

## EFFECTS OF PROGRESSIVE MUSCLE RELAXATION TRAINING ON MOOD STATES OF VOLLEYBALL PLAYERS

**Dr. R. Soundara rajan<sup>1</sup> and Dr. B. Navaneethan<sup>2</sup>**

<sup>1</sup>Assistant Director of Physical Education, PSG College of Arts & Science, Coimbatore

<sup>2</sup>Director of Physical Education, PSG College of Arts & Science, Coimbatore

### **Abstract:**

The present study is mainly concerned with volleyball players participating in high level competitions. Nowadays, the game volleyball is becoming a professional sport rather than a competitive sport. So the competitiveness among the volleyball players is growing up day by day with a different colour. Reasons for such competitiveness arises naturally among the players, because of pressures such as equal competition, and concern about fulfilling the expectation of their teachers, coaches, parents, peer group and personal needs. It leads to mental and physical stress. In high level stress, the player's vision may have to be narrow and they are unable to understand the things around them. Hence under high level stress, players are unable to show their real effort in matches though they are having the needed physical and mental resources. The study consisted of 30 male volleyball players selected from PSG College of Arts & Science, Coimbatore. Their age ranged from 18 to 25 years. Subjects were randomly assigned Group I underwent progressive muscle relaxation training group and Group II control group. The subjects of progressive muscle relaxation training Group (PSTG) for about six weeks in addition to their physical training traditionally they practiced, whereas in the case of subjects of control group, they were allowed to practice only physical training practiced traditionally. The following variables were selected for the present study of finding the magnitude of effects of progressive muscle relaxation training on the mood states of volleyball players. As mood states the chosen variables were variables: anger, confusion, depression, fatigue, tension, and vigor. The present study pays attention mainly to test the mean difference of two groups, (Experimental and Control Group) and secondarily deals with the increase of means in each group, from baseline to post treatment for various measures. The means gains recorded by the Experimental and Control Group groups in the pre-test and post-test were tested for significance by applying paired 't' test . To determine whether the training programmes produced significantly different improvements in selected variables after 6 weeks of training, the analysis of co-variance was used. The result of the study reveals that there was significant difference in 0.05 levels.

**Keywords:** Psychological Skills Training, Competitive anxiety, Blood pressure, Resting heart rate and Overall playing ability.

### **Introduction**

The present study is mainly concerned with volleyball players participating in high level competitions. Nowadays, the game volleyball is becoming a professional sport rather than a competitive sport. So the competitiveness among the volleyball players is growing up day by day with a different colour. Reasons for such competitiveness arises naturally among the players, because of pressures such as equal competition, and concern about fulfilling the expectation of their teachers, coaches, parents, peer group and personal needs. It leads to mental and physical stress. In high level stress, the player's vision may have to be narrow and they are unable to understand the things around them. Hence under high level stress, players are unable to show their real effort in matches though they are having the needed physical

and mental resources. Hence, the physical education teachers and coaches are in need to study the means and methods needed to face such competitive pressures whereby they can equip their players to perform well. As far as means and methods for high performance in sports are concerned, they are varied in the nature and type of competition such as low level competition and high level competition. In high level competition, sport is demanding high level mental toughness. Mental toughness of a player can be strengthened only through the implication of cognitive based training. Cognitive based training helps them to realize the nature of internal and external pressures, whereby, they can easily face the competitive pressures and exhibit their talents in time. The investigator has impelled to study the effects of progressive muscle relaxation training on mood states of volleyball players.

It is generally acknowledged that any psychological intervention should be guided by a sound conceptual framework. Indeed, conceptual clarity is a prerequisite for an analysis of how psychological processes are regulated (2007). Similar to Morgan (1985) and Lane and Terry (2000), this study conceptualizes mood as a unipolar dimension. Following this framework, mood is proposed to consist of vigour, tension, anger, depression, fatigue, and confusion dimensions.

Mood regulation is important for athletes for at least two reasons. Firstly, it has been postulated that certain mood patterns are advantageous for athletes' performance. For instance, successful performance is associated with above average vigour scores and below average negative mood scores. Moreover, in a recent meta-analytic study, Lane, Beedie, and Stevens (2005) revealed that performance can also be facilitated by negative moods such as tension and anger, especially when they are accompanied by zero scores on depression. Thus, appropriate mood regulation strategies to achieve these patterns may be beneficial for athletes' performance. Secondly, mood regulation is a common self-regulatory process and important in individuals' daily lives. In fact, in a comprehensive study conducted by Thayer, Newman, and McClain (1994), the researchers revealed a variety of mood regulation strategies used by participants. Importantly, Thayer et al (1994) observed that active mood regulation strategies such as relaxation techniques are commonly used in mood regulation.

