

THE IMPACT OF EXERCISE ON ANXIETY AMONG BEIJING STUDENTS

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ABSTRACT – This research examined how self-improvement and self-criticism relate to anxiety and participation in sports. The administered questionnaire package was finished by 100 Chinese university students aged 18 to 39. The results showed that participation in athletics had a significant negative relationship ($r = -0.31$, $p 0.01$) with anxiety, a significant positive relationship ($r = 0.43$, $p 0.01$) with self-enhancement, and a significant negative relationship ($r = -0.14$, $p 0.05$) with self-criticism. Furthermore, it was discovered that self-criticism (0.44, $p0.01$) and self-enhancement (0.21, $p0.01$) substantially predicted anxiety. The mediation model also confirmed the mediation of self-enhancement and self-criticism between exercise and anxiety in university students.

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INTRODUCTION

Although maintaining good health is a goal that cannot be quantified in terms of money, we often neglect it during our busy schedules. Simple steps can be taken to lead a healthy lifestyle. All that is required of us as humans is that we pay attention to the little things every day and, if necessary, make changes to make them better for our health. The soul is just as important to have a healthy body as the physical body. There are several affordable ways to maintain good health. However, many people are willing to pay a lot of money to keep their looks and health. One way to keep healthy is to exercise (Saeed et al., 2018).

For society, the sport has long been essential. The expansion of fitness and sports facilities and the influx of individuals seeking exercise to maintain a healthy body and soul during holidays are indications of this. This demonstrates how sports have evolved from a mere need to a way of life. People generally do sports to keep their bodies healthy and strong so they can go about their daily lives without injury, but many others do it as a pastime or to compete in sporting events. Sports activities that are performed intensely on a regular and continuous basis constitute healthy exercise. While the submaximal is in play, a person's capacity is not pushed above its upper bounds regarding load and intensity. Because practice for health is affordable, safe, and convenient and can be done anywhere at any time, it is good for one's physical health and social and spiritual well-being (Kotera, 2018).

The conventional method distracts students, which makes them more prone to becoming tired. Due to the rote approach's use of numerous easy ideas and techniques, teaching and learning become ineffective (Qurban (2019). Students frequently recall historical principles or instructional strategies without having a firm grasp of the fundamental concepts. Since the teaching and learning process is not focused on the needs of the students in this scenario, students are more likely to concentrate on the exam. Students lack the abilities necessary for critical and creative thinking because deep inquiry methods are not taught to them. Instead, they heedlessly accept all of their instructors' advice. Students' levels of movement can be divided into two groups, "active" and "less active," according to data from Li et al. (2020). A total of 26.1% of the populace in China engages in physical activity that is deemed inactive overall. The total populace of about 22 provinces is physically less active than the Chinese average. The five areas with the highest percentage are East Beijing (44.2%), West Beijing (38.9%), North Beijing (37.8%), and South Beijing (37.2%).

The advantages of getting enough and consistent exercise have long been known and discussed in various media, including popular and health-related pieces. Exercise can help you avoid obesity, stress, diabetes, hyperlipidemia, stroke, heart disease, and high blood pressure, among other things. Even

Veronique and Robert's research in Belgium in 2005 concluded that sports or aerobic activity can control hypertension and prevent it.

Stress is a person's emotional inability to deal with dangers that influence mental, physical, emotional, and spiritual people. This failure to cope with dangers can impact a person's bodily and spiritual health. The body's natural response to normal stress is beneficial since it increases a person's capacity to deal with challenges or obligations in life. Work and competition are pressures that everyone must deal with because of the numerous jobs, responsibilities, and problems of today's modern society. According to January et al. (2018), too intense to tolerate stressors might result in symptoms like headaches, irritability, psychosis, and sleeplessness (Viana, 2019). The body will attempt to adapt to chronic stress so that pathological alterations appear in those experiencing it. In Beijing, 12.2 million people are thought to live with mental health illnesses or stress, making stress sufferers more common than ever. Traffic conditions are worsening in Beijing Province, leading to stress disorders due to various factors, including employment issues and bad urban planning.

