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RESEARCH ARTICLE

Academic learning difficulties faced by elite sports students in Chinese universities and appropriate tutoring strategies

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ABSTRACT

The purpose of this study was to explore the psychological development of the learning difficulties of elite sports students in Chinese universities, and to identify learning strategies to address these difficulties. By using the snowball sampling method, 15 elite sports students from Chinese universities were selected as research participants. Semi-structured interviews and thematic analysis were used to collect and analyze relevant data. Results showed that the learning difficulties of elite university sports students can be divided into personal factors, school factors, family factors and career factors. In order to help these students better adapt to the combination of learning and training and to overcome their learning difficulties, this study puts forward a set of positive guidance strategies. These strategies include establishing individualized learning programs, providing academic support and guidance, strengthening communication and collaboration between school and family, and providing career planning and development support. Therefore, it is hoped to provide some reference and guidance for the cultivation of elite sports students with personalized comprehensive quality and ability, and to promote the achievement of a better balance in their academic and sports development.

Keywords: attribution theory; elite sports students; external factor; Improve learning trouble; internal factors; learning difficulties; tutoring strategies; university

1. Introduction

With the success of China's bid for major international sports events such as the Summer and Winter Olympics, the vigorous development of sports undertakings has been promoted [1]. The increasing demand for sports talents has made a growing number of young people willing to devote themselves to sports undertakings [2]. By the end of 2020, 275 colleges and universities had enrolled high-level sports teams, 289 universities had offered undergraduate physical education programs, and 94 sports training majors and 54 traditional ethnic sports majors had been offered [3]. The cultivation of elite sports students has a very important educational significance [4], which is not only conducive to promoting the extensive development

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of physical education courses in schools, but is also help to realize the teaching objectives of quality-oriented education courses [5]. However, many elite sports students have low scores when they enter college and do not want to learn. At the same time, for the honor of the school, students should spend a great deal of time engaged in specialized training, meaning that they may have difficulties with their academic learning [6].

Li and Xue found that there is an obvious gap between the academic courses of elite sports students and those of mainstream students due to their poor academic foundation and learning difficulties which make them resist learning [7]. Durlak et al. pointed out that learning distress refers to the phenomenon that some difficulties and obstacles are produced in the individual learning process, which affects their learning achievements, hinders the learning effect, and makes it impossible to improve the standard learning phenomenon [8]. In sports research, researchers have found that many factors contribute to the learning difficulties of elite sports students. Park and Ramirez pointed out that when they face external pressure or difficulties, sports students encounter problems from the individual, familial, social and school dimensions in the learning process, which causes anxiety and frustration in their study [9]. This means they cannot concentrate on their study, which undermines their academic performance and impacts their learning effect.

According to the attribution theory proposed by Heider [10], in order to better live in a complex society, people need to adapt to the surrounding environment and foresee the behavior of others. At the same time,Everyone looks for the cause and effect of people's behavior, which often lies in both internal and external factors.Learning distress and tutoring strategies are closely related [11]. Tutoring strategies can stimulate students' learning motivation, guide them to adopt different learning methods and strategies, help them effectively deal with all aspects of the problems caused by their learning problems, and improve their learning performance. Hilliger et al. stated that in view of learning difficulties, adopting appropriate coaching strategies can effectively help students overcome their difficulties and achieve better learning results [12]. For example, for elite sports students who cannot fully complete their studies due to too much time spent on training and competition, a more flexible curriculum and timing tutoring strategies can be adopted. In addition, for some students who lack effective learning methods and skills or who lack sufficient learning motivation, professional training in learning methods and skills, as well as coaching strategies can encourage and motivate them [13].

When tutoring college sports students, tutors need to understand the students' learning situations, problems and needs, provide appropriate counseling strategies and help, and at the same time, guide them to actively participate in learning and develop correct learning attitudes and values, so as to achieve comprehensive personal development [14]. This is also a process whereby the tutor and the tutee mutually influence each other and grow. Therefore, researchers need to pay attention to the personalized needs and development of sports students in universities, pay attention to their emotional care and communication in the process of tutoring, improve the quality and effect of their tutoring, and help them better balance their physical education and study in order to achieve excellent learning results. Based on the above research background and motivation, the main purpose of this study was to analyze the factors causing learning difficulties for elite sports students in Chinese universities, and to put forward corresponding tutoring strategies according to these factors.

2. Theoretical basis

Based on the attribution theory of Heider [10], this study examined the learning problems of elite sports students in universities. The theory points out that people tend to consider both internal and external causes when explaining the behavior of others. For example, due to the excessive time and energy occupied by sports training and competition, their academic pressure increases. Researchers have attributed this problem

to the external environment, which is the time and competitive requirements of physical activity, rather than to individual internal factors. According to the attribution theory, attributing academic problems to the external environment helps to reduce the self-blame and negative emotions of sports students, as they realize that their academic difficulties are caused by external factors, rather than being due to their own lack of ability or insufficient efforts. At the same time, this attribution method can encourage elite sports students to adopt positive coping strategies, such as reasonable time planning, seeking help and adjusting their learning strategies, so as to better balance the requirements of sports and study. Therefore, attribution theory provides a framework for researchers to explain the academic difficulties of elite sports students, and provides guidance for developing relevant interventions. However, researchers have also pointed out that the influence of internal factors should not be ignored; for example, students may be more inclined to spend more time and energy on sports, while paying less attention to their learning.