Progressive muscle relaxation is based on two of Jacobson's (1938) premises: (a) One cannot be simultaneously relaxed and stressed, and (b) Mental relaxation is a natural consequence of physical relaxation. As many students are habituated to high levels of muscle tension, they are normally unaware of the excess tension in their muscles. By sitting and alternately tensing and relaxing major muscle groups for brief periods (e.g., tense five to eight seconds and relax fifteen seconds) students become acutely aware of when muscles are tensed and relaxed. As muscles tend to relax easily immediately after tensing, students learn to intentionally and completely rest their muscles. Students can learn to relax particular muscle groups so that the technique can be unobtrusively employed throughout the day when these muscle groups are not needed to perform the task at hand; for instance, the thighs and non-dominant arm can be relaxed when reading and the shoulders when standing. Thus progressive muscle relaxation is a portable technique students can employ at almost any opportunity. It is helpful to have students complete simple evaluation forms to assess the effectiveness of their relaxation efforts. Forms that focus on the different muscle groups help students to systematically focus on the task and maintain motivation by visually demonstrating progress. Charlesworth and Nathan (1984) provide excellent step-by-step procedures and scripts teachers can use to initiate progressive relaxation training. Beech, Burns and Sheffield (1982) offer a brief but insightful discussion and a clearly defined hierarchy of progressive muscle relaxation exercises.

## Methods and Subjects

### Participants:

The purpose of the study was to find out the effects of progressive muscle relaxation training on mood states of volleyball players. To achieve the purpose of the study twenty four male volleyball players were selected from PSG College of Arts and Science, Coimbatore. Their age was ranged from 18 to 25 years. The purpose of the present study was explained to them clearly where by their consent to serve as samples were obtained. The present study is an experimental one and to test the effects of varied forms of intervening strategies, the care was taken in distributing the samples to each experimental group. For this, the selected samples (N=24) were divided into two equal groups. Group I was considered as Progressive Relaxation Training Group (PRTG) in which they underwent progressive muscle relaxation practices. Group II was considered as control group they are doing the regular physical & skill practice. The experimental group were given training for 3 days a week and for 6 weeks in total.

### Instruments:

#### BRUNEL MOOD SCALE (BRUMS)

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 volleyball players. 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 minutes.

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 on each subscale are:

- Anger: annoyed, bitter, angry, bad-tempered;
- Confusion: confused, muddled, mixed-up, uncertain;
- Depression: depressed, downhearted, unhappy, miserable;
- Fatigue: worn out, exhausted, sleepy, tired;
- Tension: panicky, anxious, worried, nervous;
- Vigor: lively, energetic, active, alert.

#### Progressive Muscle Relaxation Training

The volleyball players were comfortable with the breathing technique. It is systematic technique developed by Jacobson. A volleyball player is asked to inhale and tense a specific muscle group for approximately 7 – 10 seconds followed by releasing them for 15 – 20 seconds. The volleyball player then exhales and releases the tension from the specified muscle group, concentrating on the feelings of relaxation. This procedure is repeated for a number of muscle groups with each group begin tensed and relaxed three times. The muscle groups used with the volleyball team are listed.

## The Muscle groups used in the Progressive Relaxation Exercise

Muscle Group	Instructions
Hand	Clench your left hand and feet the tension relax and let hand hang loosely. Same for right hand.
Wrists	Bend hand back, hyper extending your wrists relax.
Upper arms	Bend elbow towards your shoulders and tense biceps muscle relax.
Shoulders	Bring shoulders up toward yours ears. Relax, let your shoulders drop down.
Forehead	Wrinkle your forehead, raise your eyebrows relax.
Eyes	Close your eyes tightly relax.
Jaws	Clench your jaws tightly relax.
Tongue	Press your tongue against the roof of your mouth relax.
Mouth	Press your lips together tightly relax.
Neck	Turn your head so that your chin is over your right shoulder. Straighten and relax.
Neck and Jaws	Bend your head forward, pressing your chin against your chest. Straighten and relax.
Chest	Take a deep breath and hold it for 5 seconds, slowly exhale and relax.
Abdomen	Tighten your stomach muscles relax.
Back	Arch your back relax.
Thighs	Stretch your legs in front of you. Tighten your thigh muscles relax.
Hamstrings	Push your heels down into floor, tighten your hamstring muscles relax.
Calves	Point your toes toward your head relax.
Feet	Curl your toes toward the bottom of your feet relax.

