

INFLUENCE OF PHYSICAL EDUCATION ON THE MENTAL HEALTH OF COLLEGE STUDENTS

INFLUÊNCIA DA EDUCAÇÃO FÍSICA NA SAÚDE MENTAL DE ESTUDANTES UNIVERSITÁRIOS

LA INFLUENCIA DE LA EDUCACIÓN FÍSICA EN LA SALUD MENTAL DE LOS ESTUDIANTES UNIVERSITARIOS

Xiufang Du¹ (Physical Education Professional)
Zhaoxia Liu¹ (Physical Education Professional)

1. College of Physical Education,
Taiyuan University of Technology,
Jin Zhong, Shanxi, China.

Correspondence:

Xiufang Du
College of Physical Education,
Taiyuan University of Technology,
Jin Zhong, Shanxi, China. 030600.
duxuifang0108@yeah.net

ABSTRACT

Under the influence of the special education system in China, after entering the free and open college environment from a tightly-controlled high school, many students suffer psychologically from a “weaning period”. During the students’ initial contacts with society, they can simultaneously experience confusion and psychological conflicts in interpersonal communication, perception, emotions, and free will. If these problems persist, they can cause psychological problems. Through field investigation, this paper found that physical exercise can not only improve the intelligence level of students, but also have a positive impact on their emotional and psychological states and their interpersonal skills. **Evidence Level I; Systematic review.**

Keywords: Physical education; Students; Mental health.

RESUMO

*Sob a influência do sistema de educação especial na China, ao entrarem no ambiente universitário gratuito e aberto ao término do ensino médio, de rígido controle, muitos alunos sofrem psicologicamente de um “período de desmame”. Ao mesmo tempo, durante o contato inicial dos alunos com a sociedade, os alunos mostram confusão e conflito psicológico na comunicação interpessoal, na percepção, nas emoções e no livre arbítrio. Se esses problemas persistirem, eles podem causar problemas psicológicos. Por meio de investigação de campo, este artigo constatou que o exercício físico pode não apenas melhorar o nível de inteligência dos alunos, mas também ter um impacto positivo sobre seu estado emocional, psicológico e habilidades interpessoais. **Nível de Evidência I; Revisão Sistemática***

Descritores: Educação Física; Estudantes; Saúde mental.

RESUMEN

*Bajo la influencia del sistema de educación especial en China, al ingresar a un entorno universitario abierto y gratuito al final de la enseñanza secundaria estrictamente controlada, muchos estudiantes sufren psicológicamente un “período de destete”. Al mismo tiempo, durante el contacto inicial de los estudiantes con la sociedad, éstos muestran confusión y conflicto psicológico en la comunicación interpersonal, la percepción, las emociones y el libre albedrío. Si estos problemas persisten, pueden causar problemas psicológicos. A través de una investigación de campo, este artículo reveló que el ejercicio físico no solo puede mejorar el nivel de inteligencia de los estudiantes, sino que también tiene un impacto positivo en su estado emocional, psicológico y en sus habilidades interpersonales. **Nivel de evidencia I; Revisión Sistemática.***

Descriptor: Educación Física; Estudantes; Salud mental.



DOI: http://dx.doi.org/10.1590/1517-8692202228042021_0062

Article received on 04/05/2021 accepted on 08/02/2021

INTRODUCTION

Practice has proved that physical exercise can exercise people’s will and character, improve mental outlook, and positively influence prevention and treatment of some psychological diseases. In colleges, sports activities not only help students’ psychological confusion and debug psychological barriers but also become an outlet for emotional catharsis and minimize influence of bad emotions. This benefit of sports activities is lesser known, rather sports activities are expected to enhance students’ physical quality, a 2-hour physical education (PE) class is arranged every week, and school sports meeting is held every year.¹ This study provides direction for reform of PE curriculum in colleges and indicates significance of integrating mental health education into PE.

