

# Research on the Relationship between the Psychological State and Sports Habits of College Students

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## Abstract

**Objective:** The current study examines the relationship between psychological state and sports habits of college students.

**Methods:** To understand the relationship between psychological state and sports habits of college students, this study uses a questionnaire as the main instrument of data collection along with the mental scale sc-l 90 surveys with a view to assess the statistics of the relationship between sports of different frequencies and the mental health of Chinese college students. The principle of random sampling was used to conduct a survey in the form of a questionnaire' a total of 9,876 questionnaires were distributed, and 9,185 questionnaires were returned. After screening of the responses received a final total of 8499 valid questionnaires were used for data analysis (5,324 for boys and 3,175 for girls).

**Results:** Sports of different frequencies have different effects in terms of improving the mental health of college students; The activity time is increased to more than 60 minutes each time, the number of activities is increased to 3 times a week, the percentage drops to 5%. The number of mixed projects and activities has been increased to 3 times a week, the percentage dropped to 2.3%.

**Conclusion:** The effect of improving the mental health of college students is positive. Engaging in sports in their daily life has a positive and important role in regulating the mental health of college students.

**Keywords:** college students; exercise habits; mental health, psychological state.

## Introduction

The World Health Organization defines health as "not only the absence of physical disabilities and diseases, but a complete mental, physical state and social adaptability" (Shin et al., 2017). The psychological problems of college students encompass interpersonal sensitivity, depression, anxiety, paranoia, etc. These psychological problems may cause college students to feel self-relief and low self-esteem, limit the scope of interpersonal communication, and most students often end up envying the advantages of other students. The current psychological condition of college students in our country is not ideal; according to a survey conducted by the State Education Commission on 126,000 college students across the country, 20.23% of people have obvious psychological disorders (Xiao et al., 2019).

Sports habits or participation in sport is an important means of improving the mental health (Appelqvist-Schmidlechner et al., 2018; Downs & Ashton, 2011; Easterlin et al., 2019). So far, many scholars have explored the relationship between sports habits and some mental health indicators (such as emotion, personality, personality, self-concept, cognitive process, etc.), as well as the effect of sports habits on the treatment of mental illness and other issues. Although a considerable amount of research has been carried out, there are a few studies focusing on improving the mental health of college students reporting different frequencies of physical

exercise habits; moreover, there is no uniform standard for researchers vis-a-vis the frequency and duration of activities. During the Third International Conference on Mental Health, mental health was defined as follows: mental health refers to the development of personal mental mood into the best state within the scope of physical, intelligent and emotional psychological contradiction with others. It is a measure of psychological health. However, many scholars at home and abroad have put forward different views on the meaning and definition of mental health. However, in essence, mental health should refer to the process of individuals living in a certain social environment, under the premise of normal brain function, with their whole mental outlook continuing to develop to the degree of spiritual civilization required by the society. Mental health is not a fixed state, but a constantly evolving dynamic process. Contemporary college students represent the future of the country, and the backbone of the future society. Students face a variety of problems, such as a new learning environment, interpersonal relationship, ideal and reality conflict problems, etc. It is important to develop and maintain a positive psychological state to solve and deal with the dynamic and complicated problems and challenges faced in student life. But also, to better contribute their own strength for socialist construction. However, at present, the number of only children among college students increases, and the psychological problems are more prominent. Research shows that regular and

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scientific physical exercise can prevent the occurrence of negative emotional problems, demonstrating how scientific physical exercise is an effective means to treat psychological diseases.

