

ORIGINAL ARTICLE

IMPACTS OF THREE DIFFERENT RELAXATION TECHNIQUES ON MOOD STATES AMONG ATHLETES

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ABSTRACT

Relaxation technique is a method, process, procedure or activity that helps a person to relax. There are several methods of relaxation techniques that can be used proven beneficial to improve the individual state of relaxation. Relaxation can be performed individually or in a group. With suitable technique of relaxation, it will improve quality of life as well as emotional and physical. This study aims to investigate the impact of three different relaxation techniques, namely Autogenic (AGR), Progressive Muscle (PMR) and Music Relaxation (MR) on mood states among Universiti Sultan Zainal Abidin (UniSZA) athletes. Eighty UniSZA athletes aged between 18 to 25 years old were randomly assigned into four groups which were AGR, PMR, MR and control group. Each groups consisted of 20 subjects which were male and female athletes with multidiscipline of the sports involvement. The mood states were determined by Brunel Mood Scale (BRUMS) during pre and post-intervention. The subjects in the three intervention groups received relaxation training twice a week for four weeks, 30 minutes per sessions. While, a control group not received any relaxation training during the intervention time. Repeated measure ANOVA conducted showed that the two parameters in BRUMS significantly changes in post-intervention such vigour ($F=16.083$, $p<0.0001$) and confusion ($F=3.412$, $p=0.022$). Other negative mood scores showed no significant changes such; (anger; $F=2.235$, $p=0.091$, depression; $F=0.960$, $p=0.416$, fatigue; $F=0.724$, $p=0.540$, tension; $F=16.083$, $p=0.913$). The results of Pairwise Comparison revealed that the three types of relaxation techniques (AGR, PMR and MR) effective to enhance vigour (positive mood) score among the adult subjects. In this study, PMR was the most effective relaxation technique followed by AGR and MR to regulate the mood state among adults.

Keywords: Autogenic Relaxation (AGR); Progressive Muscle Relaxation (PMR); Music Relaxation (MR); mood states; adult athletes.

INTRODUCTION

There are several relaxation techniques used to improve the individual state of relaxation. Several methods of relaxation techniques can be used and proven beneficial, especially for psychological^{9,43} and physiological effects³². Relaxation can be performed in many ways such individually or in a group⁴². Some of the relaxation involves movement, while some methods focus on stillness and other methods involve different elements⁴². There are many factors necessary for inducing the relaxation response, including; a mental device, passive attitude, decreased muscle tone and quiet environment¹². In a sport setting, the relaxation technique is one of the coping strategies used for athletes⁴⁶. Coping strategy is a technique to help athletes be free from negative moods in order to enhance their performance³¹. The relaxation technique may produce positive effects to athletes, such as happiness, alertness, confidence and relaxation²⁰.

There are several relaxation techniques used by the researchers, with some of them being autogenic relaxation (AGR), progressive muscular relaxation (PMR)^{12,21,22,23} and music relaxation

(MR)¹⁵. With suitable technique of relaxation, levels of negative moods such as anxiety, stress or anger can be reduced⁸.

The interest in mood states research is due to the belief that athletes' success in performance can be predicted on the basis of their states of mood²⁹. The success in performance can be associated with higher positive moods and lower negative moods^{29,43}. There are earlier studies that revealed the effect of mood profile among the athletes in predicting levels of achievements^{2,36}. Since mood is an important predictor and plays a significant role in the athlete's performance, the ability to control mood is useful for the athlete to practice².

The mood can be classified into positive and negative²⁹ and they plays a significant role in athletes' performance^{19,29}. Anxiety is one of the negative moods that have a great influence on athlete's performance. Realizing that, many researchers were keen to conduct research on coping strategy in reducing the anxiety level among the athletes^{13,35}.

These relaxation techniques have their own unique effects¹⁹. Martin et al. (2005)²⁶ claimed that the effects of various relaxations may differ

in several dimensions and depend on the needs. The relaxation technique enables an athlete to develop much greater sensitivity to body feelings and responses⁷. The proper relaxation techniques stimulate the release of chemical and brain signals that stimulates body organs to slow down and will increase blood flow to the brain³⁰. Relaxation technique may enhance self-confidence, concentration, performance, decrease anxiety and stress, reduce blood pressure as well as muscle stress²⁷. These collective benefits are essential in improving an athlete's performance.

This study aims to investigate the impact of three different relaxation techniques, namely AGR, PMR and MR on mood states among Universiti Sultan Zainal Abidin (UniSZA) athletes. This study plays an important role for sports development in UniSZA as this will enable the athletes to use the most effective relaxation technique that can lead to enhanced performance.

