

RESEARCH ARTICLE

PHYSICAL ACTIVITY AS COPING STRATEGY FOR ACADEMIC STRESS AMONG UNDERGRADUATE FEMALE STUDENT

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ABSTRACT

Objective: To determine the effectiveness of physical activity as a coping strategy to reduce academic stress among undergraduate female students. **Methodology:** A Randomized control trail (NCT04221022) was conducted in Bilquis Postgraduate College for Women PAF, Nur Khan Base, Rawalpindi. A total of n=37 undergraduate inactive female (>1-month) students, age between 18-24 years, with moderate level of academic stress measured on academic stress scale were included in the study. While students with diagnosed psychological disorders, systematic diseases were excluded. The participants randomly divided into Light Physical Activity (LPA), Moderate Physical Activity (MPA) and Vigorous Physical activity (VPA) groups. The academic stress scale (ASS) was used to observe level of academic stress among participant at baseline and after six weeks of intervention. **Results:** The mean age of female study participants was 20.24±1.44 years. Pre-Post analysis showed that all group significantly improve ($p<0.001$) level of academic stress after 6 week intervention. The academic stress was significantly improved in moderate PA group as compare to vigorous PA (15.17±12.39 Ver. 44.62±36.94, $p=0.019$). **Conclusion:** All types of physical activities were effective as a coping strategy for reducing academic stress among female undergraduate students. But moderate level of physical activity like brisk walking was significantly associated with reduction in academic stress as compare to vigorous and light physical activities.

Keywords: Cognition, mental health, physical activity, stress.

INTRODUCTION

Physical activity (PA) is defined as any bodily movements, which are produced by skeletal muscles that results in energy expenditure and classified as light, moderate and vigorous physical activity. PA is effective in preventing and treating high blood pressures, diabetes, osteoporosis and depression. People who performs PA are more efficient and healthier.¹ Whereas risk of developing hypertension, coronary heart disease, diabetes and obesity increases due to physical inactivity.² Now-a-days stress is a typical chunk of each individual's life.³ Excessive work leads to the feeling of physical stress whereas improper daily life routine cause mental stress.⁴ Stressors such as academic, self-imposed, economic, and health related may affect the college students.⁵ The education system is quite stressful these days. A student's life and specifically a female student is subjected to diverse kinds of stressors such as the burden of academics, grades, undefined future and family problems.⁶ stress also leads to the issues of concentration, tension, anxiety, focus and attention.⁷

Moreover, students are also overloaded with quizzes, assignments, presentations and exams and all these factors are working as stressors in students' life which may effects the academic

achievements.⁸ Academic stress is mental distress which may occurs due to the pressure of educational failure, examination, class participation, competing other class mates and extra-curricular activities.^{9,10} Due to which students face emotional, physical, and social problems which might affect their learning capability and academic performance.⁶

Regular PA is effective for health life style and it is suggested as a coping strategy for stress.¹¹ In some previous studies, it has been demonstrated that most of the students do not participate in physical activity, whereas engaging in it can be a potent tool to enhance the physiological wellbeing of the student and minimizing there academic stress.^{12,13} However, in literature there is also limited evidence that physical activity is being properly used as an effective therapy in the management of academic stress. This study was conducted to determine the effectiveness of physical activity as a coping strategy to reduce academic stress among female participants.

METHODOLOGY

A randomized clinical trial (NCT04221022) was conducted in Bilquis Postgraduate College for Women PAF Nur Khan Base Rawalpindi after the permission from Principal. A total of n=37

undergraduate inactive female (>1-month) students, age between 18-24 years, with moderate level of academic stress measured on academic stress scale were included in the study. While students with diagnosed psychological disorders, systematic diseases were excluded from the study.

