



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## INVESTIGATING THE RELATIONSHIP BETWEEN REGULAR PHYSICAL EXERCISE, STRESS LEVELS AND SELF-ESTEEM

MAHIKA MADAAN ( A1506921108)

AMITY INSTITUTE OF PSYCHOLOGY AND ALLIED SCIENCE

(BA APPLIED PSYCHOLOGY HONS)

UNDER THE GUIDANCE OF PROF. NIKHILRAJ KOLA

### Abstract

The study delves into the intricacies of the relationship between regular physical exercise, self-esteem and stress levels. The research objectives was to determine the association between regular physical exercise, stress levels and self-esteem and the sample that was taken was of 105 consisting of all the individuals between the ages of 18- 24 who exercised atleast three or more times in a week. The results of the study revealed, on the basis of the correlational analysis it was revealed that between the variables of physical exercise and stress levels it had  $r = -0.137$  and this basically indicates that as a negative correlation, it basically shows that as exercise increases, stress lowers down but since it does not offer any significant relationship which implies it is statistically insignificant and it also implies that there may be a relationship but since the sample size was small, it didn't get detected. The relationship between regular physical exercise and self-esteem reveals an insignificant relationship which is a positive relationship and  $r = 0.098$  which implies as exercise increases so does the self-esteem levels but since this is an insignificant relationship and does not show a very strong relationship and we reject the alternative hypothesis proposed earlier. On the other hand, it was found that stress and self-esteem were negatively correlated with  $r$  being  $-0.498$  indicating a significant relationship which shows that if high stress was associated with low self-esteem. Some of the limitations of this study included not including a sufficient amount of HEPA Active people who did vigorous exercise for 1500 MET per week. The second limitation of the study was not taking other factors such as individual differences in coping strategies, social support networks etcetera.

Keywords: Regular physical exercise, Self-esteem, Stress levels, Correlation

## Chapter 1

### INTRODUCTION

The Twenty-first century was indeed the marking of a new era where people started to get their things delivered within a click, be it all sorts of foods and groceries the comfort of their homes which basically disrupted the human bodily systems that for years had been subjected to all kinds of harsh environment in order to get basic needs such as food and water back in the stone age. Additionally, the starting of the twenty-first century was also the era where people were being thrashed with excessive workloads due to the extensive spread of Capitalism.

According to WHO ( World Health Organization), it is estimated that around a quarter of the Worlds's Adult population which is basically 1.4 Billion adults are not active or are insufficiently active. With levels of physical inactivity being a major problem in high-income countries. Insufficient activity has increased by 5 % ( from 31.6 % to 36.8%) in high-income countries between 2001 and 2016. In addition to this WHO ( World Health Organization) classified stress as the " Health epidemic of the 21<sup>st</sup> century". The recent reports by India Wellness Index by ICICI Lombard general insurance says that every third person in india is undergoing through stress. The fact that the research done by Indian journal of social science and economics on female college students among Delhi NCR revealed that about 67.3 % of the participants suffered from academic stress.

Amidst the uncertainty among today's youth and excessive workload has pushed them to the peripheries of their own physical and mental health are now suffering and battling various mental and physical health issues. According to the American Psychological Association (APA) "Exercise and physical activity improve overall fitness , body mass index and cardiovascular and muscular health". In a study conducted on the American population by American Psychological Association (APA) on stress reveal that 53 percent of adults say that they feel good about themselves after exercising. Among teenagers it was reported that 53 percent feel good about themselves after exercising , 40 percents says that it puts them in good mood and 32 percent says that it makes them feel less stressed than before . Regardless of all this, it has been reported that teenagers exercise less than once a week or not at all.

Exercise is known to have some of the amazing benefits to mental health as it helps in reducing your cortisol and adrenaline levels and elevates your happy pain relieving hormones such as the endorphins which keeps stress at bay. A study done by the Zaheden university of medical sciences in Iran revealed that regular physical exercise are effecting in increasing self- esteem and mental balance among individuals. So exercise is also known to be the boosting factor in self – esteem and plays an important mediating factor in leveling the self -esteem levels. Hence , exercise plays a very important role in mediating the self- esteem levels and keeping stress at bay.