2.1. Internal and external factors

As for the source of learning difficulties, individuals are influenced by both internal and external factors. Glazer found that learning challenges arise from individual, familial, and school-related influences, with individual factors carrying the greatest weight [15]. Furthermore, Glazer categorized learning difficulties into various types, including low achievement, inconsistent or regressive performance, susceptibility to distraction, and subject-specific biases, while Khan et al. determined that the causes of students' learning problems can be divided into four factors [16], namely school factors (such as school facilities, curriculum, textbooks, teaching methods and teachers' personalities and attitudes), personal factors (such as physical defects, low intelligence level, emotional distress, lack of basic skills to learn, lack of learning motivational goals), family factors (such as the family environment not being harmonious, parents not paying attention to the value of education), and occupational factors (such as career planning and values). Amir et al. pointed out that the reasons for students' learning difficulties can be grouped into three dimensions: individual, family and school, and should be dealt with and analyzed separately in order to properly relieve or solve students' learning difficulties [17]. In addition, Milkie and Warner summarized the sources of problems that affect students' learning into four categories: the physical and mental state of learners themselves, and the external environment of family, school and society [18]. Based on the above studies, researchers have defined learning difficulties as the adverse factors of students' internal and external environments in the process of learning. The internal environment includes personal physical and psychological factors, while the external environment includes factors such as family, school and career, which affect learning interest and learning effectiveness. If the learner’s personal ability cannot be fully developed, it may eventually lead to poor learning achievement.

2.2. Tutoring strategies

Tutoring originally meant the act of guiding, which is the instruction or supervision provided by a guide [19]. It is a holistic, comprehensive, and helpful process that develops the ideal self and value. Emotional and social development education is closely related to career growth and personality development. Tutoring has its professional knowledge, methods and technology, and tutoring work needs universal and accelerated development and promotion to contribute to the realization of the purposes and ideals of education [20]. Pratama et al. explained that tutoring is an educational process involving a wide range [21]. In the realm of , the facilities and activities all rely on guidance to enhance efficiency.Teachers, with relatively mature and rich experience as adults, make careful and accurate observations and analysis of students, and provide them with life, academic, and professional assistance. Therefore, the subject of tutoring strategies is personality, and it should be directly related to psychology. The relationship between the therapist and the students is very important, and life, behavior, attitude, and language are the importantSituations and means of treatment

[22]. The end point of tutoring is to help individuals adapt their behavior to society and to achieve self-realization. This requires objective performance, but it should start from the transformation of personality, and should finally achieve the self-control purpose of the student's self-awareness of their Behavior [23]. Based on the above research findings, this study focused on tutors learning about the difficulties faced by elite sports students in Chinese universities from the perspective of psychology, life, study, and career.

3. Research design

3.1. Research framework

Based on the attribution theory, this study examined the influencing factors of the learning difficulties of elite sports students in universities, and proposed the corresponding tutoring strategies, as shown in Figure 1.

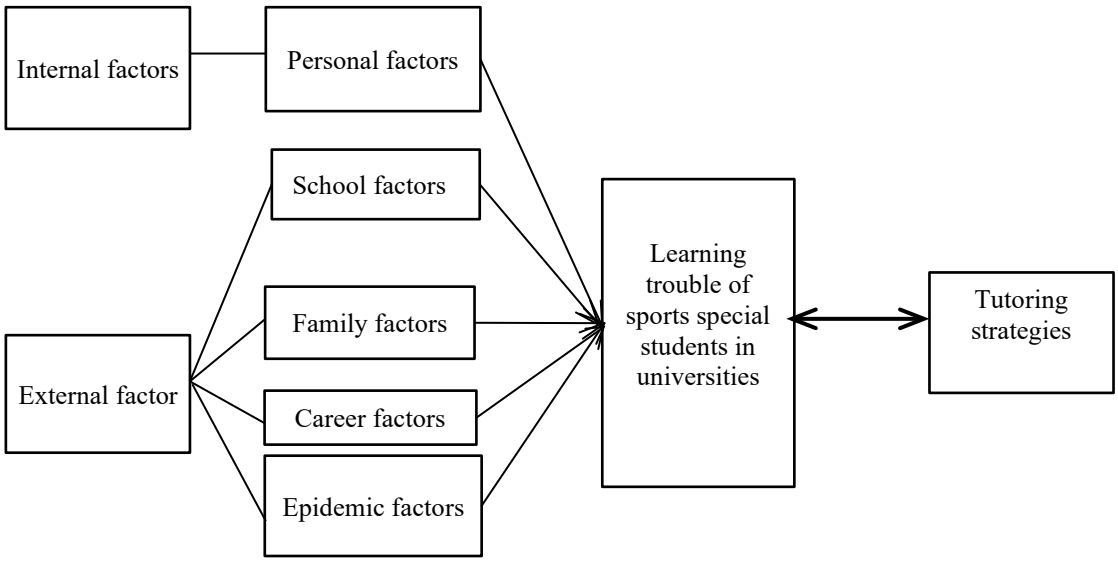

Figure 1. Learning difficulties of elite sports students in universities

3.2. Research design and Objectives

In this study, the research subjects were 15 elite sports students from three Chinese universities. After passing the study ethics review, we searched for respondents eligible for this study by adopting snowball sampling. Through the interviewees petanque players, we gradually expanded the scope to recruit eligible interviewees in various sports fields. Interviews were conducted only after the interviewees had given their informed consent, and were carried out using a mix of online and offline methods. The duration of the interviews ranged from 30 to 60 minutes and involved a one-to-one conversation on the research topic, which was audio-recorded. Interviewees were numbered and the audio data were transcribed into verbatim text data. A two-phase process was conducted as follows: Initially, 12 participants were chosen to inquire about the influences impacting their learning distress in the context of the COVID-19 pandemic. In the second stage, based on the coding analysis, three additional individuals were interviewed to collect more data until theoretical saturation was reached, giving a total of 15 participants who were university sports students from Beijing, Shaanxi and Gansu provinces, China. Participants met the following conditions: their sports level was Chinese second-class athlete or above; they were sports students with at least 4 years of sports history; and they had lower to middle academic performance in their classes. The initial 12 respondents were designated with codes ranging from T1 to T6 and S1 to S6, with the three additional respondents labeled as

F1, F2, and E1. As outlined in Table 1, these participants represented various sports disciplines and specialized in diverse sporting events. The group comprised six females and nine males, encompassing one international athlete, one national athlete, six national first-class athletes, and seven national second-class athletes. Participants were aged between 18 and 23 years old.