The participants were randomly divided into three groups, through the sealed envelope method such as Light Physical Activity (LPA), Moderate Physical Activity (MPA) and Vigorous Physical activity (VPA) group. (Figure 1)

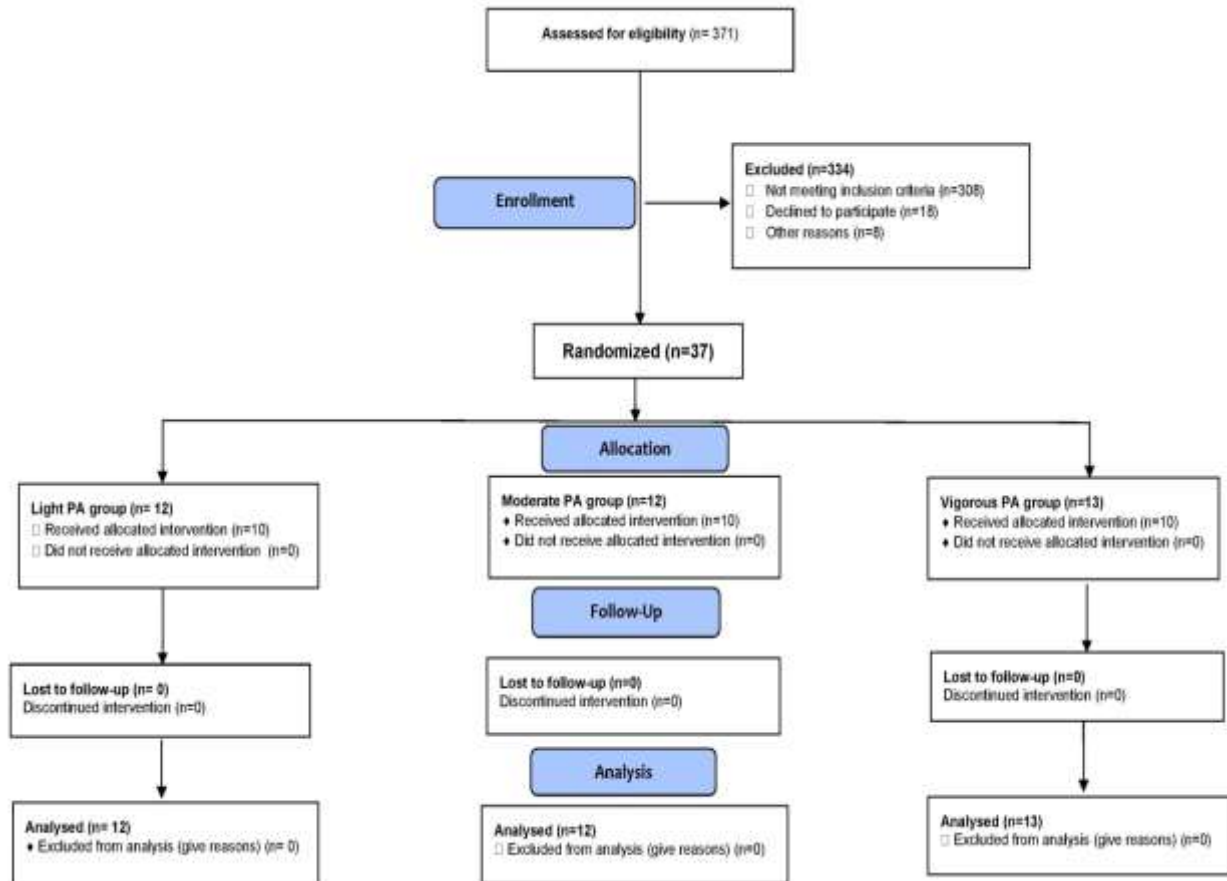


Figure 1: CONSORT Diagram

The guidelines regarding physical activity for intervention were obtained from Rapid Assessment of Physical Activity (RAPA) questionnaire which has constructed validity and reliability.¹⁵ The duration of study were 6 weeks and each group receiving intervention for 5 days/week. The participants were ask to perform Leisure Walk for 35 minutes in LPA group, Brisk Walk for 30 minutes in MPA group and jogging for 15 minutes in VPA group. The information regarding age, BMI and semester was obtained at baseline. The academic stress scale (ASS) was used to observe level of academic stress among participant at baseline and after six weeks, which is also a valid and reliable tool.¹⁶ The assumptions of parametric tests were met, so for within group changes, paired sample t-test and for comparison One Way ANOVA with Tukey HSD post hoc was used. The level of significance was set as

$p < 0.05$, and SPSS ver. 21 was used to analyse the data.