#### **Regular physical exercise**

According to the World Health Organization (WHO), physical activity encompasses any bodily movement requiring energy expenditure, including leisure activities, transportation, and work-related tasks. For adults aged 18-64, WHO recommends 150–300 minutes of moderate-intensity aerobic activity, 75–150 minutes of vigorous-intensity aerobic activity, or a combination of both per week. Muscle-strengthening activities involving major muscle groups should be done on 2 or more days a week.

To reap additional health benefits, individuals are encouraged to exceed these recommendations and reduce sedentary behavior. The IPAQ is used to measure regular physical exercise, with criteria including engagement in exercise on 3 or more days per week. The questionnaire categorizes individuals into Inactive, Minimally active, and HEPA active based on their reported activity levels, with specific criteria outlined for each category.

## Stress levels

The first most generic definition of stress was given by Hans Selye (1936), he described as “non-specific response of the body to any demand”. At its core stress is ingrained in our genetics and from an evolutionary perspective, it has existed and was used as a survival mechanism in order to navigate dangerous situations. Selye mainly focused on how we react to stress and he also gave the GAS model (General Adaptation Syndrome) wherein he highlighted that generally stress is divided into three basic stages which are namely: alarm reaction stage, resistance stage and then exhaustion stage. Now generally what happens during the alarm reaction stage is generally where we perceive our stressor and the body prepares utilizes the energy resources and directs it towards the stressor then comes the resistance where an individual is actually running out of resources and that eventually lead to the exhaustion stage where chronic stress could further lead to more physiological problems.

In one of the studies done by Richard Norris et al. (1991) where they wanted to check the relationship between physical activity and self-esteem levels and employed correlation as a measure in order to obtain results among adolescents. The correlation study revealed that individuals who did regular physical exercise reported less stress.

For measuring the levels of stress among young adults, the perceived stress scale has been used in order to measure stress among individuals.

## SELF – ESTEEM

William James first described self-esteem (1890) as developing a sense of positive self-regard for oneself after achieving important goals in life. Even after a century, the definition of self-esteem continues to be of relevance that was offered by James that self-esteem is generally considered to be the assessment of self-knowledge that reflects the extent to which people like themselves and believe they are competent (e.g., Brown, 1998; Tafarodi & Swann, 1995). High self-esteem implies a positive self-image about oneself and a low self-esteem implies a negative self-image about oneself (Campbell et al., 1996). According to Kernis (2003), self-esteem is thought to be a rather durable trait with both cognitive and motivational components. The self-esteem strategies may vary among those with high self-esteem and those with low self-esteem... for example in most people that have high self-esteem are engaged in self-enhancing behaviours and personal growth and are highly driven by their ambitions which they want to accomplish. On the other hand, people with low self-esteem just try to maintain their levels of self-esteem by self-protection and they actually do it by avoiding threats which basically implies a very fixed mindset and as for individuals with high self-esteem it implies a growth mindset.

One study among adult population done by Seyad Hojjat Zamani Asani et al. (2016) showed that higher levels of physical activity lead to higher levels of self-esteem. Hence, given that the evidence clearly shows that physical activity and self-esteem are positively correlated. In this we used the scale of Rosenberg in order to measure self-esteem.

## THEORETICAL FRAMEWORK

This model basically provides an evidence in favour of the variables that physical activity is directly related to self-esteem and physical activity leads to good mental well-being and that is directly proportional to increased self-esteem.

This model suggests several pathways which in turn influence self-esteem like the psychological mechanism and also that physical exercise induces positive feelings, reduces stress, promotes self-efficacy and enhances self-esteem, and also leads to a more positive self-perception.

It also suggests that physical exercise is very important and the physical body image is directly proportional to better mental well-being reduced stress and enhanced self-esteem.