Table 1. Participants' information

Number	Coding	Gender	Item	Athlete level	Blue ribbon
1	T1	Female	Bocce	International athlete	World Championship champion
2	T2	Female	Bocce	National athlete	Asian Nations Cup winner
3	T3	Male	Curling	National first-class athlete	Third place in the Canadian Club league
4	T4	Female	Baseball and softball	National first-class athlete	Second Youth League champion
5	T5	Male	Martial art	National first-class athlete	Provincial team champion
6	T6	Male	Taekwondo	National first-class athlete	Provincial champion
7	S1	Female	Rhythmic gymnastics	National first-class athlete	Provincial team champion
8	S2	Female	Shot	National first-class athlete	Provincial team champion
9	S3	Male	Basketball	National second-class athlete	City team champion
10	S4	Male	Basketball	National second-class athlete	City team champion
11	S5	Male	Soccer	National second-class athlete	City team runner-up
12	S6	Male	Soccer	National second-class athlete	City team runner-up
13	F1	Male	Track and field	National second-class athlete	City individual third place
14	F2	Female	Track and field	National second-class athlete	City individual third place
15	E1	Male	Skiing	National second-class athlete	City individual third place

3.3. Interview instruments

In this study, the topic of the interview was the influencing factors of the learning difficulties faced by elite sports students in Chinese universities. The interview outline of this study summarized the personal factors [24][25], school factors, and family factors [26], career factors [28,29], learning difficulties and tutoring strategies[30,31]. Five university professors (one of whom is an international coach who has been coaching the Chinese national team for many years) reviewed the interview outline to confirm the appropriateness of the content; the content was revised according to the experts' opinions and suggestions. The revised interview guide questions are as follows:

(1) Could you tell us something about your campus life at university? How is your study life and your training life? Would you like to give us some examples?

(2) Do you have any plans for your current study career? Can you give some examples (If you have a plan)?

(3) What is the ratio of your academic learning to physical training at present?

(4) Do you have any problems in your study during your university years? Why do you think that these are the problems that will affect your study?

(5) What (positive or negative) approaches do you take when problems cannot be resolved?

(6) Will you seek any ways to solve the problems? For example, try to ask a teacher (coach) or a teammate (classmate) for help?

(7) Do you have frequent negative emotions during the learning process? If so, how can the pressure be relieved?

(8) Is there any problem that existed in the past and has continued to the present?

(9) Based on your own experience, when other sports students encounter problems in the learning process, how do you suggest they solve the problems or seek help?

3.4. Methodology

This study employed a qualitative approach to explore the academic learning difficulties of elite sports students in Chinese universities. The participants were recruited using a snowball sampling technique. After obtaining ethical approval, we identified initial respondents who met the specific criteria of being a university student with an athlete level of Chinese second-class or above and having at least 4 years of sports experience. These initial interviewees were then asked to refer other eligible peers from various sports disciplines, allowing the sample to expand progressively until 15 participants from three provinces were enrolled. Data collection was conducted through semi-structured interviews, which were carried out both online and offline. Prior to each interview, informed consent was secured from the participants. The interviews, which followed a pre-designed guide reviewed by five experts for content validity, involved one-to-one conversations focused on the students' academic and training experiences. Each session lasted between 30 and 60 minutes and was audio-recorded in its entirety. The data collection occurred in two phases: initial interviews with 12 participants were transcribed verbatim, and based on a preliminary analysis, three additional interviews were conducted until theoretical saturation was achieved, ensuring no new concepts emerged. The resulting textual data were then prepared for a rigorous thematic analysis using the NVivo software to identify key patterns and themes.

3.5. Data processing and analysis

3.5.1. Thematic analysis

The analytical strategy used was based on Corbin and Strauss [32]. This study mapped and simplified the analysis strategy into three main steps: open coding, axial coding, and selective coding. Because of the important encoding function, the NVivo software, as an analysis program, enables researchers to efficiently gather information from verbatim scripts [33]. Initially, it involved coding, analyzing, conceptualizing, and reviewing the data from the initial 12 interviews. Subsequently, the three additional sets of data from the second round of interviews were analyzed. Notably, no new concepts emerged during this process, so theoretical saturation was achieved in this study to construct coherent explanatory data to prevent the researcher's subjectivity from influencing the objectivity of the coding process [32]. The first and third authors independently coded the same interview manuscript, with the second author overseeing the process. Any discrepancies or disagreements were resolved through discussions and negotiations until consensus was

reached and the specifications were refined and were consistent. Open coding involved the practice of separating data and describing concepts to represent the original block of data [32].

3.5.2. Coding process

The codes used in this study were comprised of, first, a gender code (F represents female and M represents male), then the second code represents the order of the interview participants (the numbers 01-12), the third code represents the main category (GR for the individual factor, XX for the school factor, JT for the family factor, ZY for the career factor, and YQ for the pandemic factor), the fourth code represents the subcategory (“a,” “b,” and so on), and the fifth code is the order of the subcategories in the main category (starting from the number 01). Take M01-GR-a-01 as an example: it represents the first sub-category of the main category for the first male student, as shown in Table 2.

