Effect of fitness exercise on risk assessment of mental and emotional health

Zhaoliang Yang[1], Xiaoming Fu[2]*

Abstract

The study aims to investigate the effect of physical activity on risk assessment for mental and emotional health. This paper studies the psychological test assessment through the psychological health risk assessment and psychological crisis intervention for college students and the psychological health crisis counselling risk assessment system. Experiments show that the evaluation accuracy of the designed system can reach 99% at most, and the detection time is at least 5S, which improves the evaluation performance. Based on the evaluation and with an emphasis on prevention, we will deconstruct the connotation of life education, build and operate a college students' mental health early warning system, and scientifically adopt psychological crisis intervention strategies and technologies to establish a college students' psychological crisis intervention mechanism and to promote and maintain college students' mental health.

Keywords: Fitness exercise; Mental and emotional health; Risk assessment

Introduction

In recent years, college students' psychogenic malignant accidents continue to occur. Mental health education for college students has become a priority for public opinion and colleges and institutions. However, the development of mental health education for college students in colleges and universities is haphazard and ad hoc, and there are possible risks and hidden threats. Whether it is attention to college students' abnormal psychology before a psychological crisis or support following a psychological problem, neither can be provided on time. The psychological obstacles, mental diseases and even suicidal behaviour of college students are due to the long-term accumulation of the psychological crisis experienced by individuals without timely detection and timely and effective mitigation. Therefore, it is necessary to evaluate whether there are risks to college students' mental health and intervene in the critical crisis objects to minimise the stakes in standardisation and institutionalisation of College Students' mental health education and deal with the crisis problems in a timely and procedural manner. The risk assessment of mental health crisis counselling is a means to observe students' specific behaviour through strict environmental control and conduct data analysis and evaluation according to the characteristics of psychological changes in the behaviour process. Because everyone has different reactions to things, their psychological changes vary, making their attitudes and motives very different. The task of psychological health crisis counselling risk assessment is to study the different psychological states of

different students, master the law of their psychological behaviour, guide them to participate in related social activities, and finally enable students to achieve the purpose of physical and mental health (Zou et al., 2020).

To sum up, taking college students as an example, according to the specific needs of College Students' mental health crisis counselling, we use digital multimedia means to optimise the design of their mental health problem evaluation system to improve students' mental health level more effectively. Fashion fitness exercise pays more attention to its safety, exercise value, health and individual expressive force on the choice of action, and also has the function of reducing weight. Opening fashion fitness exercise class has the following aspects of positive significance and can make up for the limitations of fitness exercise.

Since the 1980s, Chinese scholars have conducted extensive research on students' mental health, focusing primarily on academic performance, confidence, emotion, intelligence, anxiety, and depression. These studies elucidate the prevalent mental health problems among Chinese students, demonstrating a practical need for research and education on students' mental health. (Akpa et al., 2019). In terms of the causes and influence mechanism of students' mental health, the researchers investigated the effects of family and peers on students' introverted psychology such as anxiety, depression and fear, and extroverted psychological problems such as aggression, violation and maladjustment. GH, A and others investigated SCL-90 and found that about 1 / 4 of college students had psychological abnormalities above moderate level (Guo et al., 2018); A Hern Ndezvicente and

[1] College of Physical Education, Zhoukou Normal University, 466001, Zhoukou, Henan, China
[2] Research Center of Hubei Enterprise Culture, Hubei University of Economics, 430205, Wuhan, Hubei, China
Corresponding Author's Email: fxm@hbue.edu.cn

others conducted a psychological test on 5949 college students and found that the detection rate of various psychological problems was about 15% (Hernández-Vicente et al., 2021); Ding and others investigated the mental health status of college students in a city and found that the detection rate of College Students' Psychological abnormalities was as high as 40.02%, of which 5.72% had psychological disorders (Ding et al., 2021).

The Shenzhen Institutes of education and science survey shows that the detection rate of students' psychological problems is 13.2%. Middleton and others have conducted a systematic study of the mental health status of 16472 primary and secondary school students. He believes that college students' overall mental health status is good, and the proportion of mental health is 82.9% (junior middle school) and 82.7% (senior high school), respectively. Students with psychological problems show evident age stages (Middleton et al., 2020).

