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Dr. Bijukumar K
Associate Professor,
Mahatma Gandhi College,
Thiruvananthapuram, Kerala,
India

Effect of progressive muscle relaxation training on profile of mood states of adolescent male football players

Dr. Bijukumar K

Abstract

The purpose of the study was to find out the profile of mood states of adolescent football players with 12 sessions of Progressive Muscle Relaxation Training (PMR). Sixteen male university level football players age ranges between 15 to 18 years were selected from a semi urban area of Kerala (from the colleges studying under the University of Kerala) for this study. It was confirmed that the subjects had never undergone any PMR type relaxation training programmes earlier. From among the group eight subjects were given 12 sessions of PMR training and the other eight subjects were considered as the control group. Mood states were measured using Profile of Mood States-Adolescents (POMS-A). The Mann-Whitney U-test was used to compare the pre and post training effects. The level of significant value was set at $P < 0.05$ and $P < 0.01$. The results revealed significant main effect was found. However, significant effects on total mood disturbance, tension anxiety, anger hostility and fatigue were occurred with the intervention with the progressive muscle relaxation training of 12 sessions. However the other variables such as depression, vigor and confusion scores were having a little positive state of progressing with the training but not found to be significant.

Keywords: PMR (Progressive muscle relaxation), mood disturbance, tension, anxiety, anger hostility, fatigue, depression, vigor, confusion, POMS-A

Introduction

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 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, the researchers revealed a variety of mood regulation strategies used by participants. Importantly, Thayer *et al.* observed that active mood regulation strategies such as relaxation techniques are commonly used in mood regulation.

It is known that the mental state can influence the hypothalamic-pituitary-adrenal (HPA) axis and alter the cortisol levels. Cortisol, secreted from the adrenal cortex, is a biochemical index of HPA axis activation, and is an important marker related to psychological stress. Some studies have demonstrated that the long-term practice of meditation, which is one of the components of yoga, does not lead to any significant difference in the baseline cortisol level between practitioners and control participants. Besides cortisol, there have been several studies comparing other biochemical indices of experienced meditation practitioners with those of less experienced practitioners, or non-experienced participants. For example, catecholamine levels, such as nor epinephrine, epinephrine and vanillylmandelic acid (VMA), are representative examples of stress-related biochemical indices.

Several relaxation techniques are available and can be categorised as mental relaxation or physical relaxation such as autogenic relaxation (AGR) and progressive muscle relaxation

Corresponding Author:
Dr. Bijukumar K
Associate Professor,
Mahatma Gandhi College,
Thiruvananthapuram, Kerala,
India

(PMR) respectively. It has been suggested that different relaxation techniques may induce different relaxation responses. For instance, in a comprehensive review of the effects of relaxation techniques, Lehrer concluded that methods with predominantly cognitive components such as AGR are likely to produce specific cognitive effects such as reducing anxiety and enhancing positive mood. On the contrary, PMR, with its skeletal muscle emphasis, has been shown to affect muscular components such as those measured by surface EMG.

The purpose of the study was to find out the profile of mood states of adolescent football players with 12 sessions of Progressive Muscle Relaxation Training (PMR).

Methodology

Sixteen male university level football players age ranges between 15 to 18 years were selected from a semi urban area of Kerala (from the colleges studying under the University of Kerala) for this study. It was confirmed that the subjects had never undergone any PMR type relaxation training programmes earlier. From among the group eight subjects were given 12 sessions of PMR training and the other eight subjects were considered as the control group.

Instruments

Mood states were measured using Profile of Mood States-Adolescents (POMS-A). In brief, POMS-A contains 24 simple mood descriptors such as angry, energetic, nervous, and unhappy. Respondents indicate on a five-point scale (0 = not at all, 1 = a little, 2 = moderately, 3 = quite a bit, 4 = extremely) whether they have experienced such feelings. "How do you feel right now?" was used as the response timeframe.

Relaxation instrumentation

Pre-recorded relaxation instructions were used for relaxation training, along with other relaxation training accessories (e.g., mats, audio system). The relaxation instructions followed a script.

PMR consists of sequentially tensing and relaxing individual muscle groups (Figure-1). It helps individuals to develop body awareness and educates them how to release muscle tension. Engaging in a PMR exercise, individuals may start from the top of the body and progress to the bottom, or vice versa. Progressing sequentially gives the individuals an easy-to-follow sense of order.

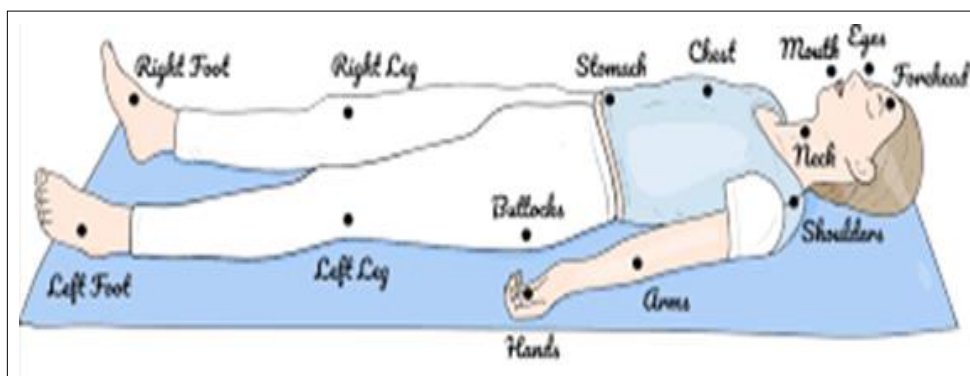


Fig 1: Progressive muscle relaxation

In this study, a control group was employed and the mood states were measured on two occasions; pre-intervention (before the start of the first session), and post-intervention (immediately after the end of the 12th session). Questionnaires were administered to the same groups, but participants were separated from each other to avoid interaction and possible influences on each other.