The number of college students participating in physical exercise is shown in Figure 1. 35.6% of college students' physical exercise frequency is concentrated 2-3 times a week, college students (46.3%) mostly concentrate on 30-60 minutes, and we found that 16.8% of students have never participated in or rarely participated in physical exercise. The statistics of the number of people with factor scores  $\geq 2$  and 3 on the scl-90 scale are shown in Table 1, the psychological problems of college students mainly include interpersonal sensitivity, depression, anxiety, paranoia, etc. These psychological problems may cause college students to feel self-relief, experience low self-esteem, affect their ability of communication, and lead them into developing envious feeling or attitudes towards others. The statistics of the number of people with psychological problems in sports at different times and times are shown in Table 2; in the same number of times a week, as the activity time increases, the psychological problems of college students gradually decrease, the effect of improving mental health gradually enhances, and when the activity time increased to 60 minutes, the psychological problems of college students significantly reduced, and the effect of improving mental health also significantly intensified. Yildirim et al. (2020) believe that the statistics of the number of people with psychological problems in different times and types of sports are shown in Table 3, in the same type of project, as the number of people exercising each week increases, the psychological problems of college students gradually decreased, the effect of improving mental health was seen to increase, and when the number of activities was increased to three times, the percentage of college students significantly reduced, and the effect of improving mental health was seen to significantly improve. This article attempts to find the ideal frequency, ideal time, and ideal items for different frequency of sports habits to improve the mental health of college students (Yildirim et al., 2020). In order to understand the relationship between college students' exercise habits and mental health, we use questionnaires, the mental scale sc-l 90 surveys and statistics pertaining to the relationship between sports of different frequencies and the mental health of Chinese college students. The experimental results show that: The effect of improving the mental health of college students is a positive and significant one. Persisting in sports in daily life has a positive and important role in regulating the mental health of college students. Several previous studies have examined the psychological state of students (Ge et al., 2020; Griban et al., 2019); however, literature missed to examine the relationship between psychological state and sports habits of college students. Therefore, the current study has overcome this literature gap by examining the sports habits

of college students along with their psychological state.

## Research methods

### Research objects

According to the principle of random sampling, we conducted a survey in the form of a questionnaire, 9,876 questionnaires were sent out, 9,185 questionnaires were returned, with a recovery rate of 93%, and there were 8,499 valid questionnaires (5324 for boys, 3175 girls), the effective rate is 92.5%. The questionnaire includes the psychological scale scl-90 as well as a basic status survey form of sports habits.

### Research methods

#### Questionnaire survey method

Mental health survey. The survey used the symptom self-rating scale (symptoncklist90, scl-90) compiled by the editorial department of the Chinese Mental Health Journal. This scale contains 9 factors and 90 items, including physical maladjustment, interpersonal relationships, depression, anxiety, hostility, terror, etc. The scl-90 scale is widely used abroad, and it is recognized by psychologists from various countries as a psychometric method with rich content and large capacity of accurately depicting conscious symptoms. The score of the table uses a 5-level scoring system, namely: No score is 1 point, very mild is 2 points, moderate is 3 points, heavier is 4 points, and severe is 5 points. In the test of college students, if the testee has a factor of 2, it shows that he (she) has a moderate adverse psychological reaction; If a factor is scored 3 points, it indicates that there is a serious adverse psychological reaction.

Survey on the basic status of sports habits (Kasemy et al., 2020). In the analysis of this research topic and related literature, and on the basis of research on the actual situation of college students' participation in sports habits, a questionnaire on the status quo of physical exercise habits was designed, after distinguishing, concentrating and screening all the indicators. After the second round of deliberation and revision by 13 sports professors, the experts agreed with the structure and content of the questionnaire (the approval rate was 100%), which shows that the questionnaire is valid; The questionnaire adopts the test-retest method for reliability test, and the reliability coefficients are:  $r_1=0.88$ ,  $p_1<0.01$ ,  $r_2=0.85$ ,  $P_2<0.01$ , which shows that the questionnaire has high reliability.

#### Logical analysis

The use of logical methods is not only reflected in the topic selection and structure design of the subject itself, it is also reflected in the basic judgments of the definition of concepts, contextual cohesion, argument proofs and related literary materials that appear in the topic. Through inductive deduction, comparative analysis, synthesis and

other logical methods, the study finally put forward conclusions and suggestions (Eryücel, 2019).

