at once. Jacobson's original PMR procedure involves 16 muscle groups, a practice time of nearly an hour per session, and several months to fully master the skill. This technique starts with 16 muscle groups, thus, as the skill is mastered, simplifies first to 7 groups and then to 4, in order to speed up relaxation time. But since athletes heightened body awareness, that allows them to start at the advanced 4 groups stage of PMR, but if they don't get effective results, they can switch to the more basic 7 group approach [7].

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PMR technique was effective in improving many aspects regarding athletes including sleep onset latency [14], physiological factors such as reducing heart rate, helping in recovery [3] and improving the overall athletic performance [18]. Over the past decade, researchers proved that the PMR technique is associated with the enhancement of many psychological factors such as mood regulating [8]; [21]; [6], concentration during stressful situations [17], and increasing self-confidence [2]; [12]. Moreover, several studies have confirmed the effectiveness of relaxation techniques including PMR on the anxiety levels among football athletes [5]; [11], volleyball athletes [16], and High jump athletes [20], Whereas other studies failed to find significant advantages of using PMR to reduce levels of anxiety among athletes [22].

In a study investigating psychological phenomena that occur among competing athletes, Kang & Jang [10] found that cognitive and somatic state anxiety exerted significant negative self-effects on perceived performance among competing athletes. However, as martial arts including Muay Thai have been considered a competitive sport in the nineties of the last century, not a lot of research has been done on its athletes [19].

Jacobson [9] stated that the neurotic (anxious) individual partly loses the mental ability to relax. So, an anxious athlete may misperceive which muscles are tense and won't decide accurately whether he is relaxed or not. A study by Sanader, Petrović, Bačanac, Ivković, Petrović, & Knežević [23] suggests that athletes of collision sports may experience higher levels of competitive anxiety. By working in the fitness industry, one particular concern is ensuring the mental readiness of the athlete before the competition and maintaining optimal levels of arousal by getting rid of unwanted anxiety. This study therefore set out to assess the effect of the PMR method on the competitive anxiety level of Muay Thai athletes.

Materials and Methods

a. Participants

The study sample consisted of (20) Jordanian Muay Thai athletes (9 males and 11 females) who were regulars in training and competitions. They were selected randomly and divided into an experimental group aged (25.40 ± 8.78) and a control group aged (23.80 ± 6.30). All the participants were informed about the study's purpose and accepted to be part of the intervention.

b. Procedures

The study sample was divided into an experimental group ($n=10$) and a control group ($n=10$), both groups have undergone regular training in preparation for IFMA International Antalya Muaythai Open Cup 2022.

Sport Anxiety Scale-2, A valid and reliable multidimensional measure of cognitive and somatic trait anxiety in sport performance settings, developed by Smith, Smoll, Cumming, & Grossbard [25], was used to measure the sample's level of competitive anxiety. The scale consisted of 15 items which were divided into three subscales (somatic anxiety, worry and concentration disruption), 5 items each. The questionnaire instruction underlines that many athletes may experience tension or nervousness before or during competitions and games. The participants were asked to mark the number (1-not at all to 4-very much) that most closely corresponds to how they usually feel during or before the competition. An English version of the SAS-2 scale was translated into Arabic using a transcultural translation procedure and specifically (a parallel back-translation procedure). After three weeks of PMR intervention, a post test of anxiety level was held using the same scale. (See Appendix 1)

Progressive muscle relaxation, all sessions were lasted for 15 minutes and conducted between 6:00 pm to 8:00 pm every Saturday, Monday, and Wednesday during November 2022. The period of the intervention was adopted based on that used in previous research [1] and [22]. Participants confirmed that they are free of injuries, and able to be part of this intervention. In each session, meditation music was played, and the lighting was reduced, then the participants were instructed to lie down or sit in a comfortable position. PMR script adapted from Burton & Raedeke [7] was used to instruct the participant to tense and relax their muscles, starting from face and head, shoulders and back, hands and arms, chest and stomach, to legs and feet. Participants were asked to breathe deeply (abdomen breathing) before the PMR instructions, and during the session especially between tensing and relaxing each muscle group. (See Appendix 2)

c. Data Analysis

To verify the internal consistency for the instrument used, Cronbach's Alpha Coefficient was calculated. Reliability was assessed, and the value was (0.787) for the whole items which reflects a satisfactory reliability level (> 0.70). For data analysis, the following descriptive statistics were calculated: means and standard deviations, the Wilcoxon Rank Sum Test was used to compare pre and post tests for each experimental and control groups, and the Mann-Whitney non-parametric test was used to compare the pre and post tests between both experimental and control groups. A $p < 0.05$ significance level was adopted in all statistical tests.

Results

a. Demographics

Table 1. The distribution of sample of the study according to the gender

		group				Total
		before-control	before excremental	after-control	after-excremental	
Gender	male	3	6	3	6	18
	female	7	4	7	4	22
Total		10	10	10	10	40

Table 1. represents the description of the sample according to gender in control group (males= 3, females= 7) and the experimental group (males=6, females=4).

Table 2. The distribution of sample of the study according to the age

		group				Total
		before-control	before excremental	after-control	after-experimental	
Age	under 20	3	5	3	5	16
	Over 20	7	5	7	5	24
Total		10	10	10	10	40

Table 2. represent description of the sample according to age in control group (under 20= 3, over 20= 7) and the experimental group (under 20= 5, over 20= 5).