Table 2. Data coding table

Coding	Male	Order of respondents	Personal factor	Study habit
M01-GR-a	M	01	GR	a

Topic coding in qualitative analysis entails identifying or recording text or image paragraphs that share a common theme or idea. This approach enables analysts to index the text into a category to create a framework of related topic ideas [34]. The explanation "lack of energy in class, easy distraction, and lack of learning motivation will result in poor attention and not being able to concentrate on the class" can be coded as "low learning motivation." The above coding approach is open coding, the purpose of which is to explore and study the factors causing difficulties for elite sports students in Chinese universities during the pandemic period. For example, an example from the verbatim interview data is as follows:

> Since I have to spend a lot of time on physical training every day, I often don't have enough time to study. I lack energy in class and am easily distracted. The lack of learning motivation will cause poor attention and failure to concentrate in class. (F01-GR-b-01)

3.5.3. Reliability

To ensure the reliability of this study, some measures were taken according to the recommendations of Morina et al. as follows:[35] (A) The researcher consulted five experts in the field of education through the investigation and formulation of the selection criteria; (B) Before the start of the formal interview, the experienced personnel would impart the interview experience to the interviewees to ensure the smooth progress of the interview, that is, including the interview skills and the problems encountered in the interview; (C) Before the coding, the research literature on university sports students was analyzed. Through the summary of these documents, four factors were formed. In addition, this study used thematic analysis to extract encoded entries. Compared with other methods, this method can extract coding entries more comprehensively.

4. Research results

4.1. Open coding

Open coding serves as the initial phase in analyzing the original interview materials. It involves conceptualizing, breaking down, and rearranging the data in a new way. By conducting coding analysis on the original interview data from the 12 interviewees, the initial open codes were derived. Subsequent iterations of coding followed this initial phase. The table below displays the open codes alongside the corresponding segments from the original interviews.

Table 3. Open coding of elite sports students in Chinese universities (part)

Coding	Open coding	Interview content
F01-GR-a-01	Lack of learning confidence, no sense of achievement	Lack of self-esteem and self-confidence in learning, no sense of achievement, no ambition and expectations, see that other students' academic skills are better than their own, their lack of confidence in learning.
M05-GR-a-06	Doubt their academic ability, worry about the results, lack of confidence	I always doubt my learning ability, worry about my poor study, and I worry about the possible academic examination results. I lack confidence and worry, so it is better to go to the stadium to train in my specialty.
F04-GR-b-06	Difficult academic courses, learning difficulties, poor foundation	The difficulty of academic courses is relatively high, maybe because sports students have low scores when they enter university, and although they try to take time to answer questions, they still feel that their own ability is not sufficient.
M10-GR-c-08	Uninterested in learning, reading headache, no energy, the students think about when the next competition will start.	Every day uninterested in learning, reading headache, want to sleep, and the training ground has completely different feelings. Every game ends by thinking about playing rather than thinking about learning. I also don't have the energy to review and read books, as I am always thinking about when the next competition will start.
M03-XX-a-04	Lack of interaction with teachers, boring classroom	The lack of interaction with the teacher in class is very boring, and because the frequent training is too tiring, I always want to sleep in class. I feel very bored or directly choose to skip class. Besides, the teacher will not pay attention to me, but generally asks students with good academic performance.
M06-XX-b-07	There is a conflict between physical education teachers and academic teachers	Physical education teachers have a conflict with academic education teachers. Physical education teachers let students strengthen their training and strive to perform well in sports competitions. Academic teachers always feel that students are absent, do not pay attention to academic courses, and often because the teacher does not allow leave, it causes students to be truants and to retake courses.
M06-JT-a-07	Family atmosphere affects learning	In fact, I am not good at study, but mom and dad are never satisfied with my exam results. If they can help me find a good way to learn, I think I will get good grades.

4.2. Personal factors

The individual factor in this study is usually that sports students perform well in sports, but they may lack confidence in learning, think they are not excellent students, or their grades are inferior to those of other students. This lack of confidence will affect their learning performance. Sports students prefer sports to learning, and are not interested in the theme and content of learning, which leads to their lack of motivation and enthusiasm for learning, thus affecting their learning performance. According to the data coding analysis, the personal learning factors include three aspects: personal mentality, learning habits and learning efficiency.

4.2.1. Personal mentality

In terms of personal mentality, according to the theme analysis results, most respondents expressed various negative emotions, including anxiety, negativity, inferiority, conceit, and so on, which are related to their academic learning difficulties. In the universities, sports students are generally faced with the problems of excessive learning pressure and excessive burden. It may be due to the elite sports students having sports training and academic class learning, resulting in a tense time arrangement and heavy task load, thus causing anxiety. Nagovitsyn et al.'s study [36], with a research sample of Russian university sports students with learning difficulties, found that the elite sports students performed well in sports, but in terms of academic learning, they may lack confidence, be labeled as bad at learning, and think they are not excellent students in

terms of their academic performance. Mon-Lopez et al. found that excessive physical training and mental fatigue may have an influence on the learning effect of athletic students [37].

> *Lack of self-esteem and self-confidence in learning, no sense of achievement, no ambition and expectations, see other students' academic skills are better than their own, their lack of confidence in learning. (F01-GR-a-01)*

4.2.2. Personal learning habits

In terms of personal learning habits, according to the theme analysis results, there are many bad habits in the study of academic courses. Students with special sports skills have a superficial understanding of the purpose of learning academic courses, regarding it as a means to cope with the examinations, and lack understanding of the depth of knowledge and its practical application. They lack learning motivation and may pay more attention to physical training while ignoring the importance of academic course learning, leading to low interest in learning, lack of initiative and enthusiasm. For example, the research results of Fernandez et al. showed that most elite sports students have many negative tendencies when taking academic courses, and their self-control tends to be relatively poor [38]; it is therefore difficult for them to adhere to the study plan and arrange their time reasonably. Akmalovich reported that the willpower of elite sports students in the face of learning difficulties is not firm enough [39]; it is often easy for them to give up or they are opportunistic, leading to their inability to effectively overcome various learning challenges.