**Results**

The study was designed to find out the effects of progressive muscle relaxation training on mood states of volleyball players. The objective framed in the present study to test the data collected on variables: anger, confusion, depression, fatigue, tension, and vigor. As one of the objectives of the present study was to test the effects of progressive muscle relaxation training on mood states, the initial test means and final test means were tested treatment wise by using the paired sample t-test. To compare the significance of mean difference among the progressive muscle relaxation training group and control group on the selected variables, the analysis of covariance was applied. The differences were considered significant at  $p < 0.05$ .

**Table 1**

**SIGNIFICANCE OF MEAN GAINS/ LOSSES BETWEEN PRE AND  
POST TEST OF PROGRESSIVE MUSCLE RELAXATION TRAINING GROUP (PRTG) ON  
SELECTED MOOD STATES OF VOLLEYBALL PLAYERS**

Variables	Pre test (Mean and ±S.D)	Post test (Mean and ±S.D)	MD	SE	't' ratio
Anger	47.80 ±1.30	46.06 ±3.34	1.73	.798	8.40*
Confusion	47.66 ±3.21	45.60 ±3.97	2.06	.396	5.21*

Depression	49.40 ±2.19	45.73 ±3.41	3.66	.567	3.38*
Fatigue	48.00 ±4.12	45.73 ±3.57	2.26	.344	6.57*
Tension	44.66 ±7.02	42.40 ±6.85	2.26	.283	7.98*
Vigor	51.33 ±6.49	49.20 ±6.13	2.13	.255	8.34*

\*significant at 0.05 level (2.14)

Table 1 indicates the obtained 't' values on variables for the progressive muscle relaxation training: 8.40 (anger), 5.21 (confusion), 3.38 (depression), 6.57 (fatigue), 7.98 (tension) and 8.34 (vigor). The obtained t- values to be significant at 0.05 level for degree of freedom 1, 14 the required critical value was 2.14. Thus the observed t- values on variables were found to be higher than the required critical value. It was concluded that the progressive muscle relaxation training group (PRTG) produced significant improvement in anger (+1.73 P<0.05), confusion (+2.06 P<0.05), depression (+3.66 P<0.05), fatigue (+2.26 P<0.05), tension (+2.26 P<0.05) and vigor (2.13 P<0.05) statistically significant and explained its effect positively.

**Table - 2**

**SIGNIFICANCE OF MEAN GAINS/ LOSSES BETWEEN PRE AND POST TEST OF CONTROL GROUP (CG) ON SELECTED MOOD STATES OF VOLLEYBALL PLAYERS**

Variables	Pre test (Mean and ±S.D)	Post test (Mean and ±S.D)	MD	SE	't' ratio
Anger	49.20 ±1.74	48.80 ±2.04	0.40	.213	1.87
Confusion	49.20 ±3.36	49.06 ±3.41	0.13	.090	1.46
Depression	51.40 ±3.99	51.20 ±4.14	0.20	.144	1.38
Fatigue	50.66 ±4.06	50.46 ±4.27	0.20	0.19	1.00
Tension	50.33 ±5.15	49.86 ±4.88	0.46	.321	1.45
Vigor	54.66 ±4.71	54.13 ±4.25	0.53	.363	1.46

**\*significant at 0.05 level (2.14)**

Table 2 indicates the obtained 't' values on variables: 1.87 (anger), 1.46 (confusion), 1.38 (depression), 1.00 (fatigue), 1.45 (tension) and 1.46 (vigor). The obtained t- values to be significant at 0.05 level for degree of freedom 1, 14 the required critical value was 2.14. Hence the obtained t-values on the variables were failed to reach the significant level. It was concluded that the changes made from pre-test to post test was statistically not significant.