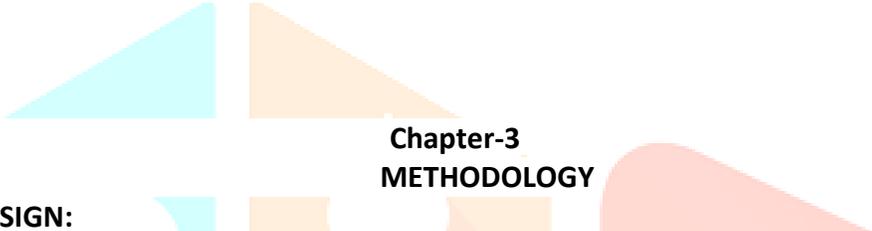
**RATIONALE OF THE STUDY:**

The onset of the 21 st century was more of a revolution in the history of mankind that transitions to a digital age wherein everyone is occupied with excessive workload , competition to get jobs and stuff. I chose the age group as 18- 24 years because this is usually an age where people are settling in terms of their career. According to World Health Organization( WHO, 2021) , It shows that suicide is known to be the 4 th leading cause of death among age groups 15- 29 years. My study intends to study whether there is a positive correlation between regular physical exercise and psychological- well being and in order to equip my readers with the apt knowledge about how they could further enhance their mental well- being during this crucial stage of career setting and college life.

This study aims to address certain research gaps which were present in the previous studies such as taking only the university students , in this we took from all fields whether working or doing college and someone who falls between the ages of 18 to 24 years and also the fact that it was conducted on the Indian population not on Caucasians.

**RESEARCH OBJECTIVES:**

- To study the relationship between regular physical exercise and stress levels.
- To study the relationship between regular physical exercise and self- esteem.



### Chapter-3 METHODOLOGY

**RESEARCH DESIGN:**

For the present study the use of quantitative method was employed. The present study used a a probability sampling method which is random sampling for the collection of data among individuals ranging from 18- 24 and the statistical analysis employed here was Analysis of Variance ( ANOVA) for the data analysis.

**SAMPLE:**

The sample encompassed of 105 individuals who exercised three or more times a week ranging from 18- 24 years of age . The sample was mainly collected from Delhi NCR.

**INCLUSION CRITERIA:**

- The respondents whose age range lies between 18- 24 years.
- The respondents who exercise atleast three or more times a week.
- The respondents who resided in urban areas.
- Young adults of both genders were included.
- Only literate young adults were chosen for the study.

**EXCLUSION CRITERIA :**

- The respondents who did not engage in physical exercise.
- Illiterates were excluded from the samples or those who did not pass 10 th.
- The respondents who resided in rural areas.

**BRIEF DESCRIPTION OF THE TESTS/ TOOLS USED:****INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (IPAQ)**

The International Physical Activity Questionnaire is a standardized tool used for measuring regular physical activity across countries and diverse cultures . It comes in two forms: the short form and the long form. The short form consists of 8- items and is particularly used for quick use in surveillance studies where time is limited. It encompasses of 8- items measuring the time spent in engaging in moderate to vigorous physical activity and also the total time remaining inactive. The Long form on the other hand measures a more detailed

aspects of physical activity including daily- physical activities such as work-related activities , transportation, household chores, gardening and leisure activities.

The test- retest reliability indicates how consistent the questionnaire is with its results and it was shown that it shows a correlation coefficient of 0.74 and this suggests that it demonstrates a good consistency in measuring the physical activity levels.

IPAQ also allows for the computation of the volume of the physical activity by weighting each type of physical activity based on energy requirements , measured in MET – minutes. Metabolic equivalent of task ( also known as MET), with walking having a MET value of 3.3 , moderate intensity physical activity having 4.0 MET and vigorous physical activity having a MET value of 8.0 .