> *The time I can invest in the academic courses is limited, so I feel nervous during the study time. In the process of learning I cannot experience the fun of learning; I can only experience fun on the sports field. (F02-GR-b-02)*

4.2.3. Psychological mechanism

While the study effectively identified personal factors as a significant source of learning difficulties for elite sports students, a deeper exploration of the underlying psychological mechanisms, framed by attribution theory, reveals a more complex internal landscape. The challenges extend beyond mere time constraints to encompass profound issues of identity, motivation, and self-concept. These students often navigate a conflicting duality: in the athletic arena, they are high-achieving, confident champions, but in the classroom, they may perceive themselves as academically inadequate. This dissonance can lead to what is termed "learned helplessness," where past academic struggles foster a belief that further effort is futile, thereby suppressing motivation and engagement. The constant physical fatigue from rigorous training regimes directly impacts cognitive functions such as concentration, memory retention, and information processing, creating a biological barrier to learning that is often misinterpreted as a lack of ability or interest. Furthermore, their intrinsic motivation is heavily skewed towards sports, where immediate feedback, clear goals, and tangible rewards (victories, rankings) are prevalent. In contrast, academic learning often involves delayed gratification and abstract concepts, which can fail to stimulate the same level of interest or commitment.

This is compounded by a potential "fixed mindset" regarding their academic capabilities; having been primarily identified and valued for their physical talents for much of their lives, they may internalize the belief that their intellectual ability is static and that they are inherently "not smart" in a traditional academic sense. This mindset leads them to avoid academic challenges to protect their self-esteem, further entrenching their difficulties. Therefore, the personal factors are not simply a matter of poor habits or a lack of time, but are deeply rooted in a psychological ecosystem shaped by years of specialized athletic development. The resulting anxiety, diminished self-efficacy, and motivational deficits form a significant barrier that tutoring strategies must address by helping students reframe their academic self-perception, develop growth mindsets,

and find personal relevance and mastery in their studies, thereby aligning their academic identity more positively with their athletic one.

4.2.4. Personal learning efficiency

In terms of personal learning efficiency, according to the theme analysis results, there are many difficulties faced by elite sports students in their study. Most of these students cannot find the motivation to learn, and do not know how to learn. Due to the long-term lack of listening to lectures and their lack of study having led to a vicious cycle, they do not have enough awareness of the serious consequences of poor learning effect. Elite sports students are not only affected by the competitive environment, but also by the class atmosphere. Jeong and So found that due to the chronic lack of interest in class [40], sports students mainly focus on training and competition, and have a resistance to learning, which may lead to a vicious cycle and cause them serious difficulties in their learning. Hutzler et al. showed that students who specialize in sports are affected by the class atmosphere, which has a negative impact on their study [41].

> *Many students always say that they envy me when I have sports classes, and even bad grades do not matter. But they may not know that, in fact, I also want to study hard, but no matter how hard I work, I am still at the bottom in my class. (M09-GR-c-07)*

4.3. School factors

School factors in this study mean that, under the influence of the traditional system, school leaders, teachers and coaches all have expectations of elite sports students to improve their sports performance and win trophies and medals for the school's honor. Their academic learning therefore does not receive sufficient attention. Under the long-term influence of such an atmosphere, elite sports students also gradually begin to think that their poor academic performance is understandable. In addition, the school's curriculum may not meet the needs of elite sports students, and may lack consideration of their special circumstances. According to the analysis of the data coding results, there are two factors which affect the academic learning of elite sports talents, namely teachers' teaching and curriculum setting.

4.3.1. Teachers' teaching

According to the coding data, elite sports students usually need to spend a great deal of time and energy on their sports training and competition, and face great pressure and difficulties in their academic course learning. Because sports students have advantages in sports, some academic teachers are relatively indulgent, and are not willing to impose strict requirements on their learning progress and learning quality. Some academic teachers have the view that sports students are mainly focused on sports training, and so the academic learning requirements can be relaxed. Townsend et al. showed that academic teachers may pay more attention to those students with better academic performance [42], while ignoring the learning needs and difficulties of elite sports students. Stride and Tashpulatov also found that some teachers often ignore the learning state of sports students, and do not have a clear understanding of their learning situation [43][44]. Therefore, teachers pay limited attention to these students. Some teachers are even prejudiced against sports students. When their answers are wrong, or their mind is wandering in class, some teachers may not only fail to encourage and correct them, but may even sneer at them, which can damage the students' learning enthusiasm and affect their self-esteem.

> *The lack of interaction with the teacher in class is very boring, but also because the frequent training is too tiring, I always want to sleep in class, and I feel very bored*

or directly choose to skip class. Besides, the teacher would not pay attention to me. The teacher asks the students with good grades, but will not ask me. (M03-XX-a-04)

4.3.2. School curriculum setting

Although the research subjects came from three different universities, we ensured that the course settings, especially the classroom attendance requirements and assessment standards, were consistent across the three universities so that the research results would not be affected by any differences. In all of these universities, students who are absent from class due to training or competitions make up for the missed classes independently, that is, the class schedule is not rearranged for them. Normally, there is no exclusive examination session for athletes, but in special circumstances, athlete exclusive examination sessions are provided to help the students complete the exams.