Mental health crisis counselling risk assessment is a technique for observing students' actions under strict environmental control and conducting data analysis and assessment based on the psychological aspects of the behaviour process. Because everyone reacts differently to things, their psychological alterations are likewise unique, resulting in varied attitudes and motivations (Singh et al., 2020). Chinese students number in the millions. The percentage of students with poor psychological health, the entire amount is astounding. Therefore, developing mental health education is not only a necessary condition for schools to implement quality education but also an important content and evaluation index of China's new curriculum reform. As we all know, life lies in exercise, and emotion regulation also lies in exercise (Pun et al., 2019). Proper physical exercise or exercise can effectively regulate destructive emotions, improve and eliminate psychological obstacles, and have the effects of strengthening physique, fitness, disease elimination and nerve relaxation. Some studies have shown that exercise may fight ageing and functional decline from multiple levels. People who lack exercise are more likely to age at the level of cells, systems and organs. Physical exercise can give people a pleasant experience and play a positive role in regulating emotion (Lemon et al., 2020). In addition, through physical exercises, such as playing basketball and other sports, through competition, we can enjoy the success brought by sports and increase the experience of good emotions to resist the original destructive emotions and to, adjust the emotional state and maintain the psychological balance.

Psychologist Xiao believes that mental health refers to people's adaptation to the environment. Mentally healthy people can adapt to the outside world and maintain a stable mood "(Xiao et al., 2020). Allaith points out that mental health is a continuous psychological condition that can make a good adaptation, have the vitality of life, and fully develop its physical and mental potential (Al-Laith & Alenezi, 2021). CAA and others believe that mental health refers to a state of emotional stability, keen intelligence and good social adaptation. Aragon calls the ideal state of mental health self-realisation the full realisation and continuous growth of all human potential (Aragon et al., 2021). The Concise Encyclopedia Britannica points out that mental health refers to the best functional state that an individual's psychology can achieve within its environmental conditions (Marazziti et al., 2021). Chung and others believe that mental health includes the following three aspects: "psychological activities have identity with the external environment; psychological processes have integrity and coordination; psychological personality characteristics have relative stability (Cheng et al., 2019). J Robertson and others divided the concept of students' mental health into mental health in a narrow sense, referring to the complete and coordinated content of the basic psychological activity process. The main purpose is to prevent psychological and behavioural problems. In a broad sense, mental health refers to an efficient and sustainable psychological state, which aims to promote psychological regulation and develop greater psychological efficacy to make people better adapt to social life and make more effective contributions to society and humanity (Robertson et al., 2021). From the above scholars' definitions of mental health, it is not difficult to obtain some valuable clues about the concept of mental health. In this study, college students' "mental health" refers to the excellent state of the unity of internal psychological harmony and external behaviour adaptation to give full play to individual potential. The mental health of college students is reflected in the transformation of individuals to the environment and contained in the relatively stable and dynamic psychological characteristics. Physiological evaluation measures physiological indexes such as brain wave, skin resistance, heart rate, respiration, and electromyography to diagnose psychological illnesses in conjunction with cognitive and behavioural measurements. Biological components can be evaluated for diagnosis, but they can also be used to diagnose some behavioural issues. The specific emotional stimulus can elicit distinct physiological and psychological responses, which the patient may be unaware of. Therefore, a physiological and psychological evaluation is conducive to finding the cause and providing a scientific basis for further diagnosis and treatment. Observe the event-related potential of EEG response corresponding to the

corresponding stimulation. Through the recording of EEG, we can see whether there are polar and irregular brain waves to diagnose whether a person has cerebral congestion. Stress and emotional arousal strongly affect the peripheral nervous system, particularly the sympathetic nervous system. The hypothalamus, the hippocampus, the amygdala, and the frontal neocortex are four critical brain regions that control human emotional behaviour. In the hypothalamus, hormone changes and neural regulation transform and affect emotion.

The psychological test measures people's behaviour to speculate the characteristics and level of individual cognition, emotion, intelligence, personality, behavioural response, etc. The test of the psychological crisis must be credible, effective and standard. The first is the personality test, which has precise structure, economy, simple scoring, straightforward interpretation and wide application. The most widely used are three projection tests: thematic ink test, thematic apperception test and sentence filling method. The second is the intelligence test. Intelligence is the potential ability of human beings to learn, remember, think, understand objective things and use knowledge to solve practical problems. Many psychologists believe that intelligence should include more things, such as the ability to adapt to the environment, innovate and innovate and the ability to innovate, and process information efficiently. However, generally speaking, the IQ test is credible and can predict work achievement.