It has a criterion validity of 0.41 which means it has moderate level of relationship with the external criterion and the concurrent validity coefficient is 0.72 meaning that those who score higher on IPAQ tends to score higher in concurrent measure of physical activity. The questionnaire had around 8 questions and the Short form version of it was used and the answers were mostly in the form of minutes in order to categorize it into three categories as Inactive, Minimally active and Hepa active. Now inactive category implies that the person is not able to meet the criteria of minimally active and hepa active. Minimally active basically implies that the person is doing

It has a criterion validity of 0.41 which means it has moderate level of relationship with the external criterion and the concurrent validity coefficient is 0.72 meaning that those who score higher on IPAQ tends to score higher in concurrent measure of physical activity. The questionnaire had around 8 questions and the Short form version of it was used and the answers were mostly in the form of minutes in order to categorize it into three categories as Inactive, Minimally active and Hepa active. Now inactive category implies that the person is not able to meet the criteria of minimally active and hepa active. Minimally active basically implies that the person is doing 3 or more days of vigorous activity of at least 20 minutes per day or 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day or 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week. On the other hand, Hepa active implies vigorous-intensity activity on at least 3 days achieving a minimum of at least 1500

MET-minutes/week OR 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week.

#### **PERCEIVED STRESS SCALE (PSS-14)**

The Perceived Stress scale (PSS) is a widely used tool in psychology and health research designed to measure stress among individuals. It was developed by Sheldon Cohen, Tom Kamarack and Robin Melmerstein in 1983. It has a total of ten items with options of 0 – never, 1- almost never, 2- sometimes, 3- fairly often and 4- very often. As far as scoring is concerned , individual score on the PSS can range from 0- 40 , with scores ranging from 0-13 indicating low stress, 14- 26 as moderate stress and 26- 40 as high stress.

Internal consistency, as assessed through Cronbach Alpha and it is considered a crucial measure in the field of psychometrics. It indicates the level of items correlated between different items with the test. Generally when there is a strong correlation coefficient of 0.7 or more it indicates a strong relationship between the items also indicating higher internal consistency. Perceived Stress Scale (PSS-14) showed a 0.856 Cronbach Alpha indicating a robust internal consistency between the items.

Criterion validity of Perceived Stress Scale (PSS) value indicates a correlation coefficient of -0.390 indicating a moderate negative relationship between perceived stress and mental health component summary of the SF-12 survey.

#### **ROSENBERG SELF- ESTEEM SCALE**

The Rosenberg self- esteem scale is a widely used tool for assessing individual self- esteem for self- reporting. It has a total of 10 items in a questionnaire ,for items 1, 2, 4, 6, and 7: Strongly agree = 3, Agree = 2, Disagree = 1 ,Strongly disagree = 0. For items 3, 5, 8, 9, and 10 (which are reversed in valence): Strongly agree = 0, ,Agree = 1,Disagree = 2, Strongly disagree= 3.

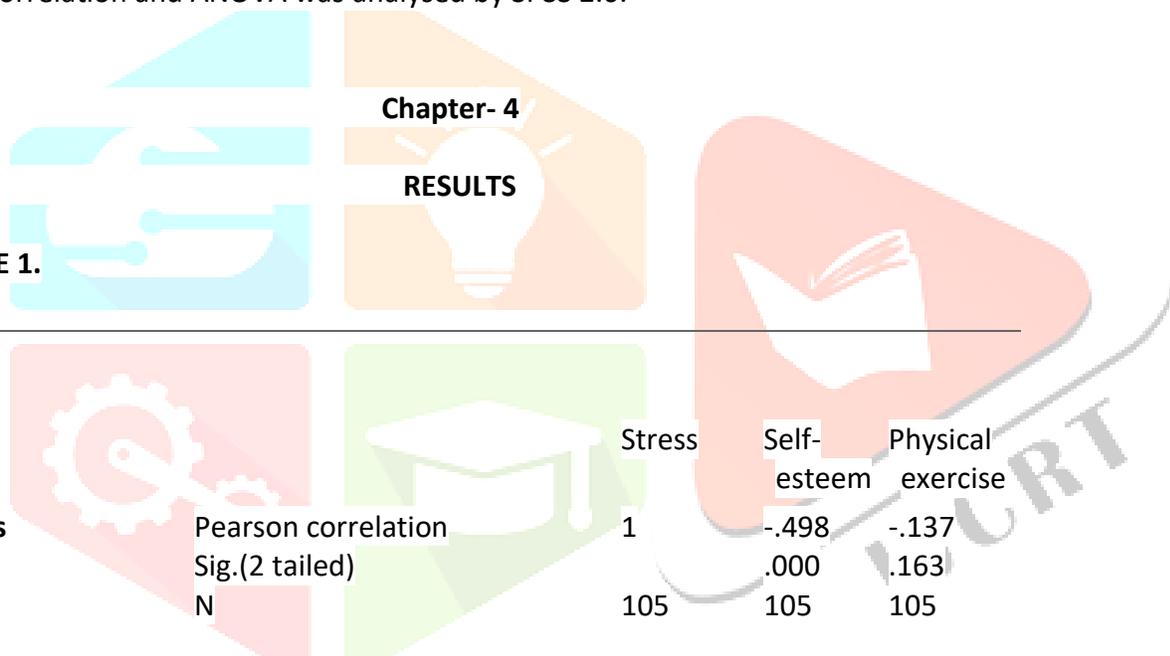
In this investigation , Item Response Theory was employed to delve into the characteristics of the scale and how its items relate to self- esteem. The findings of this study indicated contradicted some previous research that suggested the existence of separate factors within the scale such a self- confidence and self – depreciation.