According to the coding data, the universities put a great deal of emphasis on the sports skills and competitive achievements of elite sports students, while political thought learning and academic courses received relatively less focus. This result is consistent with Maher et al.'s finding that schools attach too much importance to the sports skills and competition results of elite sports students [45], while placing less focus on academic courses. Stempel reported that elite sports students form a single value in theuniversity, and believe that sports skills and competition results are of prime importance, while academic learning is ignored or even despised [46].

At the school leadership level, only sports performance is considered, and the school always deals with their academic performance. The students only need to train every day and get good results (in their respective sports). (M10-XX-b-11)

4.4. Family factors

Family is the cradle of children's growth. It is the first learning environment for children, and is also a natural place for them to develop their basic knowledge. The family factors identified in this study indicate that the family not only plays an important role in the learning of sports students, but also has a profound impact on shaping their whole personality and behavior. According to the analysis of the data coding results, there are three factors affecting their academic learning difficulties, namely family atmosphere, family support and family socio-economic status.

4.4.1. Family atmosphere

According to the analysis results, parents' urging and scolding may have a negative impact on the study of elite sports students. When children encounter difficulties in learning academic courses or their grades are not as good as expected, parents' scolding and urging may make them feel more pressure, thus reducing their enthusiasm and interest in learning. Renn and Arnold found that the family not only affects the study of sports students, but also participates in the shaping of all their personality traits and behaviors [47]. Family education replicates the real social relations and gives birth to the style of the future society. Zambianchi and Ricci pointed out that excessive expectations and pressure have negative effects on sports students, increase their anxiety and pressure, and hinder their learning progress [48].

In fact, I am not good at study, but mom and dad are never satisfied with my exam results. If they can give me more encouragement and help me find a good way to learn, I think I will do well in the exams. (M06-JT-a-07)

4.4.2. Family support

According to the analysis results, parents may have expectations for their children to become top athletes, and put a great deal of time and energy into achieving this goal. This may include participation in various sporting activities such as training, competitions, selection, and camps to improve the child's competitiveness and level in sports. However, this excessive arrangement may require a large amount of time and energy. Because so much time and energy are spent on physical activities, it is impossible to reasonably allocate enough time to complete school homework and study. Wolfenden and Holt found that the expectations and pressure on sports students interfere with their study [49].

> *My parents have high expectations for me. Because I am a sport student, many academic courses in the eyes of my parents are just a means to get the graduation certificate. They pay more attention to my development and progress in sports. (M03-JT-b-04)*

4.4.3. Family socio-economic status

According to the analysis results, a small number of respondents said that their parents may face financial difficulties, which may limit the provision of sufficient educational resources and support for their children. At the same time, family economic difficulties may mean that sports students have insufficient living conditions, learning environment and learning resources, thus affecting their academic performance. Campbell and Price found that families with financial difficulties need to rely on the help of their elite sports children to shoulder additional family responsibilities [50]. These children need to work part-time or contribute to housework to help their families reduce their financial burden. These additional responsibilities may take up students' time and energy, and affect the investment and performance in their study. Simamora and Guillory and Wolverton reported that insufficient economic capacity may lead to the inability of families to provide a good learning environment [51][52].

> *I come from a poor family, and there are two brothers and sisters in the family, so I often need to work in my spare time to earn living expenses and share the economic pressure of my family, which will take up a lot of my study time. (M08-JT-c-09)*

4.5. Career factors

The career factors identified in this study show that most sports students had a strong consensus on the importance of studying academic courses, and most face the problem of choosing a job and job hunting after graduation. Especially in recent years, with the expansion of university enrollment, the number of college students is increasing, resulting in the situation of “more students, fewer jobs.” Most sports students with special talents experience relatively large psychological distress. According to the analysis results, there are two factors affecting the careers of sports students in academic learning, namely employment guidance and career planning.

4.5.1. Employment guidance

According to the analysis results, employment advisors pay insufficient attention to and make insufficient investment in students’ employment needs in the curriculum setting, teaching methods, practical opportunities and other aspects. The cultivation of elite sports students pays attention to the improvement of their sports skills and competitive level, but may ignore the cultivation of professional knowledge and professional skills needed for their future employment. This may lead to a lack of sufficient competitiveness when students face employment after graduation. They may be unable to meet society’s needs for talents, and thus face difficulties finding employment. Hadar et al. pointed out that the occupational stress and future

uncertainty in the process of employment guidance may increase the pressure and anxiety of elite sports students, and this emotional state may have a negative impact on learning, leading to the emergence of learning problems [53]. In addition, Magnano et al. showed that some sports talents may pay more attention to and have motivation for sports training and competitive competitions, while their interest in and motivation for learning are weakened [54]. Employment guidance may further aggravate this lack of learning motivation.

> *There is a problem that has been there since school, which is the problem about employment. Because the employment area of sports students is very narrow, either to be a sports teacher or a coach, I am very worried about my employment difficulties in the future. Until now, I am still troubled by this problem. (M03-ZY-a-04)*

4.5.2. Career planning

According to the analysis results, for a sports student, sports is an indispensable label and is a part of life in their growth process. However, due to the relatively limited career choices of sports students, they may face anxiety about their future career development. Ronkainen and Ryba found that elite sports students lack systematic employment guidance and rely too much on sports [55].