RESULTS

The mean age of female study participants was 20.24 ± 1.44 years and mean BMI $20.23 \pm 0.26 \text{ kg/m}^2$, which showed that majority of participant, had normal BMI score. Majority of students were in 2nd (n=10) and 4th (n=14) semester respectively (Figure 2).

Pre-Post analysis showed that all group showed improvement in level of academic stress after 6 week intervention, while comparison between groups showed significant difference ($p=0.024$) among the groups as shown in figure 3.

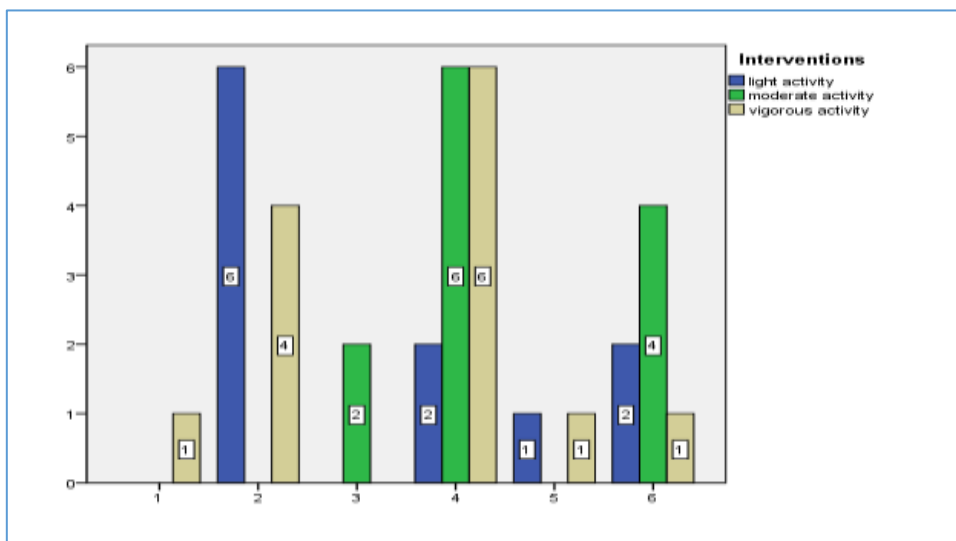


Figure 2: Semester wise distribution of participants

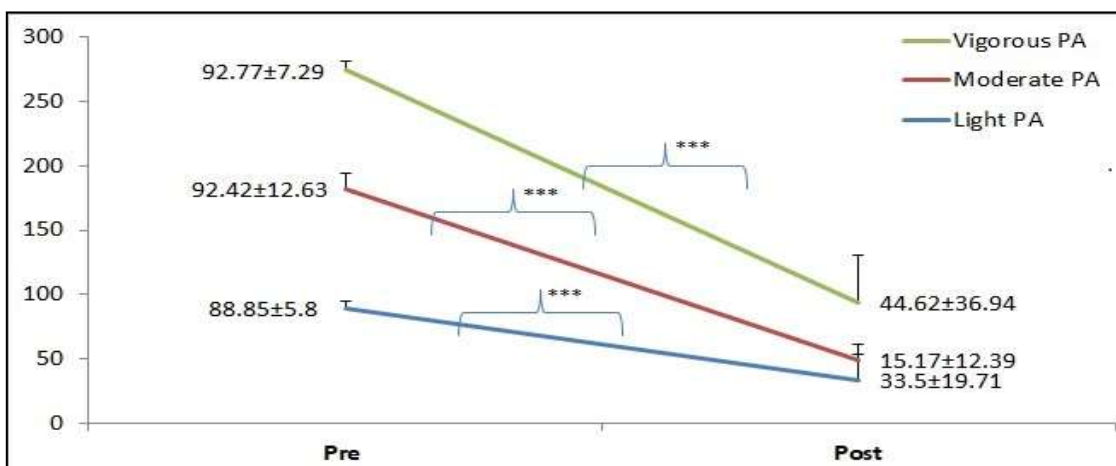


Figure 3: With-in group changes in ASS

Post Hoc analysis with Tukey HSD showed that the academic stress was significantly improved in moderate PA group as compare to vigorous PA (15.17±12.39 Ver. 44.62±36.94, $p=0.019$). But no significant difference was observed between

moderate and light PA group (15.17±12.39 Ver. 33.5±19.71, $p=0.196$) as well as light and vigorous PA group (33.5±19.71 Ver. 44.62±36.94, $p=0.543$) as shown in Figure 4.