The scoring range falls between 0-30 , with 15- 25 falling in the moderate category, 1-15 falling under low self – esteem and 25-30 falling under high self- esteem. The Rosenberg Self- esteem scale presented high ratings in internal consistency by correlation coefficient of 0.77 and test- retest reliability being 0.85.

**PROCEDURE :**

Keeping in view the research objectives and the ethical considerations , the following procedure were executed by the researcher:

Informed consent was taken prior to the study and data was collected through an online platform of google forms. The participants were given instructions to follow which were mentioned on the form itself and they were read out aloud to each and every person and were asked to answer with utmost honesty. They were also ensured that the information filled in their respective forms would be kept confidential and would be used only for research purposes. The data was collected and then systematically arranged in a tabular form and Correlation and ANOVA was analysed by SPSS 2.0.



**TABLE 1.**

		Stress	Self- esteem	Physical exercise
<b>Stress</b>	Pearson correlation	1	-.498	-.137
	Sig.(2 tailed)		.000	.163
	N	105	105	105
<b>Self- esteem</b>	Pearson correlation	-.498**	1	.098
	Sig(2 tailed)	.000		.322
	N	105	105	105
<b>Physical exercise</b>	Pearson correlation	-.137	.098	1
	Sig( 2 tailed)	.163	.322	
	N	105	105	105

TABLE 2.

	Sum of squares	df	Mean square	F	Sig.
<b>STRESS</b>					
BETWEEN GROUPS	81.367	2	40.683	1.080	.343
WITHIN GROUPS	3841.262	102	37.659		
TOTAL	3922.629	104			
<b>SELF- ESTEEM</b>					
BETWEEN GROUPS	4.055	2	2.027	.506	.604
WITHIN GROUPS	408.745	102	4.007		
TOTAL	412.800	104			

## Chapter-5 DISCUSSIONS

On the basis of the correlational analysis it was revealed that between the variables of physical exercise and stress levels it had  $r = -0.137$  and this basically indicates that as a negative correlation, it basically shows that as exercise increases, stress lowers down but since it does not offer any significant relationship which implies it is statistically insignificant and it also implies that there may be a relationship but since the sample size was small, it didn't get detected.

The relationship between regular physical exercise and self-esteem reveals an insignificant relationship which is a positive relationship and  $r = 0.098$  which implies as exercise increases so does the self-esteem levels but since this is an insignificant relationship and does not show a very strong relationship and we reject the alternative hypothesis proposed earlier.

On the other hand, it was found that stress and self-esteem were negatively correlated with  $r$  being  $-0.498$  indicating a significant relationship which shows that if high stress was associated with low self-esteem. Some of the limitations of this study included not including a sufficient amount of HEPA Active people who did vigorous exercise for 1500 MET per week. The second limitation of the study was not taking other factors such as individual differences in coping strategies, social support networks etcetera.