The third is the neuropsychological test. In neuropsychological tests, each test is only aimed at a specific ability, such as memory, spatial reasoning, movement speed, etc. These abilities are mainly related to specific brain regions. For example, memory tasks are susceptible to detecting hippocampal injury. This information can provide a valuable basis for clinical neurologists in clinical diagnosis, intervention planning and rehabilitation planning. Standard test methods include Bender's visual retention test, Scott's motor impairment test, Wechsler Memory Scale, etc.

The evaluation of crisis level evaluates the severity of an individual psychological crisis and the harm to themselves and others. Generally, it includes two aspects: one is whether the individual is in danger of life, that is, whether there is the risk of suicide, sudden attack and homicide; The second is whether the individual has lost the original social role ability and whether he is isolated from the surrounding environment or left the original natural and social environment. In crisis assessment, the following rules should be followed: the preliminary evaluation should be performed as quickly as feasible to develop a positive relationship between the two parties; The evaluation process should be continuous throughout the crisis intervention

process; the evaluation's "clinical attitude" should be stressed, and the socio-cultural distinctions of the evaluation object should be acknowledged.

Through the media role of fashion fitness exercise, increase communication opportunities and atmosphere, help each other, learn from each other. At the same time, it relieves the pressure brought by life and eliminates tension, excitement, irritability and other destructive emotions in the psychological relaxation. In addition, exercise to improve attention, memory, creativity, and central nervous system function level has a specific role. Therefore, fashion fitness exercise has an irreplaceable role in interpersonal communication and social adaptability. Fashion sports is one of the most popular fitness programs at home and abroad. It integrates all kinds of popular sports, each with its unique style and function. Its characteristics are fashion, dynamic, beautiful, hot, passionate and performance personality. Learning and training can make people healthy, happy, and full of energy. Therefore, this paper aims to conduct an experimental study on the effect of fashionable sports on mental health, its obvious improvement effect on the development of mental health, and provide a theoretical basis for better promoting sports development.

Methodology

Hardware design of risk assessment system for students' mental health crisis counselling

Through a comprehensive study of the original student mental health crisis counselling risk assessment system, optimise the design of each link of the system, and optimise the authentic system hardware environment. The optimised system hardware framework is shown in Figure 1.
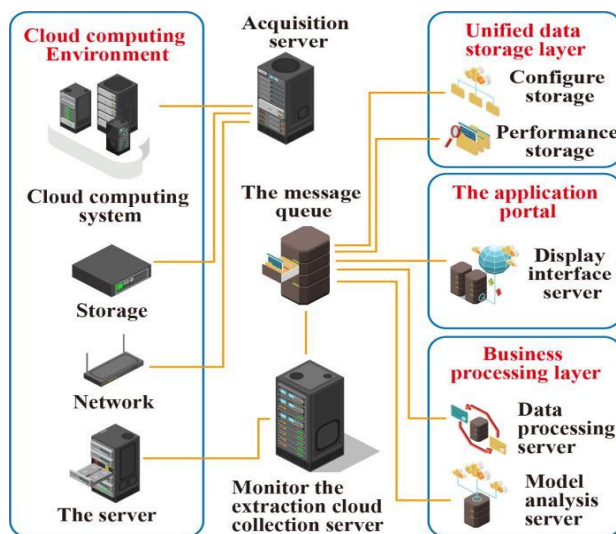

Figure 1. Deployment architecture of system hardware environment

As the basis of the whole system design, the system hardware framework design is an essential guarantee for the regular operation of the entire system. The system hardware architecture design further optimises the internal hardware environment architecture and completes the whole system process optimisation.

The main control chip (MCU) is at the heart of the risk assessment system for counselling pupils experiencing mental health crises. It is the human brain's counterpart. It is in charge of the entire risk assessment system. Its primary job is to continually convert the acquired analogue signals to data signals and digitally filter and transmit the obtained data signals. MCU has the advantages of small volume and low power loss.

