

# *The Causes and Countermeasures of Psychological Pressure of Female Physical Education Teachers in Colleges Based on Big Data*

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**Abstract:** The psychological pressure of college teachers has become a social problem that the whole society pays close attention to. In the overall progress of our country's social changes and higher education reforms, university teachers are under tremendous psychological pressure, especially female physical education teachers in universities. The psychological pressure on their frequency or intensity is greater than before. Psychological pressure directly affects the physical and mental health of female physical education teachers in colleges and universities, and affects their lives to varying degrees. The quality of work affects the healthy development of students and the development of education as a whole. Therefore, it is of great significance in practice to analyze the current situation and causes of the psychological pressure of college teachers and propose effective coping strategies. This article is based on the big data-based research on the causes and countermeasures of female physical education teachers in colleges and universities to study the psychological pressure of female physical education teachers and countermeasures. Then use the questionnaire survey method to study the causes and countermeasures of the psychological pressure of female physical education teachers in colleges and universities, and provide the basis for the systematic modeling of the psychological pressure of colleges and universities through the analysis of the results. According to the survey results, the main reason for psychological pressure comes from job competition, which accounts for as high as 48%, and the pressure on job requirements and knowledge reserves is comparable. The countermeasures to the psychological pressure of female physical education teachers in colleges and universities are mainly to strengthen the training of teachers, accounting for about 40% of the total. Then, compared with teachers in other courses, physical education teachers have relatively strong job competition, and female teachers are relatively more competitive. The psychological pressure with male teachers is greater, which requires schools to implement human-oriented management of teachers, accounting for about 36%.

## 1. Introduction

Our country is currently undergoing a period of profound social change and transformation. Therefore, the reform of the educational system and management system of colleges and universities is gradually deepening [1-2]. The social progress and development of higher education provide university professors with broad development space and opportunities, but at the same time it also brings unprecedented challenges [3-4]. As a special group of teachers with high level and high education background, university teachers have high social expectations and shoulder great social responsibilities [5-6]. Social development, educational reform and high demands of teachers themselves are all concentrated on college teachers [7-8]. Moderate pressure is a necessary motivation for teachers to participate in professional activities, but if the pressure in professional activities is too great, it will bring unnecessary psychological burdens to teachers, which will affect the enthusiasm and initiative of the role, and ultimately may lead to physical activity and mental crisis [9-10].

In the research on the causes and countermeasures of the psychological pressure of female physical education teachers in colleges and universities, many scholars have conducted research on them and achieved good results. For example, Bourassa proposed that the mental health of school teachers is one of the most important social issues in China, and it is also the social health of women in my country. Women as well as the state and schools need to pay attention to women's health issues, protect women's health and promote women's health [11]. Among all knowledgeable women, the level of female teachers in colleges and universities is relatively high, has a strong social role, is more independent, and hopes to do better. Female college teachers have high academic qualifications, strong working ability, and love education. In addition to teaching and research, female university teachers continue to learn new knowledge, hoping to improve in all aspects. In terms of social culture and customs, female teachers in universities also play a personal role and assume family responsibilities. The role of female teachers in colleges and universities is rich and not simple. They are under tremendous pressure when they travel between school and family [12].

This article is based on the big data-based research on the causes and countermeasures of female physical education teachers in colleges and universities to study the psychological pressure of female physical education teachers and countermeasures. Then use the questionnaire survey method to study the causes and countermeasures of the psychological pressure of female physical education teachers in colleges and universities, and provide the basis for the systematic modeling of the psychological pressure of colleges and universities through the analysis of the results.

## 2. Research on the Causes and Countermeasures of Psychological Pressure of Female Physical Education Teachers in Colleges and Universities and Research on Systematic Modeling

### 2.1. Research Method

#### (1) Literature research method

This article has collected many related papers, some of which are the research results of domestic scholars, and some are the research results of foreign scholars. A comprehensive study of the collected documents can be used to inform teachers of the realities of stress at home and abroad. A good understanding can also better understand the source of teacher stress, a preliminary understanding of the teacher stress reduction strategies provided by the researchers, an understanding of the state of the research results, reference to the purpose of this research and

inspection of certain appropriate documents, based on an in-depth literature review, some results were selected as references. Read widely books related to teachers' professional psychological pressure, and collect some related research topics of our school and conduct in-depth research on them.