Acute stress levels (severe stress) reaching 1-3% correspond to 14% of the population. The population of Beijing is presently 12.2 million, according to data from the Department of Population and Nationality Statistics Bureau (NBS) Beijing 2022. Residents with moderate to severe stress ranged from 12,200,000 to 366,000, or 1.71 million (or 14% of the 12.2 million total) (1-3 per cent of 12.2 million, NBS 2022).

LITERATURE REVIEW

Chinese academics are looking for strategies to assist individuals in coping with the stresses of modern life that negatively impact their mental health. A prevalent mental disease called anxiety is typified by complicated emotional reactions to stressful situations that affect the conduct and psychological states. (Biasutti, 2014). Numerous research conducted in China has shown that exercise has a good relationship with well-being. The relationship between self-health and exercise is favourable (Qurban, 2019). Exercise is described as body motions involving the skeletal muscles, and there is evidence that it helps reduce anxiety and tension, which frequently impair students' cognitive function. (Qian, 2017). (Biddle and Asare, 2017). Several empirical investigations involving Chinese students showed that exercise positively reduced anxiety, stress, and depression. (Lu, 2017). Even though 83.8% of Chinese adults aged 18 and over are inactive, the rate of sports engagement is now declining in China, according to 2010 China CDC data. (Qian, 2017). Exercise and cognitive anxiety have been linked over time by educational psychologists, sports psychologists, and medical experts [Lu, 2017]. Exercisers are more emotionally stable, less prone to feel anxiety or sadness, have higher self-esteem, and are less likely to develop mental illnesses, according to numerous research. (Habe, 2021).

From a theoretical standpoint, numerous hypotheses and models have been developed on the connection between physical activity and psychological well-being. (Habe, 2019). Exercise, for instance, supports mental health and lessens depression and anxiety, according to researchers who developed the biopsychosocial model (BPSM) of physical and mental health [Di Benedetto, 2010]. According to Vasey's social withdrawal theory, physical exercise and psychosocial conditions, including stress, depression, and anxiety, are intimately associated. (2001) According to empirical investigations, anxiety is claimed to rise when pupils' physical activity is restricted or nonexistent. However, Lee et al. claim that students who exercise more have lower anxiety levels than those who do not. (Lee, 2019).

Numerous research has looked at the effects of exercise on depression and anxiety in college students. Wang, (2018). Through an experimental study, Chan, 2018, verified Dai's (2018) findings that exercise is a protective factor for students' academic stress and considerably lowers anxiety and sadness in university students. Even though numerous studies have linked exercise to a reduction in anxiety, new Chinese research proposes examining the underlying mechanisms of some features, such as the mediation role of other factors, such as self-concept Guo. (2016). Based on this, it is asserted that there are other connections between exercise and anxiety. Exercise, for instance, can help kids feel less anxious about overcoming obstacles in college.

METHODOLOGY

In this study's corrective design, the empirical impact of exercise habits on stress levels among university students in Beijing was investigated. Hypothesis testing and statistical analyses were performed on exercise habits as the independent variable and stress levels as the dependent variable. One hundred respondents who attended universities in the Beijing area and were randomly chosen between May and November 2022 made up the research sample.

Many respondents, 233 sample students majoring in physiotherapy, had an average age of 20.48 years and a standard deviation of 0.87, according to the NBS's exclusive demographic information in the table above. This demonstrates that even though roughly 1,000 students were enrolled overall in 2021, the respondents' backgrounds were not diversified. The sample was selected because the zero population is more prevalent, and exercise habits are more important in that population.

Table 1. Age Characteristics

Characteristics	Mean+SD	Min-max
Age (n=100)	20.48 + 0.87	18-22

According to the above table, respondents' average ages are 20.48, with a standard deviation of 0.87, indicating that respondents' demographic variety is not too great given that students' ages span from 18 to 22 years, with 18 being the smallest value and 22 being the maximum.

Description of Respondents

The description of respondents, according to a study by NBS (2022), is a description of the respondents who would be measured by the value being investigated. Gender, level of exercise habits, and stress levels of students taking examinations and not taking tests are all considered when describing respondents. The lowest value age of 18 years and the maximum age of 22 years implies that the price is too high because the age range of the students is just five years apart.