Through one or more USART communication interfaces carried by itself, MCU can use the high-frequency processing speed to collect and digitally filter the signal, which reduces the configuration of the bottom register to a certain extent. MCU has multiple A / D converters built-in, which use higher clock frequency to convert analogue signals with resolution more significant than 16 bits into data signals. It can complete corresponding functions through fewer peripheral circuits, reduce the possibility of problems in the transmission process and improve the stability of performance (Cheng et al., 2019). The specific internal composition of MCU is shown in Table 1. Based on fully considering the system's functional requirements, combined with the characteristics of MCU chip, this paper uses the MCU chip of CortexTM‑M3 as the main control chip of the system hardware from the aspects of energy consumption volume and speed.

Table 1

Internal composition of MCU

Serial number	Parameter name	Parameter model
1	CPU	ARM64 bit CoetexTM-M3
2	Storage	128KB flash program memory
3	Clock	4~16MHz crystal oscillator
4	UASRT interface	4 interfaces
5	A / D conversion	12-bit analogue converter
6	Timer	Dual independent watchdog timer
7	DMA	8-channel DMA controller

Software design of risk assessment system for students' mental health crisis counselling

Construction of psychological counselling risk calculation model

In this design, the risk of students' mental health crisis counselling is quantified in the form of interdisciplinary. According to the characteristics of the research object, the risk calculation model in the information security risk assessment guide is used as the blueprint of the risk assessment model in this system design. The specific risk calculation formula is shown in formula (1):

$$A=f(B,C,D)=f(Ei,G(Ji,D)) \tag{1}$$

Where:

A represents the quantified value at risk;

T refers to the length of time students receive counselling;

W represents the degree of influence of students after the risk event;

V represents the probability of risk events.

According to the risk calculation method obtained by Aragon, M. E and others in the literature, the impact value of risk events and the possibility of events can be expressed in the form of multiplication or addition, and the quantitative results of risk events can be obtained in the form of increasing function (Aragon et al., 2021). According to the management between A, T, W and V in the above functions, the quantisation results are obtained by multiplication, as shown in formula (3):

$$A=T·W·V \tag{3}$$

Use the above formula (3) to obtain the overall risk calculation formula and combine it with the original risk research method. Then use a more appropriate way to calculate the value range of T, W and V and obtain the quantitative scientific units of T, W and V to obtain the quantified risk value a.

Risk assessment of psychological crisis counselling

This design uses the basic principle of fuzzy logic as the main psychological counselling risk assessment method. If there is a corresponding counselling domain G in the risk set X and there is g∈G, then the characteristic function of G is fg, and this function can meet the following conditions:

$$fg: G \rightarrow \{0,1\} \tag{4}$$

$$g \rightarrow fg = \{g0 \notin X, 1 \in X\} \tag{5}$$

Equations (4) and (5) adopt some concepts of the classical set, and the characteristic function of x can be expressed as the membership degree of G when the value of G is fx. Therefore, for any g∈G, there will be the corresponding g∈fx or g∉fx. According to this theory, the risk value of counselling work can be transformed from the traditional {0,1} value range into a closed value range [0,1]. After the above treatment, the characteristic function of risk value can be transformed into membership function αx(g), as shown in formula (6):

$$\alpha x(g): X \rightarrow [0,1]g \rightarrow \alpha x(g) \tag{6}$$

We mainly study and deal with natural things in the above

calculation process. The original risk assessment method is applied in this study to improve the accuracy of counselling risk assessment. Use the above formula to the membership of the risk assessment results and output the analysis results as the final results to improve the reliability and authenticity of the risk assessment. This part of the operation process is input into the system module in the form of programming. Some essential programming contents are as follows:

Namespace Fuzzy
{public partial class Form Left: Dock Content
{public staticintcurr XMID;
Pubfic Form Left()
{Initialize Component();
}

Using the above programming content, the evaluation results are introduced into the above calculation link to complete the membership calculation process. The above design hardware and software are combined into the original evaluation system. So far, the relevant design of the student mental health crisis counselling risk evaluation system has been completed.

Results and Discussion

System test environment design

To verify the use effect of the system designed in this paper, two common systems in the market are selected to compare with the system developed in this paper. In the comparative test of the three systems, it is necessary to set a good test environment to ensure the stability of the test process. Therefore, the system test environment adopts a distributed architecture, including one server as the primary node and two data processing servers as nodes, to realise the efficiency and stability of data operation. The architecture of the system test platform is shown in Table 2.