#### (2) Questionnaire survey method

The questionnaire survey method is based on the written form to obtain information, which is an indirect way of obtaining information. Send the enquiry form to the respondent, and the respondent fills it out according to the content of the form, seeking truth from facts. This questionnaire formed a preliminary questionnaire after sorting out the literature and referring to the maturity scale. First, a small-scale test was carried out and then revised and then formally distributed.

### **2.2. The Status Quo of Psychological Pressure on Female Physical Education Teachers in Colleges and Universities**

#### (1) Female school teachers are more anxious and have lower psychological quality:

The brain structure and thinking styles of men and women are different, leading to different emotional thinking styles between men and women, and the emotions of men and women are affected by their hormones and other factors. Research shows that female teachers are more irritable than male teachers. They are concerned about various trivial issues in life, are unstable, sway around, and are very sensitive to environmental impacts. Some female teachers suffer from anxiety and depression, and their mental health is generally poor.

#### (2) Health has a greater impact on school female teachers:

Some female teachers are more sensitive and show signs of depression and stress in work and life. Women's mental health will change with age. The older they are, the higher their mental health. Female teachers of different ages, female teachers under 35 have more mental health problems than teachers over 35 and female teachers under 35, social relations are more complicated, and life and work pressures are greater. A survey on the mental health of female teachers found that women under the age of 35 have a higher psychological factor index than women over the age of 35.

(3) Female teachers with higher education have more health problems than female teachers with lower education:

When researching the mental health of female teachers in schools, it was found that the mental health problems of female teachers with higher education are generally more than those of female teachers with intermediate professional titles. For example, female teachers with a doctoral degree and female teachers with a master's degree are more sensitive to interpersonal communication, and the six indicators of mental health factors are higher than those with a bachelor's degree or below.

### **2.3. Reasons for the Formation of the overall Characteristics of Teachers' Psychological Pressure**

#### (1) The characteristics of the teaching profession

Higher education provides the society with high-level talents. University professors play a huge role in higher education and are responsible for knowledge innovation. If teachers want to have higher professional ability and education quality, they must do a good job in teaching and research. Therefore, college teachers have special professional characteristics, and society has high expectations of them. In the education process, college teachers should guide students to master various professional knowledge, give full consideration to students' age and personality characteristics, so that students can learn to think independently, be more independent, and improve

self-management and learning capabilities. Inclusive education places high demands on college teachers. The work of college teachers is a kind of mental work. Teachers influence students through speech and behavior. "The teacher represents the image of the school and provides guidance to the students." The profession of college teachers has shown a certain nobility.

(2) The diversity of roles leads to role conflicts

University teachers have some role conflicts in teaching and research. University teachers put a lot of time and energy into teaching and research, both of which are very demanding. With the expansion of the enrollment scale of colleges and universities, the scale of college teachers gradually lags behind, which brings great teaching pressure to teachers. At the same time, the task of scientific research is also very arduous, with a huge brain and a very fast pace of work. Let teachers be responsible for teaching and research at the same time to achieve the desired results. However, due to time and energy constraints, role conflicts are inevitable. Some teachers have the potential for scientific research and have invested more time and energy in scientific research. Similarly, they spend less time and energy on teaching, which will affect students' learning and make students complain about the role of the teacher. Some teachers are interested in teaching and devote more time and energy to teaching, which means that less time and energy are invested in scientific research, which affects the production of scientific research results. School leaders and administrative staff will complain. This has a negative impact on the promotion and development of teachers. All these make teachers face greater psychological pressure.

(3) The pressure that personal needs are difficult to meet

If the requirements of the outside world on teachers are too high, it will be difficult for teachers to meet this requirement, and they will be under greater pressure. This pressure is due to the teacher's feeling that they cannot meet outside expectations. It can be seen from the research data that an important source of psychological pressure for college teachers is insufficient satisfaction of personal needs. The analysis of interview content and research shows that college teachers have a heavy workload, with no rest, no time for rest and entertainment. At the same time, many of the needs of college teachers cannot be met. The characteristics of college teachers are as follows: college teachers attach great importance to professional development and have a strong spirit of professionalism. University teachers love their profession very much and hope to be recognized by the principal. Show their ambitions; university teachers expect their spiritual needs to be met, university teachers expect to play their personal value, and so on. Some university administrators ignore the needs of teachers, especially the spiritual needs, making the value of teachers unrealistic.

