

EFFICACY OF SLOW DEEP BREATHING EXERCISE TO MANAGE STRESS AMONG ADOLESCENT SCHOOL STUDENTS

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ABSTRACT

The present study aimed to evaluate the effectiveness of slow deep breathing exercise on stress. An experimental approach with one group pretest posttest control group design was adopted. A stratified random sample (N=100) students proportionately selected from grade six to twelve and they were randomly assigned to experimental and control group. Slow deep breathing exercise was administered for a session of 30 minutes/day for a period of 45 consecutive days. Kendler's Stress Scale was administered to assess the level of stress among students before and after slow deep breathing exercise. Stress scores obtained from the participants before and after intervention was subjected to statistical analysis. Descriptive and inferential statistics were employed to assess the efficacy of slow deep breathing exercise. The result revealed that there is a significant reduction in the level of stress after slow deep breathing exercise. Hence, stress reduction among adolescent school students was attributed to slow deep breathing exercise.

KEYWORDS: Stress, Slow Deep Breathing Exercise, Adolescents, School Students, Stress Management

Article History

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INTRODUCTION

Adolescent stage is a crucial period in the developmental span of human being. Physical, psychological and sociological factors attributes to high level of stress among adolescents. Adolescence in this period face challenges while forming meaningful relationship, identity and locating personal directions, and often end up with stress (Wisner, Jones, Gwin, 2010). This might stimulate either new adaptive coping or maladaptive response and unhealthy lifestyle (Franko, et al.2004).

Most particularly alterations in the level of secretion of stress producing hormone induce stress that results in various health and behavior related issues such as anger, sleeplessness, mood swing, aggression, lack of motivation, poor concentration, absenteeism, school dropout, depression, anxiety, and suicidal ideation, withdrawal from social group, poor academic performance, and maladjustment with peer group members and in the family. Apart from these cultural and social factors like conflicts in family, unbalanced nutrition, separated father and mother, extreme protection and punishment, lack of proper sexual education are other than hormonal changes during adolescence are also found to be stress inducing factors (Anjali, 2005).

Due to these factors sometimes adolescents likely to exhibit emotional reactions such as tensions, suicidal behavior, rebellious acts, destructiveness, non-conformity and defiance at marked degree.

The adolescents express emotional tensions, suicidal thoughts, rebelliousness, destructiveness, non-conformity and defiance. Adolescents spend most part of their day attending school, engaging in extracurricular activities and doing academic related homework's. School environment influences overall development through the academic demands of formed curricula and through exposure to teachers who emphasize academic achievement, motivation to learn and self-improvement. The high school introduces new view for the future to the adolescent's and it plays a vital role in the development of adolescents. School environment includes relationships among and between peer group, administrators, teachers, parents, students and community. Besides, technological advancement and modernization in the academic system, rapid changes in the educational paradigm are also major reasons for stress among students. Parental expectations and forcible acts, excessive expectations from their children to perform higher standard in both academic and co-curricular activities also contributes for high stress. Factors like single parenting, single child in home, lack of parental attention towards children's personal needs, academic performance, teacher's negative approach, peer group influence, emotional immaturity; higher work expectation and extraction also induces stress. Chiang (1995) argued that one of the main stress producing sources for adolescents is school where stress provoked due to too much of homework, unsatisfactory academic performance, test preparation, lack of interest in specific subject and also punishment by teachers. Similarly, girl students found to be more stressed than boys since they tend to be more emotional and sensitive towards their surrounding and its incidences (Akhtar, 2011).

Pastey and Aminbhavi (2006) concluded adolescents with high emotional maturity have significantly high stress and self-confidence. Nemith et al. (2008) indicated that stress and low self-esteem are related to avoidant coping and depressive mood.