Table 2

System test platform architecture

| Name	Hardware configuration	Operating system
Main controller	8-core CPU4GB memory 20GB hard disk 2MB broadband	CentOS7.0
Node 1	8-core cpu4gb memory 20GB hard disk 2MB broadband	CentOS7.0
Node 2	8-core cpu4gb memory 20GB hard disk 2MB broadband	CentOS7.0

In this system test, the above test platform will be used to complete the test process and obtain the use effect of the system designed in this paper.

System test scheme

In the process of this system test, the student mental health crisis counselling course obtained by a university is quantified and processed into the form of data, which is output to the test platform. Use the system designed in this paper and the two evaluation systems currently used to evaluate and analyse the risk situation in the above target data, as shown in Figure 2. In this system test, the calculation results of VAR, the accuracy of evaluation level query and the processing time of system evaluation are taken as the comparison indicators in the test. Multiple tests will be adopted to improve comparison accuracy in this system test. Use the system test scheme set above to complete the system test and obtain effective system test analysis results (Herghelegiu et al., 2017; Huang & Ren, 2020).
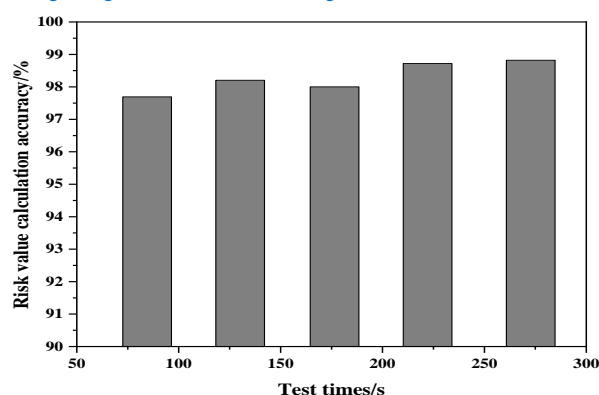
(a)Design coefficient in this paper
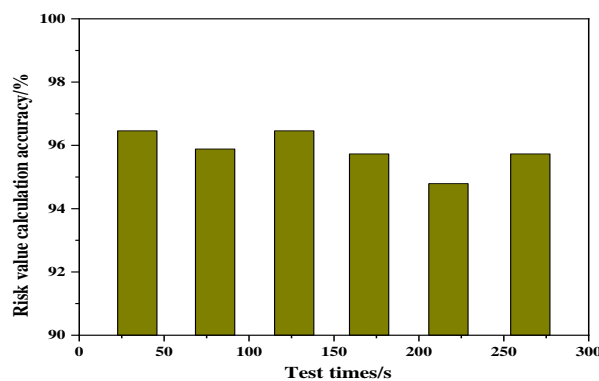
(b) Evaluation system 1
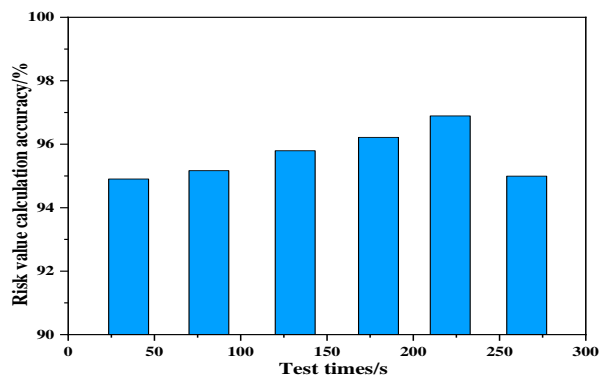
(c) Evaluation system 2

Figure 2. Comparison of VAR calculation results

System test and analysis

The above test results show that the reliability of the calculation results of the system risk value designed in this paper is high. According to the system test results, it can be seen that the calculation result of the risk value of the system developed in this paper is relatively stable. In multiple calculations, the accuracy is maintained at more than 98% for a long time, and the variation range from top to bottom is small. As can be seen, this system's calculating reliability is quite excellent. When compared to the results of the risk value calculation for the system described in this paper, it is clear that the risk value calculation results for the two systems currently in use vary significantly. According to previous studies, there are few large fluctuations in the risk assessment results. Therefore, it can be seen that the calculation ability of the currently used assessment system for the value at risk is poor (Erola et al., 2022).