**Literature survey method**

Through computer search and catalogues of Chinese sports journals, as well as books and papers related to mental health and sports habits, the study is able to understand the current research status of this subject area, providing a detailed theoretical basis for the research of this subject.

**Mathematical Statistics**

All data are statistically processed using SPSS10.0 statistical software.

SmartPLS software structural equation model (SEM) selection

When conducting research in psychology, education and sociology, we often involve similar variables such as intelligence, motivation, status and job satisfaction, which are difficult to measure directly and accurately. These variables are called latent variables. In this case, only some explicit indicators can be used to measure these latent variables indirectly. For these latent variables, it is difficult to achieve a good deal with the traditional statistical methods, but the use of SEM model can realize the simultaneous and effective processing of latent variables and indicators. SEM model is mainly the application of the Partial Least Square method, path graph, causal model and other statistical field development models, and has been widely used in sociology, psychology and other fields, the application of customer satisfaction index (CSI) analysis model is more mature. SEM model offers many advantages: processing multiple dependent variables at the same time as well as the fact measurement error is allowed in dependent variable and independent variable. SEM model is able to measure and estimate the factor relation and structure simultaneously. Moreover, the elastic range of the measurement model increases allowing for degree of fitting between different models to be estimated.

**Measurement equation model**

The measurement equation mainly describes the relationship between latent variables and indicators. Take the enterprise as an example, the latent variable enterprise image and reference

The relationship between the market positions of standard enterprises can be described by measurement equations. The relationship between the two is expressed by the following measurement equation:

$$X = A_X \xi + \delta, Y = A_Y \eta + \varepsilon \tag{1}$$

Where, the vector composed of exogenons is represented by X; The vector composed of endogenous (En-doGenous)

indexes is expressed by Y; The vector composed of exogenous latent variables is represented by  $\xi$ . The vector composed of endogenous latent variables is represented by  $\eta$ . Exogenous index and exogenous

The relationship between variables is represented by  $A_X$ , which mainly represents the factor load matrix of exogenous indicators on exogenous latent variables. The relationship between endogenous indicators and endogenous variables is represented by  $A_Y$ , which is mainly expressed by factor load matrix of endogenous indicators on endogenous latent variables. The error term of X is represented by  $\delta$ ; The error term of Y is represented by  $\varepsilon$ .

**Structural equation model**

The causal relationship between endogenous variables and exogenous indicators assumed in the system is expressed by the structural equation model, which is usually expressed as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \tag{2}$$

Where, the relationship between endogenous latent variables is represented by B; The endogenous latent variables were influenced by exogenous latent variables and were represented by  $\Gamma$ . Structure. The residual term of the equation is represented by  $\zeta$ , reflecting the parts that cannot be explained in the equation.

**Results and discussion**

**The status quo of college students' participation in sports**

From Figure 1, we can see that, 35.6% of college students concentrate on 2-3 times of physical exercise per week, and nearly half of college students (46.3%) have exercise duration mostly in 30-60 minutes; at the same time, we found that 16.8% of students never participated or rarely participated in physical exercises (30.8% for  $\leq 2$  times).

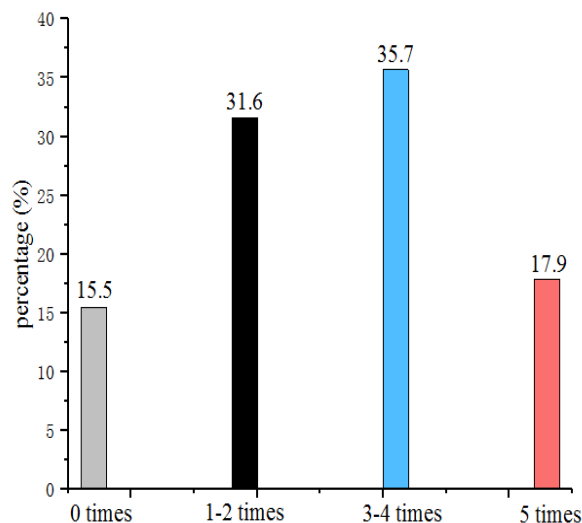


Figure. 1 Number of college students participating in sports

### Mental health of college students

#### Mental Health Test

In reference to relevant standards, as long as one of the nine factors of scl-90 has a score greater than or equal to 2 points, it is considered that the subject may have more than mild psychological problems; If there is a factor with a score greater than or equal to 3 points, it is considered that the subjects may have more than moderate psychological problems (Ohmori et