## 2.4. System Modeling Process

The heterogeneous data integration system based on the university big data platform combines two advanced big data processing technologies, Hadoop and MPP, to build a data sharing and exchange platform. According to the existing business and future development in the university, the data center theme database is constructed, and the MPP database is used. As a data warehouse, it uses Hadoop technology to process detailed data and integrate semi-structured and unstructured data. Realize data exchange between heterogeneous business systems and shared data and exchange platforms.

## 2.5. System Modeling Algorithm

(1) Dynamic threshold DENCLUE algorithm

DENCLUE is a density-based clustering algorithm. The density of a point in the data space is

defined as the sum of the "influences" of other sample points. The influence of sample points on the surrounding space is described by the kernel function. If a Gauss-type kernel function is used

$$f_{\text{Gauss}}(x, y) = \exp - \frac{d(x, y)^2}{2\sigma^2} \quad (1)$$

### 3. Investigation of the Causes and Countermeasures of Psychological Pressure on Female Physical Education Teachers in Colleges and Universities Based on Big Data

#### 3.1. Purpose of the Investigation

The questionnaire survey method is used to investigate the psychological causes and countermeasures of female physical education teachers in colleges and universities. Through big data mining, it provides a basis for the modeling of the psychological pressure system in colleges and universities.

#### 3.2. Questionnaire Survey

##### (1) Number of questionnaires

According to the minimum sample size formula in statistics, the author sets the confidence level of the questionnaire to 80%, and the allowable error does not exceed 8%. Calculate the minimum sample size as

$$n_0 = \left( \frac{t_a}{2\Delta p} \right)^2 = \left( \frac{1.645}{2 \times 0.075} \right)^2 = 120 \quad (2)$$

##### (2) Investigation implementation

Three colleges and universities were randomly selected in this city, denoted as college A, college B, and college C. The psychological stress test was conducted on female college physical education teachers. The test time was from 10 am to 12 am. During the test, the researcher asked the subjects to go to the toilet in advance and perform the test without holding back urine. The questionnaire needs to be filled in according to the steps. The first is to read the instruction to let them understand the necessity of filling in the real content, and retrieve the questionnaire on the third day after the questionnaire is issued. Build a database of the survey results, and then use data mining technology to analyze the results.

### 4. Data Analysis

(1) Causes of psychological pressure on female physical education teachers in colleges and universities. A questionnaire survey method was used to investigate the causes of psychological pressure on female physical education teachers in colleges and universities are shown in Table 1.

*Table 1. Causes of psychological pressure of female physical education teachers in colleges*

	A school	B school	C school
Work requirements	27%	25%	26%
Knowledge crisis	28%	27%	29%
Job competition	46%	48%	45%

It can be seen from Figure 1 that the main cause of psychological pressure comes from job competition, which accounts for as much as 48%, and the pressure on job requirements and

knowledge reserves is comparable.

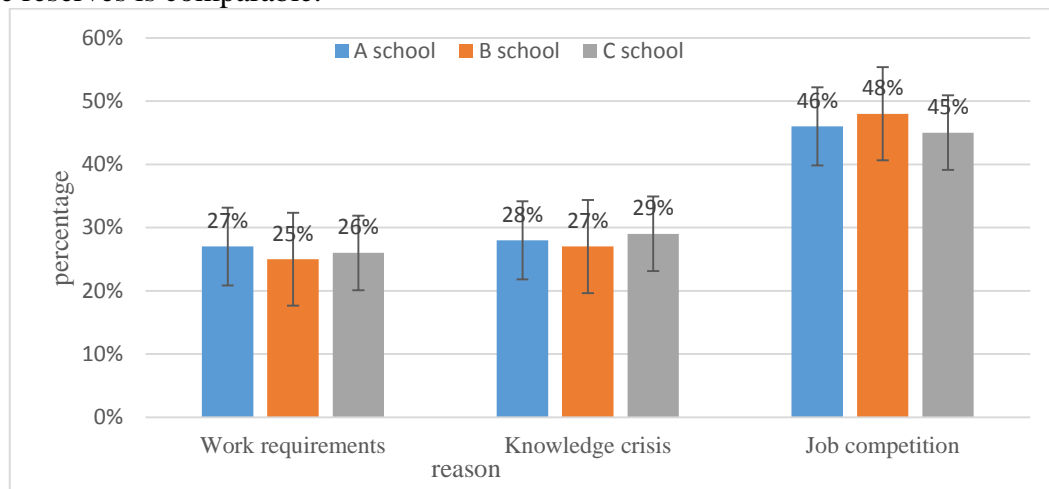


Figure 1. Causes of psychological pressure of female physical education teachers in colleges