MENTAL HEALTH STATUS OF COLLEGE STUDENTS

According to newly released “Chinese college students’ health survey report” in 2020, students have concern for their health. Average score of self-assessment is 7.4, and most students’ self-assessment score is 7–8, and 50% of students’ score is more than 8 (Figure 1). Among them, self-assessment score of mental health was 7.6 and 56% of students scored more than 8 (Figure 2). This shows students have more confidence in their health.

From perspective of grade, psychological pressure on students shows a U-shaped change, and pressure on freshmen and students near graduation is biggest. Freshmen need to face changes of learning style and new learning and living environment. Frequent topic research, presentation, and experimental learning stress them academically;² and

graduates are stressed over career planning. Therefore they face pressure in both academic and employment aspects.

Considering types of psychological problems, psychological pressure of students mainly comes from their studies, interpersonal communication, personality, and employment (Figure 3). Academic pressure is the most important source of psychological pressure for >60% of students.³

In the third part of survey, living conditions of students were statistically analyzed and evaluated on sleep, exercise, and diet. Survey shows students' diet self-assessment score is highest, averaging 7.1, followed by exercise, with an average of 6.8, and lowest sleep score, averaging 6.6. In sports, 22% of students scored <5, and only 36% of students scored >8. It can be seen that the overall health of students is not high.

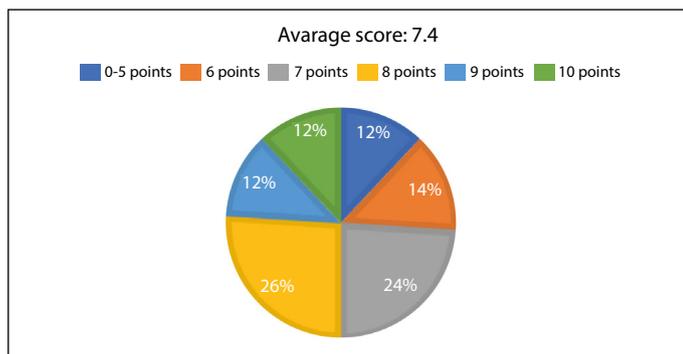


Figure 1. Statistical results of 2020 students' health self-rating survey.

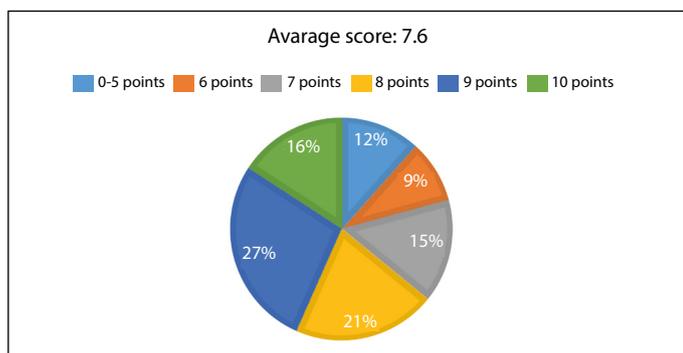


Figure 2. Statistical results of 2020 students' mental health self-rating survey.

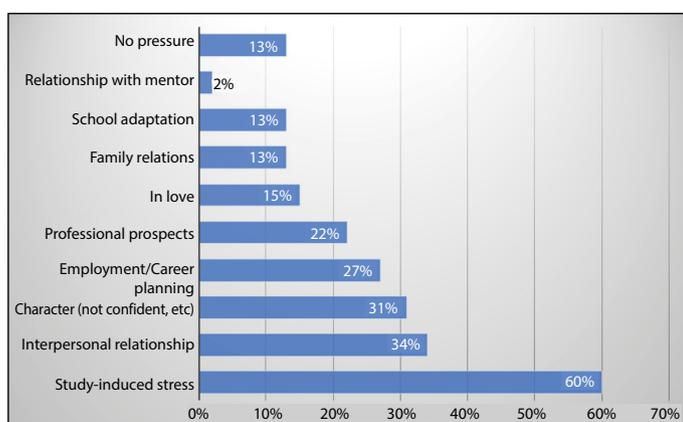


Figure 3. Statistical chart of survey results of types of psychological stress of students in 2020.