al., 2017). From the test results in Table 1, it can be seen that a certain proportion of college students have  $\geq 2$  points and  $\geq 3$  points for each factor score. The statistical results show that, there were 1,557 people who scored  $\geq 2$  points on at least one factor, accounting for 18.32% of the total. There are 536 college students who have scored  $\geq 3$  points on at least one factor, accounting for 63% of the total number. It can be seen that, a certain percentage of colleges are living with mild and moderate psychological problems.

The main manifestation of psychological problems

Table 1

Statistics of the number of people with factor scores  $\geq 2$  and 3 on the scl-90 scale

Index	$\geq 2$ points (Number of people)	%	$\geq 3$ 分 (Number of people)	%
Somatization	534	6.2	195	2.2
Obsessive-compulsive symptoms	781	9.1	131	1.54
Interpersonal sensitivity	1451	17.1	356	4.1
Melancholy	1401	16.4	458	5.3
anxiety	1121	13.1	348	4.0
Hostility	356	4.1	77	0.91
Fear	178	2.0	53	0.62
Paranoid	1231	14.4	31	0.36
Psychotic	433	5.0	12	0.14
Total people	1556	18.31	535	6.2

As can be seen from Table 1, the psychological problems of college students are mainly manifested in several aspects such as interpersonal sensitivity, depression, anxiety, and paranoia. These psychological problems can cause college students to feel uncomfortable, develop low self-esteem, narrow their communication range, feel incompatible with other classmates, and experience jealousy towards classmates' merits, etc. (Filatova et al., 2018). Mood is characterized by depression and depression is manifested in diminished interest in life, lack of motivation, and loss of vitality. His or her behavior in sports is characterized by: Unwillingness to participate in collective competition activities, standing aside and watching; Lack of interest in, and slow response to, game activities; Lack of active

participation in exercises for individual activities etc. As a result, the physique declines, and they are not active in physical education activities, participating in fewer extracurricular activities than before (Yan et al., 2019). They also develop a negative attitude towards learning in physical education, lag behind in practice, and rarely take part in extracurricular exercises after class, with sports time getting shorter and less frequent over time.

#### The relationship between sports of different frequencies and the mental health of college students

Survey results show the relationship between sports of different frequencies and the mental health of college students.

Table 2

Statistics of the number of people with psychological problems in sports at different times and times (N=8499)

Number of activities per week	Activity time											
	<15			15-30			30-60			>60		
n	Number of people	%	n	Number of people	%	n	Number of people	%	n	Number of people	%	
1	489	223	45.4	602	222	36.0 $\Delta\Delta$	575	575	30.0 $\Delta$	380	61	15.0 $\Delta\Delta$
2	646	275	42.6	831	280	35.0 $\Delta\Delta$	741	200	26.00 $\Delta\Delta$	410	54	12.0
3	669	201	30.0**	264	50	22.5	222	44	20.1*	308	15	4.0
4	210	56	26.1	68	13	19.0	158	56	16.0	204	6	3.1 $\Delta\Delta$
5	349	80	22.0	80	12	15.0	66	5	8.0	185	2	1.5 $\Delta\Delta$
6	40	8	17.0	89	8	9.0	100	4	4.0	240	1	0.7 $\Delta$
7	85	11	13.0	56	3	6.0	140	2	2.0	221	1	0.44

Note: Compare with the last time in the same time each time, \* Is  $P < 0.05$ , \*\* is  $P < 0.01$ . In the same number of times per

week compared with the previous time period,  $\Delta$  is  $P < 0.05$ , and  $\Delta\Delta$  is  $P < 0.01$ .