According to the test results of system evaluation grade query accuracy in Figure 3, it can be seen that the evaluation grade query accuracy of the system designed in this paper is high, up to 99%. It shows that this system's risk value calculation ability is firm, which ensures the high accuracy of this test result. By the two evaluation systems currently in use, it can be seen that due to the insufficient calculation ability of VAR, the query accuracy of the evaluation level has been seriously affected, the query accuracy is low, and the system reliability of the system processing results is not high. Based on the test results in Figure 4, the evaluation processing time of the system designed in this paper is shorter than that of the system currently in use, and the evaluation can be completed within 5S at the shortest. The comprehensive research and analysis of the risk assessment system show that the module with the longest running time is the risk value calculation link. Because the risk value calculation ability of the system designed in this paper is vital, in this round of tests, the system assessment processing time of the system developed in this paper is short, and the risk assessment efficiency is high.
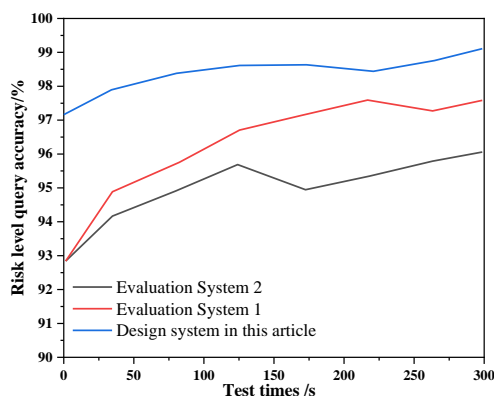

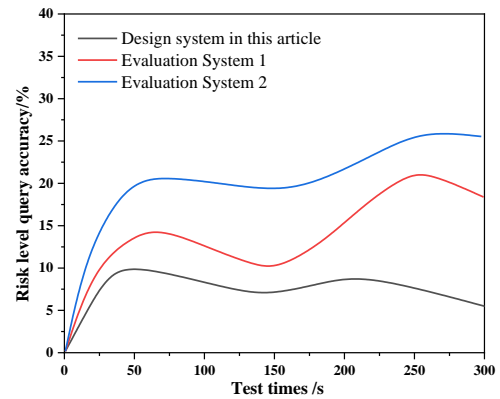*Figure 3.* Evaluation grade query accuracy test results

Figure 4. System evaluation processing time test results

It can be seen that the accuracy of the query evaluation system and the calculation results of the comprehensive evaluation system in the current design are better than those in the current three-level evaluation system.

Conclusion

Mental health is a critical component of contemporary human health. Thus, what is mental health? There are criteria for the physical and psychological health of individuals. However, mental health criteria for individuals are less specific and objective than physical health standards. It is critical to comprehend and grasp the definition of mental health to improve and preserve people's health. When individuals understand the criteria for assessing mental health, they can self-diagnose their mental health. If you discover that one or more parts of your psychological status fall short of the mental health standard, you can strengthen psychological exercise in a targeted manner to bring it up to the standard. If you discover that your mental state has deviated significantly from the accepted standard of mental health, you should seek medical therapy immediately to ensure proper diagnosis and treatment. Firstly, the hardware of the system is designed. Then the risk calculation model of psychological counselling is constructed to realise the quantification process of risk value and calculate the membership degree of risk value. Finally, the evaluation results are introduced into this part of the calculation to obtain an accurate evaluation level to complete the design of the risk evaluation system for students' mental health crisis counselling. Experiments show that the evaluation accuracy of the designed system can reach 99% at most, and the detection time is at least 5S, which improves the evaluation performance.

However, due to time constraints, all factors have not been analysed. In the future, we will continue to deepen the research to provide some help for the timely discovery of students' psychological problems and psychological counselling. College students participating in physical exercise can maintain their physical health and vent their destructive emotions such as

tension, anxiety, anxiety, and depression in time to transfer, reduce psychological pressure, and improve their mental health. However, due to time constraints, all factors have not been analysed. In the future, we will continue to deepen the research on this aspect to provide some help for timely discovery of students' psychological problems and psychological counselling.

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