> *I thought to give up, but I have nothing but this project, and I have no skill. I have a bad academic foundation. What do you say I can do? (M08-ZY-b-09)*

4.6. Tutoring strategy

Tutoring strategy in this study refers to approaches that cater to the characteristics and needs of sports students, so as to help them better overcome the difficulties brought by academic courses and improve their learning effect. At the same time, according to the training plan and competition arrangement of elite sports students, the time and content of the subject study need to be reasonably arranged, so as to avoid excessive dependence on sports training and avoid harming the learning effect of the subject. According to the analysis results, there are four aspects of tutoring strategies for sports students, namely active demand help, reasonable arrangement of time, unremitting spirit, and maintaining a good attitude.

4.6.1. Active demand help

According to the analysis results, elite sports students can recognize the problems in their learning methods and take positive countermeasures. They may actively talk to their friends and seek emotional support and understanding. Second, they can communicate with their school teachers, seek guidance from education professionals, and may even seek help from the school's mental health education or counseling center, and participate in psychological counseling or psychological counseling courses, in order to obtain professional psychological support and learning advice. Saline and Morina and Biagiotti found that when elite sports students encounter learning difficulties, they will share them with their parents or relatives and friends, and seek their support and encouragement [56][57].

> *If you encounter problems that you cannot solve yourself, you can seek professional help, such as from professional consultants, who can provide unique opinions and solutions according to your personal circumstances. (F01-FD-a-02)*

4.6.2. Reasonable arrangement of time

According to the analysis results, a reasonable arrangement of time can help to reduce the pressure of learning and training. By arranging time reasonably, elite sports students can better balance the needs of study and training, so as to reduce the physical and mental burden and maintain an active learning and

training state. Junus et al. found that elite athletic students need to ensure a reasonable allocation of time between study and physical training [58]. Elite sports students should know their sports training schedule, reserve enough time for study, and ensure appropriate time for rest and relaxation to maintain a balance between body and mind.

> *During this period, I should continue to think, formulate my own learning goals, separate learning and training, and be strict with myself in learning. I also need to plan my own study and life in advance. (M05-FD-b-06)*

4.6.3. Unremitting spirit

According to the analysis results, in the face of difficulties and challenges, elite sports students maintain a firm belief and confidence, believing that they can overcome difficulties and achieve success. This belief and confidence can become a strong backing for elite sports students in the face of difficulties, so that they will not give up easily and not be defeated by difficulties. Syam et al. found that elite sports students can make unremitting efforts in the face of difficulties and challenges [59]. No matter whether in the face of difficulties in learning or the challenges in sports training, they can continue to invest their energy and time, and not give up easily.

> *As a national athlete, I need to establish a correct outlook on life and values, be clear about my life goals and pursuit, and adhere to my beliefs and principles in order to realize my own life value and achievements. (M03-FD-c-04)*

4.6.4. Maintaining a good attitude

According to the analysis results, maintaining a good attitude can enable elite sports students to deal with many problems calmly, making it easier for them to find solutions to the problems. When facing difficulties and challenges, an optimistic attitude can help them face problems more confidently and find solutions to problems with a positive attitude. Walton and Wilson found that elite sports students can face up to their learning problems and see them as an opportunity for growth and progress, rather than as a sign of obstruction or failure [60]. Forsyth et al. found that when students with sports skills encounter difficulties in the learning process, they would not feel discouraged, but would actively face and try to solve their problems [61].

> *When the problems cannot be solved, the method I adopt is to further improve my learning state and ability through my own continuous efforts. At this time, what is needed is an optimistic attitude and unremitting efforts. Any problem has a solution; you just need to be optimistic when facing problems. (F01-FD-d-01)*

In summary, this article has discussed the current situation of elite sports students at Chinese universities with the aim of identifying the difficulties they face in their academic studies and the corresponding tutoring strategies that can be adopted to overcome them. According to the results, a model diagram of troubling factors and improving learning strategies was designed, as shown in Figure 2.