As far as the differences which we measured through ANOVA are concerned, it suggests no significant relationship between regular physical exercise and stress levels and self-esteem. The results for differences between the groups in regular physical exercise which included Inactive, Minimally active and Hepa active. There was no significant difference found between these groups as the  $F$ -statistic is 1.080 with a  $p$ -value of 0.343. The sum of squares between groups for stress levels and self-esteem is low compared to the within-group sum of squares and this indicates that the variation related to regular physical exercise is small compared to the variation within each group. It also suggests that there is no significant effect of regular physical exercise on self-esteem and stress levels. The within-group sum of squares is notably higher for self-esteem and stress levels indicating variability within each group. This variability suggests there are more other significant factors playing a more significant role in determining self-esteem and stress levels. It could be individual differences, environmental influences or could be some other lifestyle factors. The ANOVA results reveal that regular physical exercise and self-esteem and stress levels might not be strongly associated.

**Conclusion:**

In this study investigating the relationship between regular physical exercise, stress levels and self – esteem , several key findings emerged . Firstly , there was a significant relationship between stress levels and self-esteem, indicating that higher stress levels are associated with low self- esteem. However, there wasn't any significant relationship between regular physical exercise and self- esteem and regular physical exercise and stress levels. These results indicate while there is a significant relationship between stress and self-esteem, it may be very complex to determine the same for regular physical exercise and other psychological variables.

**REFERENCES:**

- Haugen, T., Säfvenbom, R., & Ommundsen, Y. (2011). Physical activity and global self-worth: The role of physical self-esteem indices and gender. *Mental Health and Physical Activity*, 4(2), 49-56.
- Kim, J. H., & McKenzie, L. A. (2014). The impacts of physical exercise on stress coping and well-being in university students in the context of leisure. *Health*, 6(19), 2570.
- Plante, T. G., LeCaptain, S. E., & McLain, H. C. (2000). Perceived fitness predicts daily coping better than physical activity. *Journal of Applied Biobehavioral Research*, 5(1), 66-79.
- Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public health nutrition*, 2(3a), 411-418.
- Zhang, Z., Wang, T., Kuang, J., Herold, F., Ludyga, S., Li, J., ... & Zou, L. (2022). The roles of exercise tolerance and resilience in the effect of physical activity on emotional states among college students. *International journal of clinical and health psychology*, 22(3), 100312.
- Kandola, A., Ashdown-Franks, G., Hendrikse, J., Sabiston, C. M., & Stubbs, B. (2019). Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity. *Neuroscience & Biobehavioral Reviews*, 107, 525-539.
- Trudeau, F., & Shephard, R. J. (2010). Relationships of physical activity to brain health and the academic performance of schoolchildren. *American journal of lifestyle medicine*, 4(2), 138-150.
- Wunsch, K., Fiedler, J., Bachert, P., & Woll, A. (2021). The Tridirectional relationship among physical activity, stress, and academic performance in university students: a systematic review and meta-analysis. *International journal of environmental research and public health*, 18(2), 739.
- Iwon, K., Skibinska, J., Jasielska, D., & Kalwarczyk, S. (2021). Elevating subjective well-being through physical exercises: an intervention study. *Frontiers in psychology*, 12, 702678.
- Schultchen, D., Reichenberger, J., Mittl, T., Weh, T. R., Smyth, J. M., Blechert, J., & Pollatos, O. (2019). Bidirectional relationship of stress and affect with physical activity and healthy eating. *British journal of health psychology*, 24(2), 315-333
- Moljord, I. E., Moksnes, U. K., Espnes, G. A., Hjemdal, O., & Eriksen, L. (2014). Physical activity, resilience, and depressive symptoms in adolescence. *Mental health and physical activity*, 7(2), 79-85
- Lamb, D., & Gulliford, A. (2011). Physical exercise and children's self-concept of emotional and behavioural well-being: A randomised controlled trial. *Educational and Child Psychology*, 28(4), 66.