Table 3. Cronbach alpha test to find the reliability of the Sport Anxiety Scale-2 (n=20)

Variables	No. of items	reliability
sport anxiety	15	0.787

Table 3. shows the results of Cronbach alpha reliability analysis over the Sport Anxiety Scale-2 items for both groups in the pre-test. The value was (0.787) for the whole items. The reliability mentioned value reflects a satisfactory reliability level, as it exceeded the minimum of 0.70 so a conclusion of satisfactory reliability could be drawn.

b. The difference in the levels of competitive anxiety between pre-test and post-test of both experimental and control groups.

Table 4. Wilcoxon signed ranked test to find the differences in the level of competitive anxiety between the pre-test and post-test of the experimental group (n=10)

variable	rank sign	ranks sum	n*	ranks mean	z	sig	difference
total of sports anxiety	positive	16	4	4.0	1.18	0.236	not supported
	negative	5	2	2.5			

* (4) out of (10) ranks differences were zeros

Table 4. represents that the mentioned probabilities (sig) value was (0.236); it was clear that this value was > 0.05 reflecting no significant differences between the pre-test and post-test of the experimental group. This result declares that despite that the PMR intervention had reduced the level of anxiety, the reduction did not meet the significance (i.e. difference not supported).

Table 5. Wilcoxon signed ranked test to find the differences in the level of competitive anxiety between the pre-test and post-test of the control group (n=10)

variable	rank sign	ranks sum	n*	ranks mean	z	sig	difference
total of sports anxiety	positive	16	4	4.0	0.345	0.730	not supported
	negative	12	3	4.0			

* (3) out of (10) ranks differences were zeros

Table 5. shows that the mentioned probability (sig) value was (0.730). once the sig value surpassed the critical (0.05) this means that there were no significant differences between the pre-test and post-test of the control group (i.e. difference not supported).

c. To infer the significance between the effect results between the experimental and control groups; the nonparametric Mann Whitney test was consulted. The results are merged in the subsequent tables.

Table 6. Mann Whitney test between the experimental and control groups over the pre-test of the level of competitive anxiety (n=20)

variable	group	ranks sum	n	ranks mean	z	sig	difference
total of sports anxiety	experimental	94.50	10	9.45	- 0.811	0.418	not supported
	control	115.50	10	11.55			

Table 6. shows the results of Mann Whitney test between the two groups over the pre assessment of competitive anxiety. The mentioned probability (sig) value was (0.418); this value had exceeded the critical of (0.05). as the sig value exceeded the critical (0.05) this leads to a nonsignificant difference between the two groups over the pre-test (i.e. difference not supported) concluding that the two groups are equivalent in the pre-test.

Table 7. Mann Whitney test between the experimental and control groups over the post-test of the level of competitive anxiety (n=20)

variable	group	ranks sum	n	ranks mean	z	sig	difference
total of sports anxiety	experimental	85.0	10	8.50	- 1.576	0.115	not supported
	control	125.0	10	12.50			

Table 7. reports that the mentioned probability (sig) value was (0.115); this value was > 0.05 . once the sig value had surpassed the critical (0.05) this leads to a nonsignificant difference between the two groups over the post assessments (i.e. difference not supported)

Discussion

The present study is mainly concerned with PMR technique. The researchers chose the experimental study method to investigate the use of PMR technique to overcome the competitive anxiety of Muay Thai athletes. Anxiety level was measured by using the Sport Anxiety Scale-2 questionnaire of Smith, Smoll, Cumming, & Grossbard [25]. The pre-test anxiety level mean value was (1.97) and the post-test of competitive anxiety level mean value was (1.55) which is less than the pre-test level.

Contrary to expectations, this study did not find a significant effect of PMR on the level of competitive anxiety of Muay Thai athletes. This result is in agreement with Alwan et al. [1] who revealed no significant effects of PMR and imagery relaxation on athlete's anxiety levels, and with Rizal et al, [22] who found that PMR training has no significant effect on anxiety levels of archery athletes. However, the findings of the current study do not support the previous research of Burhan & Vandita [5] and Kissari, [11] who concluded that progressive muscle relaxation is an effective method to reduce sport anxiety of football players. It also contradicts Navaneethan et al, [16], and Purnomo et al, [20] who indicated the effectiveness of the PMR method in reducing anxiety levels of athletes in other different sports.

The duration of the intervention may have affected the results. With reference to previous experiments made by Malik et al, [13], Navaneethan et al, [16], and Sheykh et al, [24], the intervention lasted for eight weeks, six weeks, and six weeks respectively, while in the current study and in Rizal et al, [22] study, the duration of the intervention was three weeks only. These findings suggest that the duration of the intervention should be more than three weeks to be effective on psychological variables like anxiety. In addition, the length of the session could play a role in providing statistically significant results, as the length of the session in this study was 15 minutes, compared to 20 to 30 minutes in other studies as in Liang et al. [12]

Conclusion

Competitive anxiety has an impact on an athlete's performance development because it decreases the ability to concentrate before an upcoming event or competition. It is very important to overcome the anxiety of an athlete. Muscle relaxation techniques play an important role in controlling anxiety and allow the athlete to offer the best performance. Most of the previous research results confirmed the effectiveness of this method in reducing levels of anxiety among athletes in various sports.

The result of this investigation shows that the PMR method has no significant effect on the competitive anxiety level of Muay Thai athletes. As the present study adopted a three-week intervention, in contrast with most of the previous studies that implemented interventions extended for longer periods, future research may shed light on the effect of the psychological intervention period on the significant effect of PMR on anxiety.

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