Effect of Aerobic Training & Jacobson's Relaxation Technique on Stress among College Students

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Abstract: *Background: The world is home to 1.2 billion individuals aged 10–19. According to the World Health Organization, stress especially relating to work, is the second most frequent health problem. Stress is the body's way of responding to any kind of demand or threat.17 Stress is generally defined as the body's nonspecific response or reaction to demands made on it, or to disturbing events in the environment.18Perceived Stress Scale was used to assess the stress levels in participants.20*

Methodology: Thirty participants from Dr. APJ Abdul Kalam College of Physiotherapy were screened for inclusion & exclusion criteria.15 participants were given Aerobic Training while other 15 were given Jacobson's Relaxation Technique. The results were compared & effects on vital parameters were checked.

Result: Comparison between pre and post readings of both the groups were done & their effects on vital parameters was also assessed.

Conclusion: The present study concluded that both the groups were effective in reducing the stress level in college students but Jacobson's Relaxation Technique was more effective than Aerobic Training.

Keywords: Stress, Aerobic Training, Jacobson's Relaxation Technique, Perceived Stress Scale.

I. INTRODUCTION

1.2 billion Individuals aged from 10–19 years belongs to the Adolescents Worldwide. Adolescents aged between 10 to 19 years account for more than one-fifth of the world's population. In India, adolescent's age group forms 21.4% of the total population[1]. According to the World Health Organization ,stress especially relating to work, is the second most frequent health problem ,depression is among the leading causes of disability worldwide&1 in every 5 persons (20% of the population) in India are said to be suffering from some form of mental unrest.[2] The World Health Report has quoted India as having a substantial prevalence of childhood and adolescent mental healthdisorders.[3]Due to globalization and work load, people in countries have to deal with work-related stress. Medical education is inherently stressful and demanding.[4] Stress is a natural physical response to perception of stimuli. Therefore, stress is simply defined as emotional disturbances or changes caused by stressors. Stress and anxiety is a part and parcel of every student's life. As a student, the origin of stress may be related to academic and social situations, environment and lifestyle[5] .No one can avoid all stress, but one can counteract it by learning how to produce the relaxation response, a state of deep rest that is the polar opposite of the stress response. There are various ways to cope up with stress .There are several types of relaxation therapies such as stretch release relaxation (SRR), Jacobson's progressive muscle relaxation (JPMR), cognitive imagery relaxation (COG), and some types of meditations. Relaxation is highly beneficial if practiced routinely in one's everyday life.[7] Jacobson's Relaxation Technique have been very effective in reducing stress, depression & anxiety among individuals. It was developed by American physician Edmund Jacobson's in the early 1920s.PMR entails a physical and mental component.[6] To the best of our knowledge the comparative study between Aerobic exercise and Jacobson's relaxation technique is lacking. So, the objective of the study is to determine& compare the effect of Aerobic exercises and Jacobson's relaxation technique on stress in college students. The secondary objective is to study the effect of above intervention on the vital parameters.

II. METHODOLOGY

30 participants who had stress were included in this study based on the inclusion and exclusion criteria. All the participants were selected from Dr. A.P.J. Abdul Kalam College of Physiotherapy. The participants willing to participate were asked

to signed a written informed consent. The procedure was explained to all the participants. Before proceedings for the procedure Perceived Stress Scale was explained to the participants. Participants were evaluated for the baseline measurements of all outcome measures such as HR, BP, and RR.. All the participants were given the Perceived Stress Scale to record the baseline data that was collected before the interventions. The participants were divided into 2 groups conveniently .Group A participants were given Aerobic exercise training for a period of 4 weeks. The vital parameters were also checked. Group B participants were given Jacobson's Relaxation technique for a period of 4 weeks & vitals were checked. The data was collected and recorded. After the intervention period of 4 weeks, data analysis was done.

III. DATA ANALYSIS AND RESULT

The present study "Effect of Aerobic Exercise & Jacobson's Relaxation Technique on Stress among College Students" was conducted in department of Cardio Respiratory Physiotherapy in Dr. APJ Abdul Kalam College of Physiotherapy; Loni, Taluka: Rahata District: Ahmednagar, Maharashtra, India. Thirty participants (n=30) who had stress were included in this study based on the inclusion and exclusion criteria. Data for each subject was collected and recorded by the principal investigator. Demographic data was collected and analyzed for Stress levels, Heart Rate, Respiratory Rate & Blood pressure. The data was coded and entered into Microsoft Excel spread sheet. Analysis was done using Graph pad INSTAT demo version. Data was collected and presented in graphs & tabular form and was analyzed by using the Students paired "t" test & unpaired 't'test.