Stress in adolescents is a consequence of personal, environmental and social factors. Personal factors include perception of stress, interpersonal conflict, coping response and prior knowledge of puberty and cultural norms for handling stress (Ge,2003; Kim, Conger, Elder, Lorrenz,2003; Patil, 2003; Rosen,2003; Simon, Wardle, Jarvis, Steggle, Cartwright, 2003; Pastey, Aminbhavi, 2007).Environmental factors include home and community situation, type of school, violence, crowding, noise and barriers to health services Ge,2003; Kim, Conger, Elder, Lorrenz,2003; Patil, 2003; Rosen,2003; Simon, Wardle, Jarvis, Steggle, Cartwright, 2003).Among social factors, social support, parental support, parental education, parental psychological problems, poor monitoring and inconsistent discipline are strong predictors for adolescent psychological health outcomes (Ge,2003; Kim, Conger, Elder, Lorrenz,2003; Patil, 2003; Rosen, 2003; Simon, Wardle, Jarvis, Steggle, Cartwright, 2003; Pastey, Aminbhavi, 2007). Many mental disorders initiate in adolescence. If left unidentified and untreated, these conditions may lead to some chronic mental illness in adulthood (Mubbashar, 2001; Hinshaw, 2005). High prevalence rates of anxiety, depression, and mental and behavioural disorders have been found among adults in Pakistan.

MANAGEMENT OF STRESS

Managing stress is a highly noted problem solving activity exercised in every sector, whereas an optimum level of stress required for quality performance of any activity. Academic performance with expected high quality during high school age among adolescents is mandatory for entering into right career choice and future job placement. Hence, students during this stage are expected to be highly competent and exert ingenious talents in achieving their curricular and co-curricular goals.

In the highly competitive scenario, though distress has its ill effects, it is well to manage and equip man to manage stress in crisis situations is a current need in human resources management.

To manage stress, there are various techniques have been adopted and implemented by various scholars. They are yoga, meditation, guided imagery, physical exercises, pranayama, time management, self-hypnosis, progressive muscle relaxation and biofeedback. Slow deep breathing exercise is a yogic technique employed in many studies in various part of the world. Diaphragmatic breathing has been reported to have beneficial consequences like increased oxygen supply to the brain and muscles, stimulation of parasympathetic nervous system, which promotes a state of calmness and quiescence, reduced anxiety and worry, improved concentration, release stress and tension (Joshi, 2014). An experimental approach adopted by Joshi (2014) revealed that there is a reduction in stress and strain in the intervention group after 5 weeks of practicing diaphragmatic breathing exercise both in boys and girls students compared to non-interventional group.

Participants of both intervention groups experienced reductions in perceived stress, state and trait anxiety scores, as well as increases in holistic wellness scores, as compared with controls (Nancy C. Baker, 2012)..

METHOD

Participants

Participants for the present study included both male and female students belongs to grade six to twelve from a selected higher secondary school from Coimbatore Corporation, Tamilnadu India. A stratified random sample of (N=100) participants drawn from a population of 500 students. The selected 100 participants distributed to experimental and control groups employing alternative assignment. Hence, the sample size in each group was 50.

Measures

Kendler's Stress Scale (1997) consists of three dimension viz. Somatic symptoms, Psychological Symptoms and Resilience. Each dimension consists of four point Likert scale question statements. Under somatic and psychological symptoms there are 19 statements and under resilience there are 20 question statements measures the health symptoms. The maximum score is 152 in both somatic and psychological symptoms. The maximum score in the resilience scale is 80. The higher the health Symptoms higher the stress and higher the resilience score lesser the stress. The scale has high reliability and validity and widely used tool in stress research throughout the world.

Slow - Deep Breathing Exercise

Slow deep breathing exercise was developed by White (1979) and it is a kind of breathing technique applied by many scholars as a yogic treatment to cure minor psychological disturbances and to enhance general wellbeing. Based on this technique the present investigator developed a specialized exercise module by combining various breathing techniques such as rhythmic breathing, pranayama, sudarshan kriya, slow breathing exercise and deep breathing exercise. Slowly inhaling deep breath from the lower abdomen through nostril and holding the breath for a few seconds and exhaling the breath twice slower than the inhaling develops relaxation and voluntary control over the autonomic nervous function (Sellakumar, 2015). Repeated practice of this breathing exercise for 20 to 30 minutes strengthens a conditioned state of relaxation. Interventional procedure was followed as the guidelines prescribed by the author.

RESEARCH DESIGN

Experimental approach Pretest Post test Control group Design was used to assess the efficacy of slow deep breathing exercise.

STATISTICAL ANALYSIS

To evaluate the efficacy of the intervention, repeated measures ANOVA was employed. Pretest mean and post test means were compared after analysis to find the significant difference between the two sets of data.

PROCEDURE

Before embarking the interventional procedure the following steps were strictly followed and instructions were distinctly recited to the participants and prerequisites were maintained before commencement of each session of this intervention.