**Table 3**

*Statistics of the number of people with psychological problems in different times and different types of sports (N=8499)*

Number of activities per week	Recurring project			Non-cyclical project			Mixed project		
	n	Number of people	%	n	Number of people	%	n	Number of people	%
1	16	14	87.0	13	4	32.2 $\Delta\Delta$	19	1	10.0 $\Delta$
2	1131	692	61.1*	313	99	29.0 $\Delta\Delta$	153	12	8.3 $\Delta\Delta$
3	1076	426	39.5**	873	196	22.4	703	15	2.2
4	865	245	28.3**	722	131	18.1	496	3	0.7 $\Delta\Delta$
5	458	110	23.3*	693	98	14.2	458	1	0.21 $\Delta\Delta$
6	75	12	16.3	96	10	11.0	215	0	0.0
7	31	3	11.2	53	3	7.3	70	0	0.0

Note: Compared with the last time in the same type of project, \* Is  $P < 0.05$ , \*\* is  $P < 0.01$ . Compared with the previous item in the same number of times,  $\Delta$  is  $P < 0.05$ , and  $\Delta\Delta$  is  $P < 0.01$ .

As can be seen from Table 2, in the same number of sports every week, as the activity time increases, the percentage of college students with psychological problems is gradually decreasing, showing that the effect of improving the mental health of college students is gradually increasing, with the activity time increased to more than 60min, and the percentage of college students with psychological problems dropping significantly, the overall effect of improving the mental health of college students has been significantly improved. After statistical testing, there is no significant difference except 7 times a week, except for 6 times a week, there are significant differences, and the rest are very significant differences. Similarly, in sports every time at the same time, as the number of weekly activities increases, the percentage of college students with psychological problems gradually decreases, the effect of improving the mental health of college students is seen as gradually increasing, and the number of activities increases to three times a week, while the percentage of college students with psychological problems has dropped significantly, and the effect of improving the mental health of college students is seen to have significantly improved. After a statistical test, except for the significant difference in (30~60) min time period, the rest are found to be very significant differences. This phenomenon has the same performance in Table 3. In Table 3, for the same type of project, as the number of weekly sports increases, the percentage of college students with psychological problems has gradually decreased, and the effect of improving the mental health of college students has gradually increased, the number of activities increased to three, the percentage of college students with psychological problems has been significantly reduced, and the effect of improving the mental health of college students has been significantly

improved. It is worth noting that the activity time in Table 2 is increased to more than 60 minutes each time, the number of activities increased to 3 times a week, and the percentage dropped to 5%. Table 3, the number of mixed projects and activities increased to 3 times a week, and the percentage dropped to 2.3%. These two situations indicate that, the effect of improving the mental health of college students is positive. This can also indicate that if you participate in a mixed project, do more than three times a week, each time more than 60 minutes, the risk or chance of you developing psychological problems is insignificant, so insignificant that it becomes impossible to have psychological problems, as the level of mental health has reached a particularly high or stable level. To sum up, the longer the physical exercise, the higher the frequency, and the more intense the project, the more obvious the effect in terms of improving the mental health of college students, take exercise for more than 1 hour each time, exercise more than 3 times a week, sports that often take part in mixed events have the best effect on improving the mental health of college students.

**The Cause of the psychological problems**

From within the family to the society at large, the scope of interpersonal communication is expanded and complicated. The fast-paced lifestyle and ever-changing ways of learning make it difficult for college students to adapt quickly. Due to the influence of exam-oriented education in high school, the high ideological tension formed by the heavy study burden before the college entrance examination has not yet been alleviated and eliminated. In addition, psychological stress from the family and the environment has not been fully recovered. College students themselves have bad lifestyle habits, experience emotional instability, have weak willpower and

weak adaptability to the surrounding environment, and these are the reasons driving the psychological problems or challenges of college students.