3.1 Data Analysis

Table 1: Mean of Stress Level of Group A

Group A	Mean+-SD	p value	t value
Pre	21.866+-3.962	<0.0001,considered extremely significant	12.749
Post	11.8+-1.740		

Table 2: Mean of Stress Level of Group B

Group B	Mean+-SD	p value	t value
Pre	22.13+-4.565	<0.0001,considered extremely significant	10.540
Post	11.6+-1.920		

Table 3: Mean of Group A & Group B (Pre & Post Readings)

SCALE	PRE (Mean+ SD)	POST (Mean+ SD)
GROUP A	21.866+-3.962	11.8+-1.740
GROUP B	22.13+-4.565	11.6+-1.920

Table 4: Mean value of the Heart Rate of Group A

Heart rate	Mean +-SD	p value	t value
Pre	73.13+-2.69	0.0008, considered extremely significant.	4.2617
Post	69.93+-2.53		

Table 5: Mean value of the Heart Rate of Group B

Heart rate	Mean +-SD	p value	t value
Pre	73.866+-2.642	<0.0001, considered extremely significant.	4.600
Post	69.8+-2.178		

Table 6: Mean value of the Respiratory Rate of Group A

RR	Mean +-SD	p value	t value
Pre	19.20+-1.26	0.0001, considered extremely significant.	7.6184
Post	16.33+-1.05		

Table 7: Mean value of the Respiratory Rate of Group B

RR	Mean +-SD	p value	t value
Pre	18.33+-1.291	<0.0001, considered extremely significant.	6.991
Post	15.33+-1.047		

Table 8: Mean value of the Systolic BP of Group A

SYSTOLIC BP	Mean +-SD	p value	t value
Pre	123.866+-4.307	0.0007, considered extremely significant.	3.935
Post	119.6+-1.882		

Table 9: Mean value of the Diastolic BP of Group A

DIASTOLIC BP	Mean +-SD	p value	t value
Pre	80.466+-2.100	0.0181, considered significant.	2.316
Post	79.266+-1.438		

Table 10: Mean value of the Systolic BP of Group B

SYSTOLIC BP	Mean +-SD	p value	t value
Pre	123.2+-4.329	0.0014, considered very significant.	3.617
Post	120.133+-1.922		

Table 11: Mean value of the Diastolic BP of Group B

DIASTOLIC BP	Mean +-SD	p value	t value
Pre	79.2+-3.069	0.0023, considered very significant.	3.080
Post	76.133+-2.336		

IV. RESULTS

30 individuals when participated in Aerobic Training & Jacobson's Relaxation Technique. Mean value of the stress levels of Group A in the pre readings was 21.866 and the post readings after the intervention is 11.8; there were significant difference within the groups. (t value is 12.749 & the p value is <0.0001) which is ,considered extremely significant. Similarly, the mean value of the stress levels of Group B in the pre readings was 22.13 and the post readings after the intervention is 11.6 (t value is 10.540 & the p value is <0.0001)which is ,considered extremely significant.

Comparing the stress level of both the groups, Group B (Jacobson's Relaxation) was more effective in reducing the stress level among the students than Group A (Aerobic Training) & also shows the effect on the vital parameters.

V. DISCUSSION

- **Stress:** Comparing the stress level of both the groups, Group B (Jacobson's Relaxation) was more effective in reducing the stress level among the students than Group A (Aerobic Training)
- **Heart Rate:** In the present study, the mean of pre intervention value was 73.13 and post intervention is 69.93. (t value is 4.2617 & the p value is 0.0008) which is considered extremely significant for Group A, & the mean

value of pre intervention was 73.866 and post reading is 6.98.(t value is 4.600 & the p value is <0.0001)which is considered extremely significant for Group B.

- **Respiratory Rate:** In the present study, the mean value pre intervention was 19.20 which after the intervention showed 16.33. (t value is 7.6184 & p value is 0.0001)which is considered extremely significant for Group A. Also the mean value pre intervention was 18.33 which after the intervention in the post readings showed 15.33 i.e (t value is 6.991 & p value is <0.0001) which is considered extremely significant for Group B.
- **Blood pressure:** In the present study, the mean value pre intervention was 123.866 and post value after the intervention is 119.6. (t value is 3.935 & the p value is 0.0007) that is considered extremely significant which showed decrease in Systolic BP for Group A. Similarly, the mean value pre intervention was 80.466 and post value after the intervention is 79.266, which shows decrease in the Diastolic BP of the participants. (t value is 2.316 & the p value is 0.0181) that is considered extremely significant, for Group A(Diastolic)

The mean value pre intervention was 123.2 and post value after the intervention is 120.133.(t value is 3.617 & the p value is 0.0014)that is considered extremely significant for Systolic BP for Group B & the mean value pre intervention was 79.2 and post value after the intervention is 76.133,which shows slight decrease in the Diastolic BP of the participants.(t value is 3.080 & the p value is 0.0023)that is considered extremely significant, for Group B.

VI. CONCLUSION

The present study concluded that Aerobic Training &Jacobson's Relaxation Technique are effective ways to reduce the stress levels among the individuals. Results showed that comparing both the methods, Jacobson's Relaxation Technique was found to be more effective in reducing the stress levels among students than the aerobic training..Also there was a effect on the vital parameters in both the methods (HR,RR, BP) after 4 weeks of intervention.

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