- **Step I.** All participants were assembled in a hall with adequate silence, ventilation and lighting.
- **Step II.** Participants were instructed to sit comfortably on a mat with equal gap between each other.
- **Step III.** Keep the palms on the knee and keep open upwards.
- **Step IV.** Sit steadily with spinal cord (body) and neck erect.
- **Step V.** Close the eyes and inhale a deep breath slowly from the lower abdomen and hold the breath for a few seconds and exhale the breath two times slower than inhaling.
- **Step VI.** Continue the same procedure until you told to stop.

These above cited instructions and procedures were suggested to practice for 30 minute daily for a period of 45 consecutive days. The participants were instructed to practice this exercise minimum three hours after food intake

RESULTS

Table 1: Pretest and Post test Mean Difference of Experimental and Control Groups

Between Groups	Pre Test		Post Test		df	t	Sig
	M	SD	M	SD			
Control Group	106.94	13.75	107.24	12.92	1	0.36	0.05
Experimental	106.86	10.85	93.28	14.72	1	7.35*	0.05

*p>0.05

Table 1 shows pretest and posttest stress scores of experimental and control group participants. Pretest Stress Score of the control group participants (M=106.94, SD=13.75) is almost equal to the experimental group participants (M=106.86, SD=10.85), hence, before the interventional condition both groups were found to be homogeneous. While, comparing the post test scores of control group (M=107.24, SD= 12.92) and experimental group (M= 93.28, SD= 14.72) there is a significant difference in the mean scores of stress. Similarly, comparing the pretest (M=106.94, SD=13.75) and posttest (M=107.24, SD=12.92) mean scores of control group, there is no mean difference in the level of stress, whereas there is a mean difference between the pretest (M=106.86, SD= 10.85) and posttest (M=93.28, SD=14.72) mean score of experimental group. On analyzing the significant difference between the pretest and posttest mean scores of experimental group, there is a significant difference in the level of stress ($t(1,98) = 7.35, p < 0.05$) after slow deep breathing exercise.

Table 2: Pretest Mean Difference between Experimental and Control Groups

Conditions	Control Group		Experimental Group		df	t	Sig
	M	SD	M	SD			
Pretest	106.94	13.75	106.86	10.85	2	0.97	0.05

The above Table 2 shows the significance difference between experimental group and control groups before slow deep breathing exercise. On analyzing the pre-test scores of Stress score of Control group (M=106.94,SD=13.75), experimental group(M=106.86, SD=10.85).On analyzing the significant difference in pretest scores of experimental and control groups there is no significant difference in the level of stress ($t(2, 98) = 0.97, p > 0.05$). Hence, the two groups were found to be homogeneous in the pretest.

Table 3: Post test Mean Difference between Experimental and Control Groups

Condition	Control Group		Experimental Group		df	t	Sig
	M	SD	M	SD			
Post test	107.24	12.92	93.28	14.72	2	2.13	0.05

The above Table 3 shows the significance difference between experimental group and control groups after slow deep breathing exercise. On analyzing the post test scores of stress among control group (M=107.24, SD=12.92), experimental group (M=93.28, SD=14.72). On analyzing the significant difference in posttest scores of experimental and control groups there is a significant difference in the level of stress ($t(2, 98) = 2.13, p > 0.05$). Hence, the two groups were found to be heterogeneous after the administration of slow deep breathing exercise to experimental group.