Table 2. Gender Characteristics

Type of Gender	N	Percent
Male	83	83%
Female	17	17%
Total	100	100%

Table 2 shows that of the 100 respondents, 83 (or 83%) were men, and 17 (or 17%) were women; as a result, women outnumber men in terms of responses.

Table 3. Characteristics Of Exercise Discouragement During Exams and Lectures

Exercise Habit Characteristics					
Characteristic	%	Mean+ SD	Characteristic	%	Mean+ SD
Never	0		Never	0	
Rarely	14	22.57	Rarely	11	22.87 +
Frequent	41	+ - 2.94	Frequent	40	2.79
Very often	45		Very often	49	

According to the table, respondents who never exercise during exams or lectures are nonexistent. In contrast, those who rarely exercise during exams and lectures numbered 14 people, often during exams and very often during exams, 45 people, with an average of 22.57 and a standard deviation of

2.94, indicating frequent exercise habits. During lectures, sports habits that are uncommon at the time of exam number 11, frequently 40, and very frequently 49 people with a mean of 22,87 and a standard deviation of 2,79, which shows an increase in the number of those who exercise because currently, students are not as preoccupied with assignments and semester exams.

Table 4. Characteristics Of Stress Level During Exams And Lectures

Exercise Habit Characteristics					
Characteristic	%	Mean+ SD	Characteristic	%	Mean+ SD
<14 No anxiety	71		<14 No anxiety	68	
14 - 20 = mild anxiety	18	22.57	14 - 20 = mild anxiety	29	22.87 +
21 - 27 = moderate anxiety	11	+- 2.94	21 - 27 = moderate anxiety	3	2.79
28 - 41 = severe anxiety	0		28 - 41 = severe anxiety	0	
42 - 56 = severe anxiety once	0		42 - 56 = severe anxiety	0	

From the results of the table above, it is possible to determine the characteristics of respondents with stress levels who experience severe anxiety once, severe anxiety experienced at the time of the exam or lecture, moderate anxiety at the time of the exams, mild anxiety at the time of the exams, and no anxiety in 71 people with a mean of 12.12 and a standard deviation of 5.11; this demonstrates the lack of high anxiety in students in Beijing when they are taking semester exams. While just three students reported experiencing considerable anxiety during lectures, 29 people reported experiencing no anxiety, and 68 people reported no anxiety, with a mean of 11.75 and a standard deviation of 4.59, demonstrating the lack of significant anxiety in Beijing students.

The pressure of tests and assignments and students' fear of receiving a low grade point average caused an increase in average stress levels during lectures compared to exams. Before performing additional bivariate analysis, the first normality of the variables for gender, exercise habits, and stress level was tested after descriptive analysis of each variable to be researched. In Table 5.5 below, the results of the normalcy test are displayed.

Table 5. Normality Test of Dependent And Independent Variables With Shapiro Wilk Method

Normality Test	Shapiro-Wilk	
	Statistics	Significance(p)
Gender	0.50	0.01*
Exam Exercise Habits	0.91	0.01*
College Exercise Habits	0.93	0.01*
Exam Stress Level	0.90	0.01*
Course Stress Level	0.91	0.01*

** p<0.05 data are not normally distributed

According to the Shapiro-Wilk method's calculation of the normality test method, it is known that data on gender variables, exercise habits, and stress levels are not normally distributed; therefore, a non-parametric test of ordinal variables, namely the Spearman test, is required to examine the correlation between each variable. The Wilcoxon non-parametric test was employed to investigate the association between changes in exercise habits and stress levels during tests, lectures, and lectures. There was a Wilcoxon non-parametric test applied.

Relationship between Exercise

Habits that increase stress levels during tests and in-class lectures. Table 5 displays each variable's correlation test results. Exercise habits and stress level variables were correlated using a correlation test.