## (2) Psychological pressure countermeasures for female PE teachers in colleges and universities

Investigate the causes of the psychological pressure of female physical education teachers in colleges and universities by means of questionnaire surveys. The results of the survey are shown in Table 2.

Table 2. Countermeasures for psychological pressure of female teachers in physical education

	A school	B school	C school
Strengthen the training and training of teachers	21%	23%	20%
Implement humanistic management for teachers	36%	38%	37%
Establish a developmental teacher evaluation system	43%	40%	43%

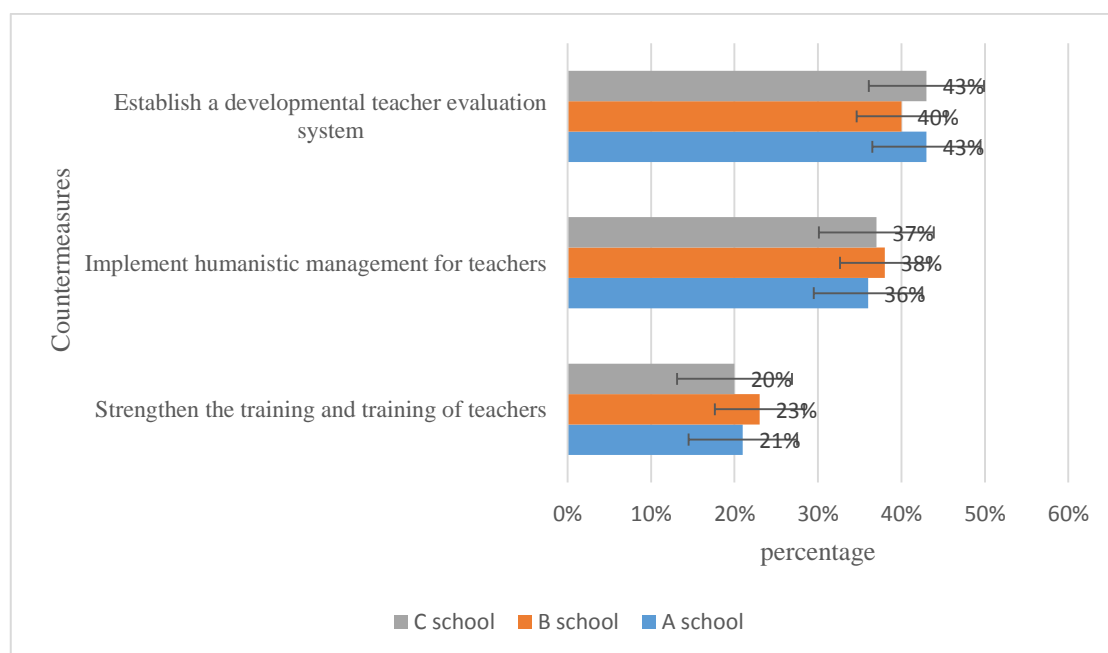


Figure 2. Countermeasures for psychological pressure of female teachers in physical education



It can be seen from Figure 2 that the countermeasures to the psychological pressure of female physical education teachers in colleges and universities are mainly to strengthen the training of teachers, accounting for about 40% of the total. Then, compared with teachers in other courses, physical education teachers are more competitive in their work. Yes, female teachers have greater psychological pressure than male teachers, which requires schools to implement human-oriented management of teachers, accounting for about 36%.

## 5. Conclusion

There are many factors that affect the mental health of female physical education teachers in colleges and universities. To solve this problem, it is necessary to create a relaxed and happy job from various aspects such as society, colleges, and themselves through social support and college management. At the same time, individual female physical education teachers in colleges and universities should also adjust their own psychology by improving self-cognition and self-concept. Only by doing this can the mental health of female physical education teachers in colleges and universities continue to improve.

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## Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Conflict of Interest

The author states that this article has no conflict of interest.

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