METHODOLOGY

Participants

The subjects who fulfil the inclusion criteria were the participants in this study. The inclusion criteria for this study were: i) must be UniSZA's athletes; ii) aged between 18 to 30 years old; iii) must be active in a sport which is currently represented at least at university level such as "Majlis Sukan Universiti Malaysia" (MASUM) or "Sukan Institusi Pengajian Tinggi" (SUKIPT) tournament. However, for exclusion criteria; i) they must never receive any relaxation training before either in a group or personal to prevent bias, and; ii) the subjects must be physically healthy and do not take any illegal drug. The researcher screened the inclusion and exclusion criteria by personal information form circulated to the subjects.

80 subjects participated in this study. Each group consisted of 20 subjects which were male and female athletes with multidiscipline of sport involvement. Three groups were selected randomly to be the intervention group and the remaining was regarded as control group. In order to divide the subjects into groups, randomization technique was used. The subjects randomly received an envelope consisting of numbers 1 to 4. (1=Autogenic Relaxation, 2=Progressive Muscular Relaxation, 3= Music Relaxation and 4= Control group).

Instrument

The mood regulation among the subjects was determined by using Brunel Mood Scale (BRUMS) for pre and post-intervention. The BRUMS is a quick assessment in assessing the mood state for adolescents¹⁰ and adults^{16,43}. The original version of this scale was in English. In this study, the BRUMS was translated into Malay. Several studies

have been done using the Malay translated version of BRUMS^{10,16}. The subjects were required to answer the BRUMS to determine their mood state for pre and post-intervention.

The procedure of BRUMS, the subjects indicated if they have experienced such feeling on a 5 point scale (0=not at all, 1= a little, 2= moderately, 3= quite a bit and 4= extremely). The subject used a response timeframe "How you feel right now?" and the administration took about 5 to 10 minutes¹⁰.

The BRUMS followed six subscales such as anger, confusion, depression, fatigue, tension and vigour. These six subscales which was parameter to determine the mood state among the subjects. Each subscale contained four items of mood descriptor. The total mood descriptor in BRUMS contained 24 moods such as being angry, energetic, unhappy and nervous. When responses from the four items in each subscale were summed, a subscales score in range 0-16 was obtained. The items in each subscale were;

- i. Anger : annoyed, bitter, angry, bad tempered (items 7, 11, 19, and 22)
- ii. Confusion: confused, mixed up, muddled, uncertain (items 3, 9, 17, and 24)
- iii. Depression: depressed, downhearted, unhappy, miserable (items 5, 6, 12, and 16)
- iv. Fatigue : worn out, exhausted, sleepy, tired (items 4, 8, 10, and 21)
- v. Tension: panicky, anxious, worried, nervous (items 1, 13, 14, and 18)
- vi. Vigour: lively, energetic, active, alert (items 2, 15, 20, and 23)

The normative data can be used by converting into raw score (summed from each subscale) to standard scores (T-scores) in BRUMS Profile Sheets by Terry and Lane (2010)⁴⁴. To use the BRUMS profile sheets, raw score were shown in the left hand column and the equivalent T-score was shown for each subscale. There were several different BRUMS Profile Sheets that can be used for population such for adult student (aged >18 years), adult athletes (aged > 18 years), school children (aged 12-17 years) and young athletes (aged 12-17 years). In this study, the researcher used BRUMS Profile Sheets for adult athletes to score the BRUMS. The validity and reliability of BRUMS has been established among adult population in several studies^{17,49}.

Procedures

During the four weeks of the intervention period, the intervention group received relaxation training conducted by the researchers. The subjects needed to attend the relaxation training twice a week for four weeks. They must complete the eight sessions of relaxation training in four weeks as required for this study.

The schedule for relaxation training every week has been set after discussing with the subjects. The subject who cannot attend the training session according to the set time was reminded to do on their own using the MP4 given. The researcher reminded each of the absent subjects by telephone calls to ensure they accomplished every session of the interventions.

The duration of relaxation training was approximately 30 minutes per session. The relaxation training was conducted by the researcher in an air-conditioned room at UniSZA. The room temperature was set to 27°C. The subjects were needed to be shoeless and wore comfortable clothes during the sessions. The subjects were reminded to give their full attention during the relaxation training. During the sessions, they were required to listen and follow all the pre-recorded sound or instructions according to their tasks. The researcher reminded the subjects to avoid any discussion or interaction during the sessions. The AGR script and PMR instruction were presented in Malay language.