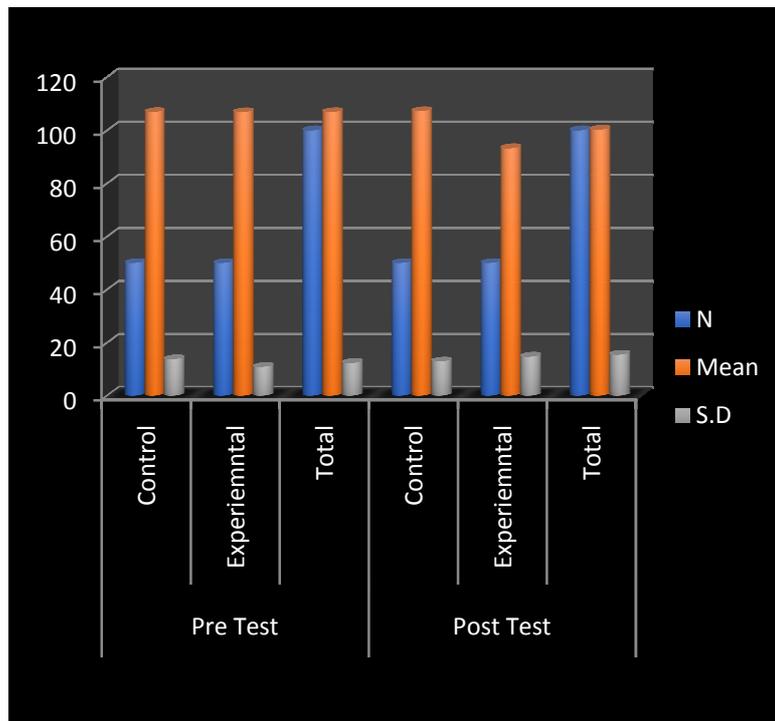


Figure 1: Shows the Pre Test Post Test Mean and Standard Deviation of Experimental and Control Group.

Table 4: Shows the 2 x 2 Repeated Measures ANOVA of Pre test Post test Stress Level of Experimental and Control Groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power ^a
Stress_Pre_Post	2204.480	1	2204.480	37.375	.000	.276	1.000
Stress_Pre_Post * Group	2408.180	1	2408.180	40.828	.000	.294	1.000
Error(Stress_Pre_Post)	5780.340	98	58.983				

The Mean and Standard Deviations of experimental and control groups during pretest and post tests are presented in Table 1, 2& 3. The present table indicates the significant effect of slow deep breathing exercise on stress among experimental group participants ($F(1, 98) = 37.375, p < .05$). Experimental group participants who practiced slow deep breathing exercise were found to have decreased their state anxiety scores in the post test. There is a significant interaction effect between overtime and groups ($F(1, 98) = 40.828, p < .05$). Thus, H1 “There is a significant decrease in the level of stress after slow deep breathing exercise” is accepted.

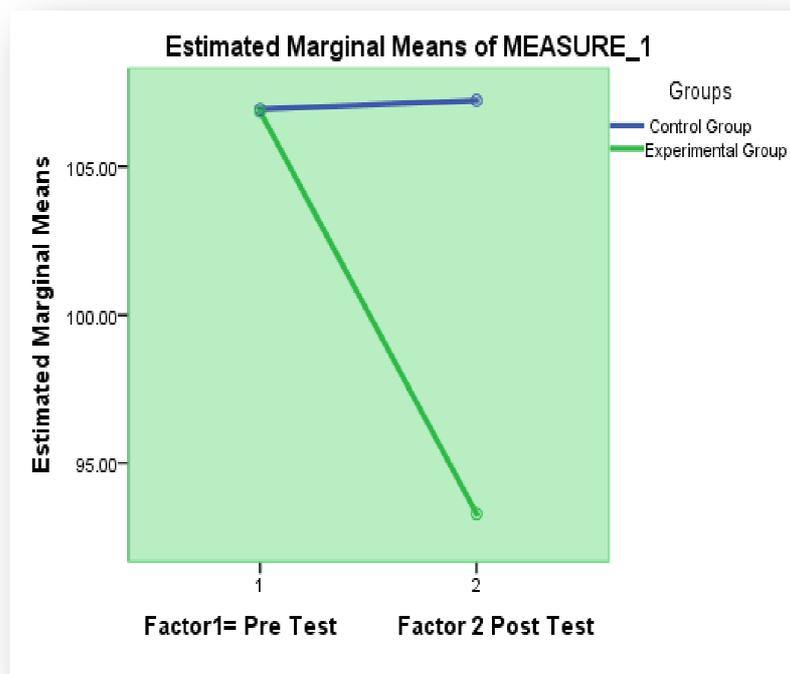


Figure 2: Shows the Mean Difference of Experimental and Control Groups between Pretest and Post Test.

Figure 2 indicates the pretest post test mean scores of experimental and control group on stress. The pretest mean score ($M=106.94$) and post test mean score ($M=107.24$) of the control group. The post test means score is found to be slightly increased when compared to pretest. Whereas the mean scores of pretest ($M=48.76$) and post test ($M=38.00$) of the experimental group is found to be significantly decreased compared to pretest and post-test. This significant difference is attributed the influence of slow deep breathing exercise intervention practiced by the experimental group participants. The control group participants did not exhibit a significant difference in the mean scores of trait anxiety, though there is a slight

difference in the mean scores of pretest and post-test. Since the control group participants were not participated in the intervention program.

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