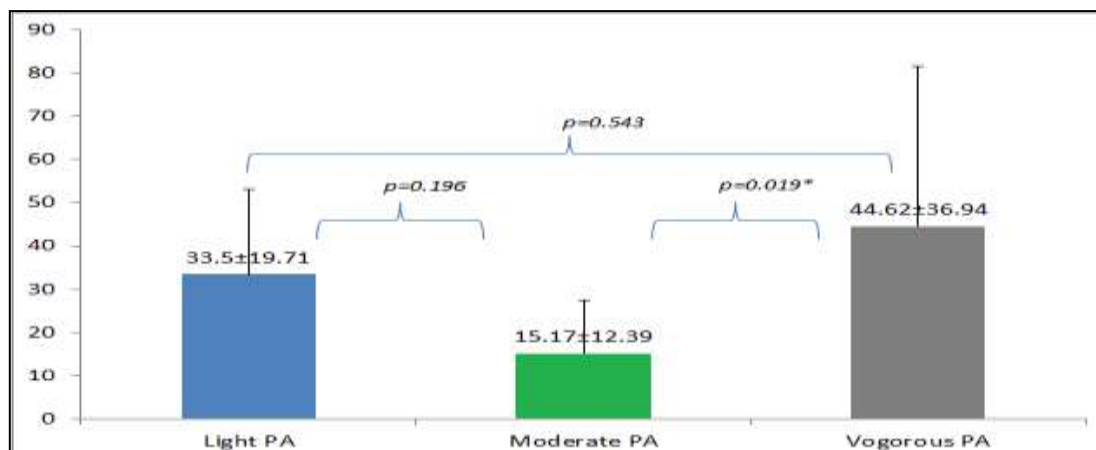


Figure 4: Comparison of ASS among LPA, MPA & VPA groups

DISCUSSION

According to the results, each level of physical activity reduced the academic stress level at the end of 6 weeks but moderate level of physical activity e.g. brisk walk significantly improve academic stress symptoms as compare to light and vigorous physical activity.

In this study, it was concluded that moderate level of PA was significantly associated with the academic stress, which correlates with the previous study conducted by Ulrich A. In which it has been demonstrated that moderate level of PA i.e. 150 minutes/week is effective for reducing stress and improve health in undergraduate students.¹⁷

Moreover, it has also been determined that regular moderate and vigorous intensity PA improves mental and cognitive health.¹⁸ A study conducted by James A. Blumenthal et al. discussed that 12 weeks of aerobics and strength training is effective for reduction in mental stress.¹⁹ However, according to the results of this study, brisk walking for a time period of 6 weeks can significantly use as a coping strategy for mental stress. This occurs due to the cortisol level, which is considered as stress hormone. Cortisol is released during physical activity such as brisk walking which reduces the stress level while secretion of cortisol is decreased or inhibited due to low PA.²⁰

Additionally, another possible mechanism is the increased concentration of serotonin and other neurotransmitters due to PA, which are associated with the endorphin effects and decrease the negative effects of stress.²¹ This supports the current findings of the study that moderate intensity of physical activity for 6 weeks reduces the stress level and improves mental health of college students. And stress is the leading cause of poor academic performance in college students.¹⁴

Moreover, in the current study no significant difference has been observed in the light and vigorous PA after 6 weeks of intervention. However, in a previous literature, it has been discussed that vigorous PA is inversely associated with the stress level among college students.²² On the other hand, walking in nature is also effective for the mental health.²³ However, there's less evidence available for the leisure walk and the academic stress in college students.

CONCLUSION

All type of physical activities were effective for coping up with the academic stress among female undergraduate students. But moderate level of physical activity like brisk walking was significantly associated with the academic stress, as compare to vigorous and light physical activities. The current study was single centre study as well as no confounding variables like age socioeconomic status were included in the analysis. So multi-centre study, while focusing confounding variables, is recommended for future research.

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