Autogenic Relaxation: During the relaxation training, the subjects in AGR group could choose the comfortable position either by being seated or laying down on the mats. The exercise mats were provided to each subject during the relaxation training sessions. During the sessions, the subjects were spaced approximately one meter from each other. The researcher kept reminding the subjects to give full attention during the sessions and to remain relaxed and comfortable. The subjects were instructed to listen to the recorded AGR sound on a CD player.

The AGR sessions focused on imagining peaceful places (the beautiful seaside and quiet) followed by developing an awareness of physical sensations. There are heaviness in the extremities, warmth in the extremities, regulation of cardiac activity, regulation of breathing, abdominal warmth and cooling of the forehead³. AGR is based on a notion of relaxing the mind in order to relax the body. It employs both visual imagery and body awareness to move a person into a state of deep relaxation^{11,19}.

Progressive Muscular Relaxation: The subjects in PMR group were assuming a comfortable position during the sessions. They were instructed either to be seated or lay down on mats provided. The subjects needed to follow the instructions recorded on a CD player. During the session, they needed to close their eyes, put their legs comfortably apart and placed their hand away from their bodies with the palm facing upward¹¹. The procedure of the PMR began from the top of the body and progressed to the bottom.

The intention of PMR is to relax the skeletal muscle followed by the relaxation of the mind^{5,6,33}. The PMR is a combination of deep breathing and systematic tensing and relaxing of specific major muscle groups. During the PMR session, the subjects must tense each muscle group vigorously without straining, immediately release the tension and feel the relaxed muscle. The subjects tense each muscles for about five second. The muscle groups included; i) arms and shoulders, ii) faces and neck, iii) chest and back, v) legs and buttocks.

Music Relaxation: The subjects in MR group could choose the suitable position by either sitting on the chair or lying on the exercise mat. They were told to relax and be comfortable in their position. It was compulsory for them to listen to the pre-recorded slow music with zikr lyric for 30 minutes per session. The slow music with zikr lyric was taken from "Zikir Terapi" by Hafiz Hamidun. The lyric of MR is about praises for Allah. The researchers choose the zikr as the MR because the zikr is believed to be effective in human psychological and physiological therapy²⁴.

Statistical Analysis:

Statistical analysis was done using Statistical Package for Social Science (SPSS) version 20.0. The mean value and standard deviation (SD) of the experimental data was calculated and data were reported as mean \pm standard deviation (SD). The data collected was normally distributed with skewness and kurtosis ranged between 0 to 1 for all variables. The skewness value provided an indication of the symmetry of the distribution. Kurtosis; provided information on the "peakedness" of the distribution³⁰. Descriptive analysis was performed to determine the demographic data of the subjects and mean value of mood regulation between pre and post-intervention. The Repeated Measure ANOVA was performed to determine the significance differences. The differences were considered significant at $p < 0.05$.

RESULT

A total of 80 subjects participated in this study. The subjects mean age was 19.8 ± 1.56 years old. They were randomly grouped into; AGR: $n=20$, PMR: $n=20$, MR: $n=20$ and Control: $n=20$. The athletes were representatives for various sport events such; university level $n=49$, state level $n=19$ and national level $n=12$. A summary of the demographic data of the subjects was presented in Table 1.

The subjects consisted of multi sport event. Majority of the subjects involved in this study were those involved in rowing ($n=20$), followed by soccer ($n=19$) and archery ($n=13$). The details regarding types of sports among the subjects were shown in Table 2.

Descriptive analysis of mood states for pre and post-intervention based on groups was presented in Table 3. There are six parameters to determine the subject's mood state for pre and post-intervention. The parameters are anger, confusion, depression, fatigue, tension and vigour.

The repeated measure of ANOVA revealed significant interaction in two subscales in BRUMS which were confusion ($F=3.412$, $p=0.022$) and

vigour ($F=16.083$, $p<0.0001$) between groups across time. Table 4 shows time and group interaction effect of mood states based on the group for pre and post-intervention.

To determine the best relaxation technique for regulate mood response, pairwise comparison was used. The results of pairwise comparison revealed significant differences in the effect of relaxation techniques towards vigour and confusion subscales in BRUMS (Table 5).

Table 1 : Summary of the demographic data of the subjects.