**Table 3**  
**ANALYSIS OF CO-VARIANCE ON SELECTED MOOD STATES OF VOLLEYBALL PLAYERS**

Variables	Source of variation	Sum of Squares	Degrees of freedom	Mean Squares	F-ratio
Anger	Between sets	11.676	1	11.676	17.133*
	Within sets	18.400	27	0.681	
Confusion	Between sets	25.889	1	25.889	20.227*
	Within sets	34.558	27	1.280	
Depression	Between sets	105.878	1	105.878	12.165*
	Within sets	235.002	27	8.704	
Fatigue	Between sets	34.394	1	34.394	30.082*
	Within sets	30.870	27	1.143	
Tension	Between sets	26.792	1	26.792	20.195*
	Within sets	35.820	27	1.327	
Vigor	Between sets	24.860	1	24.860	19.732*
	Within sets	34.018	27	1.143	

**\*significant at 0.05 level (4.21)**

In testing the adjusted means among the psychological skills training group and control group on criterion variables, the obtained F-ratios were: 17.133 (anger), 20.227 (confusion), 12.165 (depression), 30.082 (fatigue), 20.195 (tension) and 19.732 (vigor). The obtained F- ratios on the above said criterion variables among the two groups were significant at 0.05 level as they exceed the required critical value (4.21 df 1, 27). Thus, the obtained results on adjusted means statistically confirm that differences exist after completion of treatment period on criterion variables among the two different groups namely PRTG and CG. It was concluded that the mood states variables influenced by the treatments used in the present study.

**Discussion and Findings**

The purpose of the present study was to examine if progressive muscle relaxation decreased positive mood scores. The only statistically significant effects found between the experimental group and the control group occurred on the anger, confusion, depression, fatigue, tension, and vigor sub-scale of profile of mood states. The mood states of the subjects were tested first producing no statistical significant effects between the experimental and control group. Although, previous research suggests that various

relaxation training techniques, including progressive muscle relaxation, decrease full-scale mood states (Lehrer, 1996), the results of the present study did not confirm these observations. The mood states produced no statistical significance for the overall mood states levels between the relaxation training experimental group (group 1) and the no training control group (group 2). There are several reasons for the lack of statistical significance between the groups. Originally, the subject pool contained 30 subjects. Other limitations of the present study pertained to a restricted form of Progressive muscle relaxing.

Due to the transitory nature of mood states, there could be other explanations for the changes in post intervention mood states. Specifically, it might be possible that the reduction in the negative mood score post-intervention was due to a placebo effect (Beedie, 1996). The placebo effect is a favourable outcome arising purely from the belief that one has received a beneficial treatment. In sport, there is evidence of the influential effects of placebos on sports performances. For instance, it was observed that athletes who were led to believe that they received performance enhancement supplements, while in fact they received a placebo, showed improvement in their performance. Although this effect was not examined in this study, participants were informed that they would engage in a technique that would make them relax. It could be argued that the reduction in their negative moods might have been driven by their belief about the effect of the technique, rather than its actual effect.

The observed changes in participants' moods might also be influenced by other regulating strategies used by athletes. For instance, in a study of mood regulating strategies used by athletes, the researchers revealed three most common strategies used by athletes to regulate mood dimension assessed by POMS. The strategies were 'listening to music', 'exercise', and 'change location' (Steven, 2003). Given that the uses of other regulating strategies were not controlled, the findings of this study should be interpreted with this limitation in mind.

The findings of this case are supported with the theoretical construct of Jacobson (1938). According to him Progressive muscle relaxing of various muscle groups although the exercise is a relaxation technique, we start with anxiety because most individuals find it easier to go from a tensed state to a relaxed state then they muscles. Progressing from a tensed state to relaxation also helps to develop the ability to recognize and differentiate the feelings of tension and relaxation in the muscles. Relaxation improves alertness and awareness in such a way that the performance will be maximized. In short, learning to hang loose in all situations is talking one giant step towards playing at consistently high levels at or near potential performance.

## Conclusions

The following conclusions were drawn from the results of the study:-

Results on individualized effects of progressive muscle relaxation training on mood states of volleyball players who practiced with progressive muscle relaxation training, in addition to their traditional physical training, and

From the results of comparative effects, it was observed that progressive muscle relaxation training, used in the study, made desirable changes on mood states variables, compared to the volleyball players of Control Group. By this, it was concluded that the desirable changes observed on anger, confusion, depression, fatigue, tension, and vigor would be significant sources compared to Control Group.

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