### **Analysis of the relationship between sports of different frequencies and the mental health of college students**

As the activity time and frequency increase, the the level of mental health maintenance becomes higher, and the less likely it is to develop psychological problems. Every time you are active for more than 1 hour, it is impossible to have symptoms of depression, and the possibility of other psychological problems becomes very small. Activities undertaken more than 3 times a week not only lead to a higher level of mental health, but also improve physical function, and the chance of psychological problems is also lower, and the effect of improving the mental health of college students is demonstrably positive. Through a group project of mixed physical exercises and through fierce confrontation and hard work, students' physical stamina and emotions can be brought into full play, which, to a certain extent, it is more effective than psychological education and counseling aimed at opening the window of the minds of college students. From the perspective of psychology, in mixed physical exercises, every shot, every attack, every defense, every run, every leaping, is closely related to individual and collective success and failure, at the same time, the mind is also under greater or lesser pressure, accompanied by emotional experience and tempering of will. Especially in the group project of mixed physical exercises, and the process of fierce competition, it is like a rehearsal of the human society, as participants are in solidarity and harmony with their peers, in unleashing personal potential and creative thinking activities, making progress in learning through individual efforts, experiencing the spirit and fun of sports, and gaining a deep sense of psychological success. The higher the level of mental health. Psychological feelings and comparison before and after participating in physical exercise. According to the data from the survey, it was found that most students can feel more relaxed after than before exercise. From the longitudinal comparison of the grade, the proportion of the lower grade is gradually higher, and in the first and second year, in the same grade, the proportion of boys is generally higher than girls. The contrast of the sports inferiority complex. From the data, we can see that college students' views on self-sports quality show differences in different grades, and the differences are more and more obvious with the increase in grades. You can see that the lower graders' confidence in sports is higher than the senior graders. From the

research results, it is seen that the seniors are more conservative and less optimistic. From the gender perspective, boys' physical inferiority is significantly lower than girls, and girls show a more conservative attitude towards their physical exercise quality. It can be seen that the difference between grade and gender, the sense of sports inferiority is also significantly different, and the "polarization" of the psychological state is becoming more and more obvious.

### **The relationship mechanism between the different frequencies of physical activity and the mental health of college students**

With an improvement in physical activity level, the secretion of serotonin and norepinephrine gradually increased, the release of endorphins gradually increased, inducing positive thinking and emotion, while at the same time, the function of the cardiovascular system gradually enhanced. High concentrations of serotonin and norepinephrine maintain a positive and happy mood; high concentrations of endorphine also promote pleasure and reduce pain; positive thinking and emotional enhancement can resist the emergence of negative mood, and enhanced cardiovascular function is conducive to maintaining a healthy mental state. The above facts show that the higher the level of physical activity, the better your mental health.

The results also showed that the detection rate of psychological problems and more than 2 points, were significantly or significant by u. Among the various factors in the SCL-90 scale, the symptoms were significantly lower than those in their normal counterparts, the symptoms were significantly higher than those in forced symptoms, anxiety, hostility, terror, paranoia and positive items. It can be seen that adhering to physical exercise in daily life has a positive and important role in regulating the mental health of college students. It is possible that physical exercise promotes physical health while transferring the individual's unpleasant cognition, mood and behavior, enhancing the "change of consciousness" and adaptability to stress, thus improving the individual's sense of self-efficacy. Our results are consistent with previous experimental studies, demonstrating that exercise reduces compulsive symptoms, improves relationships, reduces depression, relieves anxiety, and thus effectively improves mental health status. Psychological research shows that *interest* is one of the components of motivation, can actively make people's personality, it can stimulate people's positive emotions, and help an individual maintain a good state of mind. Mixed physical exercises of the collective

