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# Effect of Six Weeks Progressive Muscle Relaxation Technique on Resting Heart Rate of College Level Handball Players

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***Abstract – The purpose of the study was to investigate the effect of progressive muscle relaxation technique on reducing resting pulse rate of college level Handball players. Twenty subjects were randomly selected for the study (Experimental group=Ten, Control group=Ten) from B.P.Ed Students of LNIPE, NERC Guwahati. The variable selected for the study was resting heart rate. The criterion measure chosen for testing the hypothesis in this study was stop watch for testing resting heart rate. The training was carried out for a period of 6- weeks, three days a week in the evening for 30 minutes. By employing the Paired t-test method and for testing the hypothesis the level of significance was set at 0.05. By employing the Paired t-test method and for testing the hypothesis the level of significance was set at 0.05. The result of the study was significantly indicated that the varied Progressive muscle relaxation training program helped to reduce the resting heart rate of Handball Players of 18-22 age groups after 6-weeks training program.***

***Key Words: Resting Heart Rate.***

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## INTRODUCTION

Progressive Muscles relaxation technique is a non-pharmacological method of deep muscle relaxation, based on the premise that muscle tension is the body`s psychological response to anxiety provoking thought and that muscles relaxation blocks anxiety. This technique has been effectively used to control stress and anxiety, relive insomnia, and reduce symptoms of certain types of chronic pain (https://en.wikipedia.org, n.d.). Progressive muscle relaxation is based upon the simple practice of tensing, or tightening, one muscle group at a time followed by a relaxation phase with release of the tension. PMR was developed by American physician Edmund Jacobson and presented first in 1920s (Kremer W. 2015).

As relaxation is an important mechanism of recovery (Fritz et.al. 2010), improving relaxation should be effective for improving recovery also on physiological level. Interventions that aim to improve relaxation often combine relaxation therapy, which focuses on releasing muscle tension consciously and in a controlled way, with meditation or deep-breathing exercises (Richardson & Rothstein, 2008).

Brown, Barton, Pretty and Gladwell (2014) examined the effects of physical activity (namely, walking) during lunchtime. They used two walking groups (nature/park and built environment), and a control group. The walks during lunch breaks lasted for 20 minutes each and were carried out two times a week, for a total of eight weeks. Data were collected at the beginning of the intervention and at the end. No differences in resting heart rate (HR) or HR variability were found among the 73 participants. However, the adherence rate was low in the study (42-43% in the walking groups), therefore the null results need to be interpreted with caution. Self-reported mental health increased compared to baseline in the nature walk group, whereas no change was found in the built environment walk or control group (Brown et al., 2014).

Your resting heart rate is the number of times your heart beats per minute when you're at rest. A good time to check it is in the morning after you've had a good night's sleep.

When it comes to resting heart rate, lower is better. It usually means your heart muscle is in better condition and doesn't have to work as hard to maintain a steady beat. Studies have found that a higher resting heart rate is linked with lower physical fitness and higher blood pressure and body weight (Jensen MT, et al).

## METHODOLOGY

For the purpose of the study subjects will be randomly selected from B.P.Ed. Students of LNIPE,

NERC Guwahati. For experimenting on Resting Heart rate from Progressive Muscle Relaxation training, two groups i.e. one experimental group and one control group will be formed. Each group will contain 10 subjects.

## DESCRIPTION OF THE TEST:

**Resting heart rate**

**Equipment: Stop watch**

It should be measured first thing in the morning with your fingers and a stop watch. Put your middle and index finger to either your radial artery on your wrist or your carotid artery in your neck. Once you find your pulse, count how many beats occur in 10 seconds, and multiple this number by 6.

**Scores:** The final scores were display on screen on the stop watch.

**Administration of Test**

The training programmed was personally supervised by the researcher throughout the 6- weeks duration. 3 days a week training session, each session of training was 30 min per day in the evening. Control group was not participated in any training program except their daily life routine.

**Statistical Procedure**

In order to evaluate the study, descriptive statistics such as mean, standard deviation and compare means such as paired sample t- test was applied and was tested at 0.05 level significance level.

## RESULTS

The statistical analysis of data pertaining to the effect of Progressive muscle relaxation training on Resting heart rate of 18-22 age groups has been presented.

**Table -1**

**Descriptive Analysis of Mean and Standard Deviation of Experimental And Control Group on Resting Heart Rate**

| Group | Test | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Experimental | Pre Test | 76.300 | 10 | 4..270 | 1.350 |
| | Post Test | 74.500 | 10 | 4.089 | 1.293 |
| Control | Pre Test | 78.000 | 10 | 2.708 | .856 |
| | Post Test | 79.300 | 10 | 3.267 | 1.033 |

**Table-2**

**Paired Samples 't' test of Experimental and Control Group on Resting Heart Rate**

| Group | Test | Mean | Std. Deviation | Std. Error Mean | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| Experimental Group | Pre Test | 1.8000 | .78881 | .24944 | 7.216 | 9 | .000 |
| | Post Test | | | | | | |
| Control Group | Pre Test | -1.300 | 2.11082 | .66750 | -1.948 | 9 | .083 |
| | Post Test | | | | | | |

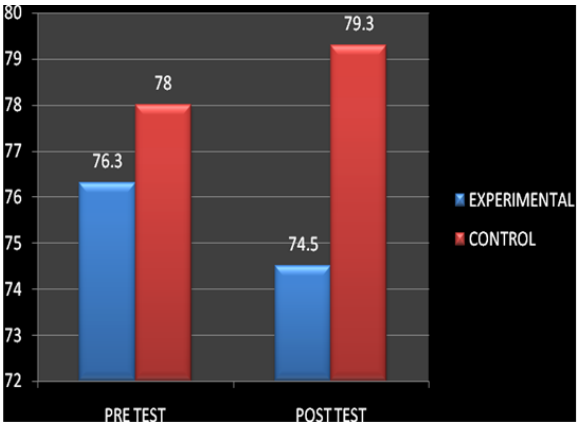


**Figure 1 –Graphical repreentation of Pre and Post mean scores of control group and experimental group of Resting Heart Rate**

## DISCUSSION

The raw data was analyzed and pair sample t-test was applied which concluded that the varied Progressive muscle relaxation training helped to reduce the resting heart rate of Handball Players of 18-22 age groups after 6- weeks training.

In table 2 significant difference was found between the mean score of Experimental group (pre and post) in relation to varied progressive muscle relaxation training on Resting Heart Rate of Handball players. This may be also the result of continuity in training and the intensity which was given to the subject in the training programme was helpful to exert significant reduction of Resting Heart Rate.

The progressive muscle relaxation training is included in this study has helped in improving the skill performance and decreasing the fatigue level.

Finally, it is concluded that this result is helpful to the reason that the present sample was exposed to the reason to the type of training for the first time and the programme chosen were difficult for them. Hence, in all the parameter there has been improvement. Time constraint was another factor.

This study can be taken as a preliminary assessment in the regard.

The finding of the study is great important in terms effect of specially design training program on progressive muscle relaxation training. The statistical finding shows the finding in terms of resting heart rate i.e. progressive muscle relaxation training were significant in every aspect.

The drive and priority of the study was to compare the effectiveness of progressive muscle relaxation training on resting heart rate of college level Handball players that ultimately could fulfill training requirement for development of Handball players at various level of performance. However, the finding after six weeks of experimentation on subjects in most scientific way established the appropriateness of the study.

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