Table 6. Relationship Between Exercise Habits And Stress Levels During Exams

	Exercise Habits During Exams		Exercise Habits During Lectures	
	r	p	r	p
Stress Level During Exams	0.312	0.002	0.241	0.016
Stress Level During Lectures	0.168	0.095	-.0231	0.021

** p<0.05 data are not normally distributed

Based on the Spearman statistical test, while there is a strong association between exercise habits during examinations and stress levels during exams ($r = 0.312$; $p = 0.002$), there is no such correlation between exercise habits during exams and stress levels during lectures ($r = 0.168$; $p = 0.095$). There is a unidirectional relationship between exercise habits and stress levels, and when stress levels are compared to exercise habits during lectures, there is a significant relationship between the two ($p=0.016$), and there is a positive correlation of $r = 0.241$. On the other hand, there is a relationship between exercise habits during lectures and lectures because an average value of exercise habits increases that relationship.

Relationship between Gender and Stress level

According to Table 5.7's statistical test results for the Mann-Whitney U Test for gender variables, there is a negative correlation between gender and stress levels during exams and during lectures, where there is an opposite relationship. A Z value of -0.50 during the exam and a Z value of -0.49 during the lecture, where the Z value obtained value is greater than Z table = 0.291, shows a difference in stress levels.

Table 7. Test Of Relationship Between Gender And Stress Level During Examinations And Lectures

	Type Of Gender	
Exam Stress Level	Z = -0.50	p= 0.61**
Lecture Stress Level	Z = -0.49	p= 0.62**

** p<0.05 data are not normally distributed

DISCUSSION

Stress has become a phrase and appears to be a part of daily life. Stress is brought on by pressure to do tasks at work or around the house by the deadline or expectations for success in sports or education. According to research (Song et al., 2020) titled "Relationship Between Physical Activity, Psychological Well-Being, And Stress in College Population," physical activity and adequate exercise will influence students' stress levels. This aligns with other studies showing that exercise habits can affect stress levels. Out of 100 respondents, 83 were male respondents in this study, while 17 were female. This indicates that women outnumbered males, consistent with previous research (Tian et al., 2020) showing that women suffer higher stress than men. Respondents' median age is 20.48 years, with the lowest age being 18 and the highest being 22. Average exercise behaviours during lectures were 22.87 (SD = 2.79), while average behaviour during tests was 22.57 (SD = 2.94), indicating that the mean of exercise behaviours during lectures was 22.87. Because students have more time during lectures than during exams, this demonstrates that the average exercise habits are higher during lectures. The difference between the mean stress levels during lectures and exams—11.75 (SD = 4.59) against 12.12 (SD = 5.11) indicates that students have more time during lectures than during exams. This demonstrates that students'

increased stress levels related to exams result from increasing homework, studying, and exam-related anxiety.

According to research on the relationship between exercise habits and stress levels, the relationship between exercise habits and stress levels during exams and exams correlates $r = 0.312$. There is a significant relationship of $p < 0.05$. In contrast, the relationship between exercise habits and stress levels during lectures was found to correlate at 0.168, and there was no significant relationship with $p > 0.05$. If exercise habits during lectures with stress levels during exams, there is a significant relationship $p < 0.05$ and there is a positive correlation of $r = 0.241$, which means that there is a unidirectional relationship between exercise habits and stress levels, while on the other hand, exercise habits during lectures and lectures there is which there is a relationship because if there is an average value of exercise habits increases this will cause stress level decreases with a correlation coefficient of $r = -0.23$. This demonstrates a level of relationship between the variable exercise habits and stress levels, with $p < 0.05$ indicating a significant relationship with $p = 0.02$ indicating a significant change, and there is a unidirectional relationship; this is influenced by the exercise habits of students majoring in physiotherapy. It is well known that students in Beijing frequently participate in sports activities like futsal, basketball, and volleyball for men. At the same time, women prefer to participate in sports like swimming and morning jogging on holidays. This impacts their stress levels when taking exams; as the stress level rises due to external factors from the environment, such as friends, lecturers, and instructors, students experience pressure stress because they must perform well in their classes. At the same time, research (Shah & Pol, 2020). indicated that gender influences a person's degree of stress, specifically that higher levels are frequently discovered; other research claims that for each gender criterion, stress levels between men and women are equal. This is different for women, who are more prone to experiencing worry, guilt, restless nights, and eating problems. This is consistent with the study's findings that the sample is 83% more dominantly male than female, but there is no statistically significant difference between the two when $P > 0.05$. In contrast, the study found a difference between the two when $Z = -0.50$ during exams and $Z = -0.49$ during lectures. Demonstrates that men and women experience different amounts of stress during tests and lectures.