RESEARCH ON INFLUENCE OF PE ON STUDENTS' MENTAL HEALTH

Research method

This survey adopts methods of field interview, investigation, and mathematical statistics. Specifically, spot interview method assesses the development of PE in colleges, and field investigation method investigates

mental health status of students of Shandong Jianzhu University at the beginning of second year and end of semester, and uses professional statistical software to make statistics on relevant data.

Research object

Initially, psychological status of new students is easily affected by external environment, and they show certain pressure and bad mood.³ To avoid impact of environmental factors on results of study, the author selected students of Shandong Jianzhu University in 2018 as research objects. After a year of adaptation, they are familiar with surrounding environment and their classmates. During the survey period, these students are required to receive physical exercise for one year (two semesters) in physical education. After PE curriculum reform and strengthening rationality of students' sports, the change of mental health status can better reflect the influence of sports.⁴

Research steps

First, determine research object and select research scheme. Visit several colleges nearby and use method of field interview to understand the current implementation of PE curriculum.

Second, mental health status and health problems of subjects were surveyed by using "college students' psychological scale."

Third, scientificity of PE curriculum reform and strengthening students' sports: On one hand, Shandong Jianzhu University needs to reform original PE curriculum according to the situation of students in different grades. To attract students to extend exercise time, it also needs to use a second classroom to increase the frequency of students' sports, attract students through psychological interest sports meetings, and sports associations.⁵

Fourth, through comparison of before and after effect. In school year after PE reform in colleges, mental health status of students of Shandong Jianzhu University in 2018 was investigated again, and the effect of sports on students' mental health was analyzed by comparing before and after.

Result analysis

Results of first survey on Students' mental health

In October 2019, in the second year of 2018 students of Shandong Jianzhu University, 500 students were randomly selected from different majors and colleges, and their mental health status was surveyed with psychological scale. Results are shown in Table 1.

It was seen at the beginning of school, quite a number of students of Shandong Jianzhu University in 2018 have different degrees of psychological problems. Interpersonal communication, anxiety, and depression are the most common psychological disorders. Specifically, 37% of students have psychological problems in interpersonal communication.⁶ Good interpersonal skills not only alleviate loneliness of students but also help them to maintain their personality. Although most of students are eager for friendship, students are often helpless in complex interpersonal relationships and interpersonal conflicts, unable to find effective solutions.

Table 1. Statistical Results of First Mental Health Survey of 2018 Students of Shandong Jianzhu University.

Mental disorder factor	Student number	Student ratio (%)
Interpersonal relationship	185	37
Depression	130	26
Anxiety	155	31
Fear	75	15
Paranoid	155	21
Neurasthenia	60	12
Force	80	16

Problems of depression and anxiety are more, in addition to interpersonal communication, pressure of academics, and examinations. Because of improper formulation of learning objectives, lack of learning motivation, and lack of interest in major, students are prone to lose their confidence in learning when they are separated from strict control of teachers.⁷ They are more likely to have a sense of emptiness in the process of self-abandonment while approaching examination; students feel anxious and depressed as examination approach. Additionally, because of lack of experience and immature personality, some students have psychological problems in love. Some students are depressed because they are troubled by unrequited love. Besides, some students may be unable to concentrate on their studies because of love. This will not only increase their anxiety but also bad psychology such as paranoia and compulsion.