project provide students with a variety of opportunities to exercise and communicate, and through the fierce fight, learn to fight, so that the students play incisively and vividly (both, physically and emotionally). These exercises also make them more open-minded and help them develop cheerful mood emotion, which to some extent work more effectively than psychological education and consultation to open the window of the soul of college students. From the perspective of psychology, in the mixed body exercise, every shot, shooting, every attack, defense, every run, stride, is closely related to individual and collective success and failure. Collective project, especially the combination of physical exercises of the fierce competition process, is like a comfortable live preview of the adult society, participants engage in solidarity with others and get along, in personal potential and creative thinking activities, through own efforts learning progress, experience the spirit of sports and fun, to gain a deep psychological feeling of success. The higher the level of mental health. College students insist on physical exercise in daily life, engaged in their favorite sports, will make it intoxicated, feel free, excited, and will make practitioners more consciously into sports. This positive emotional experience has direct mental health benefits and has a good effect in relieving physical and mental pressure. In the face of weak mental health adjustment in recent years, how to cultivate college students to develop good daily physical exercise habits should become one of the indispensable important means for universities to carry out psychological counseling and adjustment.

## **Conclusion**

The above study shows that the mental health of college students who often or frequently participate in physical exercise is significantly better than those with low participation, which serves to show that participation in sports promotes mental health. Physical exercise improves willpower, requires much sweat and effort to complete established exercise tasks, and in the process, requires an individual student to overcome physical fatigue and psychological inertia, so that long-term exercise goals are possible and achievable. Moreover, physical exercise can relieve tension and create a relatively stable mood. Studies show that physical exercise can make the secretion of many chemicals, such as endorphins, which can make us happy and optimistic. When college students adhere to physical exercise regimens in daily life, and are able to engage in their favorite sports, it makes them intoxicated, feel free, excited, will make practitioners more consciously into sports. This positive emotional experience has direct

mental health benefits, and has a positive effect in terms of relieving physical and mental pressure. Physical activity of different frequencies which aims to improve the mental health of college students is found to have different results. The longer the sports time, the more the number, the more intensely the project improves the mental health status of college students, and therefore the more obvious the effect. Mental health of college students improves when they exercise more than 1 hour, exercise more than 3 times a week, and participate in mixed sports activities. In the face of the lack of adjustment of mental health in recent years, it is particularly important to teach college students to form a good habit of daily physical exercise. Identifying ways and opportunities should steer and guide the future research direction on the subject of college students' psychological counseling and adjustment.

## **Implications of the Study**

This study addressed the relationship between psychological state and sports habits of college students. Psychological state is important to study among the students along with the sports habit because it has significant effect on students' academic performance. However, this relationship is rarely addressed in the literature. Therefore, by examining this relationship, the current study contributes to the existing body of literature on the subject. While examining this relationship, the current study also considered the mental state of students. The sports of different frequencies and the mental health of college students was examined which is not a topic or subject area addressed by previous studies. Therefore, this study provided a new direction of research to study the sports abilities and mental health indicators of college students. Additionally, the current study contributes to the literature by examining the frequencies of physical activity and the mental health of college students.

## **Limitations and Future Directions**

Despite its major contribution to the literature, the current study has a number of limitations which could help guide future directions in research on the subject. For instance, this study addressed the relationship between psychological state and sports habits of college students. The psychological state contains several dimensions which are not considered in this study. These dimensions include bodily awareness, belief, motivation, intention, pleasure, emotion and imagination as well as memory. Future studies should choose various important dimensions. Furthermore, this study only addressed college students, therefore, future studies should consider students from

universities. Additionally, future studies should use Least Square (PLS) and Mplus. advance research tools to analyze the data such as Partial