Statistical analysis

The Mann-Whitney U-test was used to compare the pre and post training effects. The level of significant value was set at $P < 0.05$ and $P < 0.01$.

Findings

Table 1: Scores of profile of mood states (POMS) in the control and football groups

Variables	Control group	Football group
Profile of mood states (POMS)		
Total mood disturbance score	32.41 ± 29.46	17.03 ± 30.54 *
Tension-Anxiety	10.16 ± 7.01	6.45 ± 5.34 *
Depression	9.52 ± 8.12	7.39 ± 8.42
Anger-Hostility	11.18 ± 8.40	7.29 ± 7.57 **
Vigor	11.26 ± 6.59	14.00 ± 6.17
Fatigue	8.25 ± 5.54	5.17 ± 5.11 **
Confusion	7.46 ± 5.23	5.42 ± 4.58

Level of significance at *: $p < 0.05$; **: $p < 0.01$

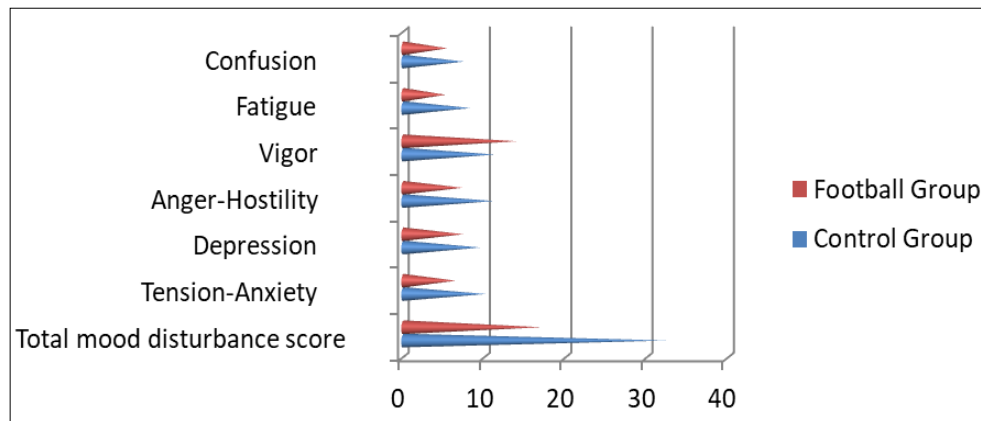


Fig 1: Profile of mood states after PMR training

Results

The results revealed significant main effect was found. However, significant effects on total mood disturbance, tension anxiety, anger hostility and fatigue were occurred with the intervention with the progressive muscle relaxation training of 12 sessions. However the other variables such as depression, vigor and confusion scores were having a little positive state of progressing with the training but not found to be significant.

Discussion

Results of this study revealed that progressive muscle relaxation training has made reductions in four of the negative subscales score. The findings, especially the significant decrease in the tension and anxiety subscale score, may provide important practical implications for mood regulation strategies for adolescent athletes. It was observed significant decreases in mood disturbance, anger hostility and fatigue scores, while a pattern of decrease was found in the depression vigor and confusion scores post-intervention.

It has been previously reported that relaxation induces positive moods in children and adolescents. In consonant with it, this study revealed positive changes in moods states after 12 sessions of relaxation. In fact, there was a pattern of increase in post-intervention positive mood scores of some variables. However, we speculate that motivational factors may explain the increment in the positive mood scores. The findings, especially the significant decrease in the depression subscale score, may provide important practical implications for mood regulation strategies for adolescent athletes. Lane and Terry proposed that depression plays a crucial role in regulating other mood dimensions. They suggested that a decrease in depression subscale score is likely to lead to a decrease in other negative mood dimensions. Indeed, we observed significant decreases in confusion, depression, fatigue, and tension scores, while a pattern of decrease was found in the anger scores post-intervention. These results might have a connection with Lane and Terry's contention regarding the central role of the depressed mood in regulating other mood dimensions.

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 and will be useful for the improvement of their performance in sports.

Conclusion

The present findings suggest that Progressive Muscle Relaxation Training can reduce the scores related to mental health indicators for. This study sought to determine the effect of a relaxation technique (PMR) on football players' mood states. The findings offer at least two important implications. Firstly, the study revealed that progressive muscle relaxation training produce mood responses. Therefore, it appears that this technique may be used to regulate athletes' mood states. Secondly, a reduction in positive mood scores was found post-intervention.

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