PE curriculum reform based on students' mental health

To help students maintain a good psychological state and overcome psychological predicaments, we should modify PE curriculum in colleges based on students' current mental health status.⁸ On one hand, we should integrate psychological knowledge into PE curriculum, make full use of sports resources to meet needs of students in physical exercise, emotional catharsis, weight loss, and body building, and show educational function of sports culture. With compulsory PE courses, electives such as body building, yoga, boxing, taekwondo, outdoor survival, hip-hop, and others can be set up. This helps students to get new sports experience in schools. On other hand, schools also need to carry out various activities. In addition to annual school sports meeting, they can also hold sports meetings in colleges. Besides, school should purchase more sports equipment and improve sports facilities based on the survey of students encouraging student participation in sports.⁹ Finally, schools can also organize sports associations, such as mountaineering clubs, amateur football teams, hip-hop dance groups, and sports dance teams. These associations help students to open up and make more friends in cooperation.

Results of second survey of students' mental health

In July 2020, at the end of second year of 2018, the same 500 students in the Shandong Jianzhu University underwent second mental health survey on the same psychological scale. Table 2 below shows difference between second survey and first survey (1: indicators of first mental health survey; 2: indicators of second mental health survey).

According to statistics in Table 2, after one academic year of scientific physical exercise, psychological obstacle factors of students in Shandong Jianzhu University have noticeably changed. According to results of *T*-test, improvement of interpersonal relationship, anxiety, and depression was most obvious ($t = 3.75, P < 0.03$; $t = 2.56, P < 0.03$; $t = 2.25, P < 0.03$).

Table 2. Statistics on difference between two mental health surveys of 2018 students of Shandong Jianzhu University.

Mental disorder factor	N	Mean	Standard deviation	Standard error mean	T
Interpersonal relationship	1	500	1.5184	0.5763	3.75
	2	500	1.4827	0.5236	
Depression	1	500	1.5918	0.6024	2.25
	2	500	0.5262	0.5531	
Anxiety	1	500	1.4087	0.5359	2.56
	2	500	1.3171	0.5036	
Fear	1	500	1.2595	0.5157	1.98
	2	500	1.0239	0.5059	
Paranoid	1	500	1.4939	0.5058	1.83
	2	500	1.2537	0.4817	
Neurasthenia	1	500	1.4577	0.5087	0.26
	2	500	1.3866	0.5073	
Force	1	500	1.8026	0.6274	0.78
	2	500	1.5184	0.5763	

INFLUENCE OF PE ON STUDENTS' MENTAL HEALTH

Impact on emotions

Most sports enable students to relax their body and mind, nerves that were tense for a long time in life and study.¹⁰ They also experience a sense of enrichment and eliminate empty and lonely psychology. For students with negative emotions such as loss, depression, and sadness, sports are an effective way to vent long-term deposition of these emotions and resolve them in time.¹¹ Additionally, students think more active and develop optimistic attitude toward study and life. They focus on studies, with positive impact on will and character, and help them to maintain good mood for a long time. In sports activities, nerve center of students will be activated, so they get a pleasant experience and achieve spiritual stimulation and positive emotions.

Impact on interpersonal communication

In earlier-mentioned field survey, >35% of students have interpersonal problems. Especially with maturity of information technology, social activities, learning activities, and so on have a new carrier network. In fact, with change of life style, students' interpersonal communication opportunities lessen.¹² Compared with real social contact, there are many uncertain factors in network social interaction, causing misunderstanding and interpersonal disputes, bringing new problems to students. Sports can effectively alleviate this problem. It provides students with opportunities for interpersonal communication. Students easily form friendship in cooperative practice and competition.¹³ In process of communication, they also have a sense of trust and tacit understanding between each other. This eliminates students' emptiness and depression in network social interaction and helps them to master social skills in real social situations.

Prevention and correction of abnormal psychology

If abnormal psychology is uncorrected for a long time, it causes mental health problems. Sports have function of prevention and correction, it can help students to understand their emotions and guide them to establish a correct psychological concept.¹⁴ Through scientific and reasonable physical exercise, students can get relaxed and pleasant experience. In process of long-term persistence, students can form character of facing difficulties and going forward bravely. This character can be transferred from sports to life and study, and then realize prevention of abnormal psychology. In addition, regular exercise can also alleviate fatigue caused by mental work and optimize nervous system at a higher level.¹⁵ For students who have already had abnormal psychology, sports help them to activate their positive emotions, thereby replacing negative emotions with positive emotions. So, when they have abnormal psychology, they will not ask for help. Physical exercise is an effective way of self-psychological correction.