## References

- Appelqvist-Schmidlechner, K., Vaara, J., Häkkinen, A., Vasankari, T., Mäkinen, J., Mäntysaari, M., & Kyröläinen, H. (2018). Relationships between youth sports participation and mental health in young adulthood among Finnish males. *American journal of health promotion*, 32(7), 1502-1509. <https://doi.org/10.1177%2F0890117117746336>
- Downs, A., & Ashton, J. (2011). Vigorous Physical Activity, Sports Participation, and Athletic Identity: Implications for Mental and Physical Health in College Students. *Journal of Sport Behavior*, 34(3), 228-249. <https://digitalcommons.cwu.edu/studentarticles/85/>
- Easterlin, M. C., Chung, P. J., Leng, M., & Dudovitz, R. (2019). Association of team sports participation with long-term mental health outcomes among individuals exposed to adverse childhood experiences. *JAMA pediatrics*, 173(7), 681-688. <https://dx.doi.org/10.1001%2Fjamapediatrics.2019.1212>
- Eryücel, M. E. (2019). Examination of wrestling athletes' psychological resilience in terms of wrestling education. *Univ J Educ Res*, 7(4), 1054-1060. <https://doi.org/10.13189/ujer.2019.070417>
- Filatova, O. V., Polovinkin, S. S., Chervova, I. V., Baklanova, E. I., & Plyasova, I. O. (2018). Estimation of psychological features, body composition and status of actual nutrition of women with eating behavior disorders. *Obesity and metabolism*, 15(3), 28-32. <https://doi.org/10.14341/omet9314>
- Ge, F., Di Zhang, L. W., & Mu, H. (2020). Predicting psychological state among Chinese undergraduate students in the COVID-19 epidemic: a longitudinal study using a machine learning. *Neuropsychiatric disease and treatment*, 16, 2111. <https://dx.doi.org/10.2147%2FNDT.S262004>
- Griban, G., Kuznietsova, O., Dzeneliuk, D., Malynskiy, I., Dikhtiarenko, Z., Yeromenko, E., . . . Prontenko, K. (2019). Dynamics of psycho-emotional state and individual psychological characteristics of students in the process of physical education classes. *Dilemas Contemporáneos: Educación, Política y Valores*, 7, 1-23. <http://openarchive.nure.ua/handle/document/10401>
- Kasemy, Z., Sakr, A., EL Shebiny, E., Elbasyouny, H., & El Dalatony, M. (2020). Psychological Status and Irritable Bowel Syndrome among Healthcare Workers. *Egyptian Journal of Occupational Medicine*, 44(2), 605-620. <https://dx.doi.org/10.21608/ejom.2020.109590>
- Ohmori, Y., Ito, H., Morita, A., Deura, K., & Miyachi, M. (2017). Associations between depression and unhealthy behaviours related to metabolic syndrome: a cross sectional study. *Asia pacific journal of clinical nutrition*, 26(1), 130-140. <https://doi.org/10.6133/apjcn.112015.01>
- Shin, H., Yu, N. S., Jung, L., Heo, Y., & Lee, J. (2017). Study on the relationship between family dining and personality in adolescence. *Journal of Korean Home Economics Education Association*, 29(4), 1-14. <https://doi.org/10.19031/jkheea.2017.12.29.4.1>
- Xiao, B., Bi, Y., & Zheng, T. (2019). investigation on the triggers and the effect of healthy education on recurrence of vestibular migraine. *Lin Chuang er bi yan hou tou jing wai ke za zhi= Journal of Clinical Otorhinolaryngology, Head, and Neck Surgery*, 33(7), 577-580. <https://doi.org/10.13201/j.issn.1001-1781.2019.07.001>
- Yan, Y., Tang, Y., Xu, G., Lian, J., & Fu, D. (2019). Study on the Relationship between Mechanical Properties and Mesostucture of Microbial Cemented Sand Bodies. *Advances in Materials Science and Engineering*, 2019. <https://doi.org/10.1155/2019/3684645>
- Yildirim, T. T., Atas, O., Asafov, A., Yildirim, K., & Balibey, H. (2020). Psychological status of healthcare workers during the Covid-19 pandemic. *Age*, 20(30), 31-40. <https://doi.org/10.29271/jcpsp.2020.Supp2.S26>