	No. Of Subjects (N=80)	Percentage (%)	Mean (\pm SD)	Min-Max
Age (Years)	-	-	19.8 \pm 1.5	18-25
Gender				
Male		77.5	-	-
Female	18	22.5	-	-
Experimental Group				
Autogenic Relaxation	20	25.0	-	-
Progressive Muscle Relaxation	20	25.0	-	-
Music Relaxation	20	25.0	-	-
Control	20	25.0	-	-
Level of Sport representative				
University	49	61.2	-	-
State	19	23.8	-	-
National	12	15.0	-	-

DISCUSSION

The subjects consisted of variety of sports events such endurance and non-endurance sports. In order to maximize the validity of this study, the male and female subjects were randomly selected into four groups. The results of this study showed that vigour (positive mood) significantly increased after eight sessions of relaxation training. It is similar to previous studies that reported relaxation induces positive mood after several relaxation trainings^{22,23} Contrary to these findings, a study by Hashim and Hazwani (2011)¹¹ revealed that there is no change in positive mood among young soccer players after 12 sessions of relaxation training.

Hazwani et al. (2011)¹² claimed that they were inconsistencies existed within relaxation literature pertaining to the frequency of relaxation session before desirable effects could be obtained. For example, some studies observed that even 5 sessions of relaxation training among children would lead to enhanced positive mood²³. In contrast, a study by Hashim and Hazwani (2011)¹¹ revealed that there was no change in positive mood among the adolescents after 12 sessions of relaxation training. Likewise, another study with 24 sessions of relaxation training among children and adolescent did not reduce anxiety level between experimental and control groups⁴⁸.

Table 2: Types of sports among the subjects.

Sport	Groups				Total
	AGR	PMR	MR	Control	
Badminton	0	0	0	1	1
Soccer	1	2	8	8	19
Volley ball	2	3	0	2	7
Futsal	1	0	2	4	7
Hockey	0	0	0	1	1
Archery	8	1	3	1	13
Athletic	1	0	2	0	3
Rowing	2	13	2	3	20
Self-defence arts	3	1	1	0	5
Teakwando	2	0	2	0	4
Total	20	20	20	20	80

Several studies of relaxation technique showed that both PMR and AGR produce consistent efficacy in mood response^{11,25,40}. A study by Hashim and Hazwani (2011)¹¹ on comparison effects of PMR and AGR on moods among young soccer players revealed that these two relaxation technique induce equivalent mood responses. They also found that these two relaxation techniques can be used to regulate mood state among young soccer players.

Regarding the effect of music relaxation, previous studies found that by listening to music, especially slow music, can increase the feeling of relaxation such as peacefulness and a sense of ease¹. A study by Montello and Coons (1998)²⁸ revealed that MR can facilitate self-expression and provide channel for transforming frustration, anger and aggression into the creativity and self-mastery experience. MR was also reported to be able to increase pleasant emotions and decrease unpleasant emotions following music intervention¹⁸.

While the MR method (slow music with zikr lyrics) selected was different with other previous studies, the effects of the zikr remained the same. A study by Mohd Rozali et al. (2013)²⁷ revealed that zikr has beneficial impact on the individual behavioural changes, the mind, emotions and behaviour. Another study by Wahab and Rahman (2015)⁴⁷ disclosed that the zikr was beneficial for human in either psychological or

physiological aspects. Zikr can be practiced by everyone and can be done at any time, any place and any state³⁷. The previous studies showed that by practising zikr, the autonomic nervous system (a control system in the body that acts largely unconsciously) will influence the regulation of the heart rate, respiratory rate and the metabolic rate by lowering the physiological processes³⁷. This present study made use of slow music with zikr lyrics, to the researcher's knowledge, was the first study as such.

The findings of repeated measure ANOVA based on pairwise comparison in BRUMS showed significant differences in two mood subscales (vigour and confusion; $p < 0.05$) between the intervention groups (AGR, PMR and MR) and control group. The finding, showed no significant differences in the comparison among the intervention groups for these two BRUMS subscales (vigour and confusion). The finding revealed that these three types of relaxation techniques (AGR, PMR and MR) were effective in mood regulation and positive mood enhancement when compared to the control group. From the result, it can be concluded that the relaxation techniques (AGR, PMR and MR) were beneficial in enhancing positive mood among adults population. These results were similar with previous studied conducted on the effectiveness in induced positive mood among athletes; PMR and AGR^{11,22,23}, music relaxation^{4,14,15,39,41}.

Table 3: Descriptive analysis of mood states for pre and post-intervention.