THE WAY TO CARRY OUT SPORTS ACTIVITIES AND ENHANCE STUDENTS' MENTAL HEALTH

Stimulate students' motivation for physical exercise and enhance students' physical ability

Sports ability is the basis for college students to develop sports. One of the reasons for the relatively low self-rating of college students' sports is that their sports ability is relatively weak, they have fewer sports skills, and they cannot find their own suitable sports methods.¹⁶ In addition, some students have relatively weak physique and cannot reasonably control the amount of exercise without professional counseling. They are prone to have a strong sense of fatigue during exercise, and their motivation for physical exercise is relatively weak. Therefore, in college physical education classrooms, teachers should pay attention to the

training of college students' physical ability. In addition to helping them understand their physical fitness and athletic ability through tests, they can also teach them more sports knowledge, such as Stretching methods before exercise, emergency treatment methods for sports injuries, etc. At the same time, it is necessary to provide more motivation for students' physical exercise to stimulate their potential and interest.¹⁷

Strengthen construction of sports facilities

Degree of perfection and use of sports facilities are closely related to development of sports activities. To give full play to "heart building" effect of sports, colleges need to increase capital investment and improve sports facilities. It is necessary to carry out investigation among students to understand sports activities they are interested in and introduce corresponding facilities for students to use. After sports facilities are put into use, school also needs to arrange special personnel for inspection and maintenance, so as to eliminate potential safety hazards at first time.¹⁸ For venues students use frequently, such as yoga hall and badminton hall, college can also appropriately extend opening hours. In addition to opening on Saturdays and Sundays, it can be opened on holidays, morning, and evening, so students can flexibly arrange their sports time.

Infiltrating mental health education into PE curriculum

In usual PE, teachers should take initiative to infiltrate mental health education, which can further strengthen educational effect of college PE.

When learning new sports, students often have psychological manifestations such as impatience and want to give up, which requires teachers to give timely encouragement to students, help them to improve their learning methods, and make continuous progress.¹⁹ For sports requiring high physical fitness of students, such as long-distance running, aerobics, and Sanda, teachers should not only explain breathing and power-generating skills to students in advance but also need to cheer them up in their sports, so students can actively overcome short-term discomfort, and obtain a sense of achievement and enrichment with final victory.

CONCLUSIONS

Presently, the mental health of students is affected by psychological problems such as anxiety, depression, and interpersonal disorder, and most of them do not have awareness on solving psychological obstacles through sports. Through investigation and research, it is found that sports activities improve students' psychological problems, help prevent and correct abnormal psychology, and at the same time, help them to improve their interpersonal skills and alleviate their negative emotions. To give full play to functions of sports, schools need to enhance students' sports ability, strengthen construction of sports facilities, and actively infiltrate mental health education.

All authors declare no potential conflict of interest related to this article

AUTHORS' CONTRIBUTIONS: Each author made significant individual contributions to this manuscript. XD and JD: study design and implementation, results analysis, and writing of the manuscript.