Two thousand seven hundred men and women without a history of depression participated in the study. From 2008 through 2020, specifically. These subjects had significant depression after a year, it was discovered. % of participants said that their jobs contributed to their depression. Men only saw a 2.9 per cent incident increase in depression related to employment, compared to women, who experienced an increase of up to 4.5 per cent. This demonstrates how the workplace atmosphere and conditions can impact a worker's mental health, however, in various ways depending on whether they are a man or a woman.

This study found that underappreciation at work or not being recognised for one's efforts and hard work are women's main causes of stress. However, men experience more stress due to their mounting workload, which makes them uptight. It is tense them. Chodkiewicz et al. (2020) good exercise will lower stress since it can stimulate the release of endorphin, a hormone that eases anxiety, releases tension and lessens pain. Exercise will release endorphins in place of the stress hormone, stabilising your emotions. And vice versa, if a person does not participate in sports often, their level of stress will rise, which is consistent with an increase in the stress hormone cortisol (Xu & Li, 2017).

A component of healthy living is engaging in physical exercise by exercising daily. Teenagers can gain much from daily exercise, including more energy and a lower risk of developing chronic illnesses. Not only adults need to develop the habit of exercise. The same is true for kids and teenagers, especially as it will promote their growth and development. Additionally, exercise can support children's and adolescents' mental health (Brinsley et al., 2020). To overcome obstacles and enjoy life, we need to think, feel, act, and interact in ways consistent with mental health. Kids and teenagers need healthy social and emotional development to experience, control, and express various emotions. Children and adolescents with good mental health can be more imaginative, better able to engage with others, and more willing to take risks.

Numerous things can harm a child's mental health. One of these is a kid's difficulties when they enter adolescence, including those brought on by puberty, shifting social roles, and the environment surrounding the rationing process. These may result in behavioural issues as well as chronic stress. As

time passes, the digital age's influence causes many youngsters to prefer playing video games on their phones or being more active on social media than being active. Additionally, it makes teenagers more prone to depression and stress (Dunstan et al., 2017). It has been demonstrated that exercise is a useful way to help kids and teenagers with their mental health. Exercise can help fight stress, anxiety, and depression, according to several studies. The less frequently you do it, the lower your risk of developing certain mental health issues. Physical activity causes the body to create specific hormones that improve mood and promote relaxation. Along with improved sleep quantity, Academic achievement is also aided by exercise.

According to studies in the Journal of Abnormal Psychology, playing sports and getting more exercise are linked to decreased sadness and improved self-perception. Teenage girls will benefit from this. Teenage girls are thought to be more susceptible to depression than teens of the same gender (Yeung, 2017). Yet another Trumbo's Institute study reinforces the advantages of exercise for mental health. In 7,000 adolescents between the ages of 11 and 16, the research team has discovered a connection between physical activity and mental health. The study's findings revealed that teens who exercised frequently exhibited positive self-images had strong social skills and tended to emanate those qualities.

Accordingly, the study team from the Universities of Strathclyde and Dundee discovered that physical activity aids scientific performance. A correlation between exercise and achievement on English, math, and science exams was discovered in the study, which comprised almost 5,000 kids. It was discovered that academic performance improved for every additional 17 minutes of activity for boys and 12 minutes for girls (Budd et al., 2017). Teenagers should be physically active for at least 60 minutes each day. It is unnecessary to complete this all at once, and it could include various physical activities. Maintaining activity is crucial. Children and teenagers have different exercise options, including participating in sports at school, walking, swimming, running, cycling, and doing it at home with the family.

CONCLUSION

The habit of exercising is very important for students. It can not only reduce anxiety but also help reduce stress hormones with a healthier life, especially when facing exams. By exercising, students will not only be healthier but will excel in their studies compared to students who do not exercise.

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