<i>Parameter</i>	<i>AGR</i>		<i>PMR</i>		<i>MR</i>		<i>Control</i>		<i>Skewness</i>		<i>Kurtosis</i>	
	Mean (\pm SD)		Mean (\pm SD)		Mean (\pm SD)		Mean (\pm SD)		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
<i>BRUMS (subscales)</i>	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Anger	50.85 \pm 6.62	49.25 \pm 4.79	52.50 \pm 6.65	49.10 \pm 4.30)	52.50 \pm 6.65	53.60 \pm 6.59	52.35 \pm 6.79	54.45 \pm 7.21	1.11	1.00	0.81	0.71
Confusion	54.65 \pm 5.13	51.75 \pm 5.89	54.65 \pm 4.03	51.05 \pm 5.69	55.00 \pm 3.91	55.00 \pm 4.27	54.85 \pm 4.04	56.00 \pm 4.05	-0.26	-0.18	-0.88	-0.91
Depression	60.05 \pm 8.10	57.40 \pm 8.65	58.80 \pm 4.98	55.40 \pm 6.52	59.50 \pm 5.98	61.25 \pm 8.26	59.05 \pm 5.01	57.05 \pm 9.69	0.30	0.94	0.32	-0.06
Fatigue	48.95 \pm 4.12	48.70 \pm 3.64	48.40 \pm 3.25	50.05 \pm 3.47	48.25 \pm 3.43	49.85 \pm 3.79	48.25 \pm 3.19	48.85 \pm 3.29	0.54	0.10	0.84	-0.37
Tension	45.55 \pm 4.50	43.55 \pm 3.17	45.05 \pm 4.66	44.20 \pm 3.83	44.75 \pm 4.55	43.25 \pm 3.35	45.30 \pm 4.68	43.45 \pm 3.39	0.12	0.58	-0.72	-0.73
Vigor	36.75 \pm 4.13	50.55 \pm 5.31	36.60 \pm 5.00	53.15 \pm 6.17	36.50 \pm 4.88	52.70 \pm 4.40	36.75 \pm 4.88	39.25 \pm 7.29	-0.08	-0.54	-0.85	-0.04

Note: SD: Standard Deviation

Table 4: Time and group interaction effect of mood states.

BRUMS(Subscales)	Mean (SD)								F-stats	p-value
	AGR		PMR		MR		CONTROL			
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention		
Anger	50.9 ± 6.63	49.3 ± 4.80	52.5 ± 6.65	49.1 ± 4.30	52.5 ± 6.65	53.6 ± 6.60	52.4 ± 6.79	54.5 ± 7.21	2.235	0.091
Confusion	54.7 ± 5.15	51.8 ± 5.89	54.7 ± 4.03	51.1 ± 5.69	55.0 ± 3.91	55.0 ± 4.27	54.9 ± 4.04	56.0 ± 4.05	3.412	0.022
Depression	60.1 ± 8.10	57.4 ± 8.65	58.8 ± 4.98	55.4 ± 6.52	59.5 ± 5.99	61.3 ± 8.26	59.1 ± 5.01	57.1 ± 9.69	0.960	0.416
Fatigue	49.0 ± 4.12	48.7 ± 3.64	48.4 ± 3.25	50.1 ± 3.47	48.3 ± 3.43	49.9 ± 3.79	48.3 ± 3.19	48.9 ± 3.30	0.724	0.540
Tension	45.6 ± 4.50	43.6 ± 3.17	45.1 ± 4.66	44.2 ± 3.83	44.8 ± 4.55	43.3 ± 3.54	45.3 ± 4.68	53.5 ± 3.39	0.175	0.913
Vigour	36.8 ± 4.13	50.6 ± 5.31	36.6 ± 5.01	53.2 ± 6.17	36.5 ± 5.04	52.7 ± 4.40	36.8 ± 4.88	39.3 ± 8.12	16.083	<0.0001

Note: Statistical Analysed Used: Repeated measure ANOVA (Time and Group interaction Effect).
RPE: Rating Perceive Exertion, SD: Standard Deviation
Significant at p<0.05

Table 5: Pairwise comparisons between relaxation techniques at post-intervention (only significant result shown).

BRUMS (Subscales)	Groups	Mean difference	p-value
Confusion	PMR VS Control	-1.00	0.016
Vigour	AGR VS Control	11.30	<0.0001
	PMR VS Control	13.90	<0.0001
	MR VS Control	13.45	<0.0001

Note: Significant at p<0.05

LIMITATION

The subjects in this study consisted of athletes in variety of event such endurance and non-endurance sports. This factors was the limitation for this study as their level of training were different and may effect the individual states of mood.

CONCLUSION

In conclusion, the result showed that the three relaxation techniques beneficial to regulate mood response to adult athletes. It appears that PMR was the most effective relaxation technique to regulate mood response followed by AGR and MR. Therefore, these relaxation techniques was suitable to use at university level to enhance athlete performance.

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