REFERENCES

1. Wen X, Wen S. An experimental study on the integration of theme group psychological counseling into physical education teaching -- an intervention practice of "improving shyness" of group assistance into college physical education curriculum. *J Southwest Univ (NAT SCI ED)*. 2015;40(02):145-9.
2. Zhang L, Song X, Hu T, Pan J, Du Y, Cui L. Experimental study on the effects of single and mixed sports intervention programs on physical and mental health of primary and secondary school students. *J Nanjing Inst Phys Educ (SOCIAL SCIENCE EDITION)*. 2016;30(01):107-16.
3. Under the background of "national physical education reform" of "National Physical Education" by Zhang guopeng, Wang Huiming, and "National Physical Education" in the era of "National Physical Education" by Zhang guopeng (2015), and "health education for all" in China
4. Yan N, Chen H, Cheng L, Wang Y. Research and practice of three bit integrated teaching of physical education in Internet plus club system -- Taking Hangzhou Dianzi University as an example. *Zhejiang Sport Sci*. 2019;41(02):48-53.
5. Wen X, Wen S. An experimental study on the integration of theme group psychological counseling into physical education teaching -- an intervention practice of "improving shyness" of group assistance into college physical education curriculum. *J Southwest Univ (NAT SCI ED)*. 2015;40(02):145-9.
6. Zhang Y, Wu X, Tao S, Zhang S, Su P, Zhang M, et al. The interaction between physical exercise and sleep quality and mental health of college students. *Chin Sch Health*. 2015;36(07):1025-8.
7. Copeland WE, McGinnis E, Bai Y, Adams Z, Nardone H, Devadanam V, et al. Impact of COVID on College Student Mental Health and Wellness. *J Am Acad Child Adolesc Psychiatry*. 2020 (prepublish).
8. Arenas DL, Viduani AC, Bassols AMS, Hauck S. Peer support intervention as a tool to address college students' mental health amidst the COVID-19 pandemic. *Int J Soc Psychiatry*. 2021;67(3):301-2.
9. Valenstein M, Clive R, Ganoczy D, Garlick J, Walters HM, West BT, et al. A nationally representative sample of veteran and matched non-veteran college students: Mental health symptoms, suicidal ideation, and mental health treatment. *J Am Coll Health*. 2020;1-10.
10. Michael EL, Woolee A, Carter HD, Michael PT. Evaluating Acceptance and Commitment Therapy and Mindfulness-Based Stress Reduction Self-Help Books for College Student Mental Health. *Mindfulness*. 2020;11(5):1275-85.
11. Elisabeth A, Namik K, Ashley NC, Kelly TC, Timothy JM, Lisa DC, et al. A pragmatic clinical trial examining the impact of a resilience program on college student mental health. *Depress Anxiety*. 2020;37(3):202-13.
12. Oswald SB, Lederer AM, Chestnut-Steich K, Day C, Halbritter A, Ortiz D. Trends in college students' mental health diagnoses and utilization of services, 2009-2015. *J Am Coll Health*. 2020;68(1):41-51.
13. Asaad TA, Imad AN, Hazim AG. The Impact of Physical Exertion on hormone secretion ACTH-TSH rate in Individual and Group Games for third-year students of College of Physical Education and Sports Sciences at AL-Muthanna University, Iraq. *Indian J Forensic Med Toxicol*. 2019;13(4):843.
14. Matthy J. Research on Design of College Sports Learning Feedback Based on Big Data Analysis. *Computer Informatization and Mechanical System*. 2019;2(6).
15. Sean N, Patrick RM, Daniel G. Expanding Perspectives: Systemic Approaches to College Students Experiencing Depression. *J Couns Dev*. 2019;97(3):260-9.
16. Elly P, Wahyu P, Ahmad F. Exploration on the Combination Mechanism of Social Practice and College Students' Mental Health Education. *Indian J Pub Health Res Dev*. 2019;1(1).
17. Lattie EG, Lipson SK, Eisenberg D. Technology and College Student Mental Health: Challenges and Opportunities. *Front Psychiatry*. 2019;10:246.
18. Krafft J, Haeger JA, Levin ME. Comparing cognitive fusion and cognitive reappraisal as predictors of college student mental health. *Cogn Behav Ther*. 2019;48(3):241-52.
19. Bravo AJ, Villarosa-Hurlocker MC, Pearson MR. College student mental health: An evaluation of the DSM-5 self-rated Level 1 cross-cutting symptom measure. *Psychol Assess*. 2018;30(10):1382-9.