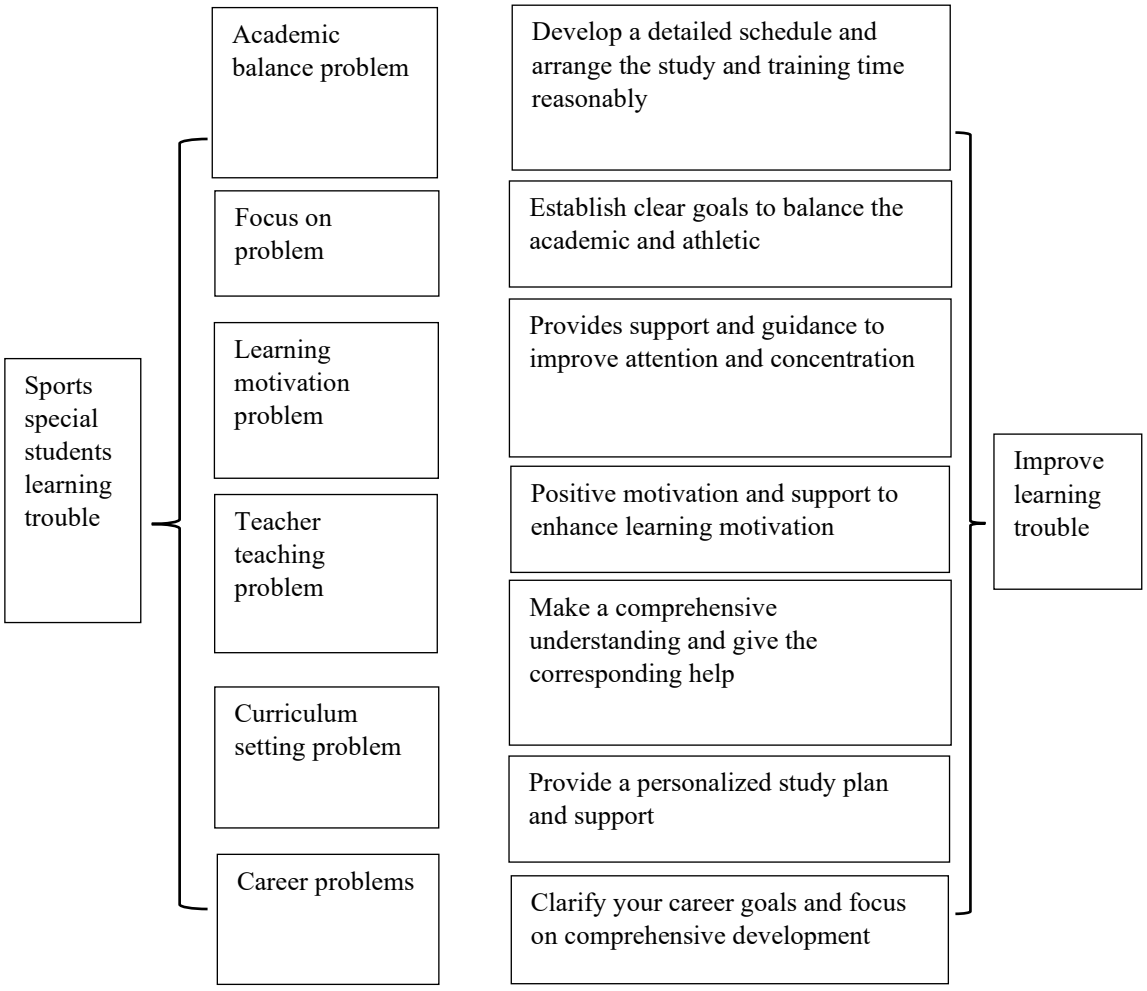

Figure 2. Model diagram of troubling factors and how to address them

5. Conclusion and suggestions

5.1. Conclusion

This study aimed to explore the factors causing difficulties for elite sports students in Chinese universities. After conducting semi-structured interviews with 15 elite sports students, themes were analyzed and four factors were identified. First of all, in terms of personal factors, elite sports students need a great deal of time and energy to invest in sports training and competition, which leads to limited time for taking academic courses and makes it difficult to balance their learning and training needs, reducing the learning effect and causing problems. Second, frequent physical activities may lead to physical fatigue and mental stress, making it difficult for elite sports students to concentrate on their study, as they feel tired and lack motivation. In view of these problems, corresponding improvement strategies are proposed, with the aim of establishing a strategy model of the causal factors of university elite sports students' difficulties and steps for overcoming their learning problems.

There are the problems of insufficient teaching resources and support for academic courses in schools. The lack of appropriate teaching materials, teachers and learning environment affects the learning effect of

elite sports students, leading to learning difficulties. In addition, elite sports students need to participate in many physical activities, which may conflict with the arrangement of their academic courses. The school's curriculum may not allow athletic students to fully participate in academic courses, or may fail to provide a flexible learning schedule that affects their learning progress and academic development.

In terms of family factors, family education environment has a great influence on the study of elite sports students. If the family does not pay attention to their study and if they lack a good learning atmosphere and guidance, it may limit their learning opportunities and achievements. Moreover, family expectations and pressures on students may make them feel overburdened with study. Parents expect their children to do well in school and in sports, which may create psychological stress and learning difficulties for the children.

In terms of career factors, elite sports students may face the pressure of career choice. They may face the choice of professional sports development or giving priority to their study. This uncertainty and pressure may have an impact on their learning; they need to make a decision between academic learning and sports development. In addition, elite sports students may worry about the impact of their studies on their future career development.

5.2. Suggestions

Individual students may experience all kinds of negative emotions, such as anxiety, when facing academic courses. However, elite sports students should not be too sensitive or nervous, nor do they have to deny their own feelings. They should actively understand and accept these emotions, consult with excellent students, listen to their experience, correctly understand the characteristics of learning, cultivate self-study ability, arrange their time reasonably, make full use of their class time, take good study notes, and repeatedly preview.

Schools, while pursuing honor, should pay attention to the learning situation of elite sports students in academic courses, issue timely academic early warnings, formulate solutions, and urge them to strengthen their learning. By attaching importance to their performance in academic courses, providing an appropriate learning environment and resources, and formulating employment support policies, the school can provide better learning conditions and development opportunities for elite sports students, help them overcome their learning difficulties, and achieve comprehensive development.

As for families, parents play an important role in the learning of elite sports students, and should understand and support their learning challenges and pressure, actively provide help and encouragement, create a quiet and orderly learning environment, and reduce family noise and interference. Parents' encouragement and provision of good learning conditions and living habits would help elite sports students better cope with their learning difficulties and achieve a balance between academic and sports development.

Teachers should have a comprehensive understanding of the learning progress of elite sports students, and give help and support in combination with the school's talent training program. According to their learning needs, teachers can provide suitable learning software, teaching videos or online resources to promote the mastery of academic knowledge. At the same time, teachers can establish smooth supervision and feedback channels, establish good communication with students, and help solve their learning problems in a timely fashion. By providing personalized learning support and psychological tutoring, teachers can help elite sports students overcome their learning difficulties and improve their learning effect and performance.

5.3. Research limitations and recommendations

This study utilized thematic analysis to explore the factors influencing elite sports students, offering insights into addressing their learning challenges in Chinese universities. The sample of 15 exceptional

sports students from Chinese universities is representative of the country's context. Nevertheless, certain limitations warrant acknowledgment. While the interviewees selected in this study included the top talents in various fields of sport, the sample range of the survey could still be strengthened. Therefore, follow-up studies can expand the scope of the sample, or discuss athletes who have not won prizes, supplemented by interview materials from teachers and school-level administrators. In terms of research methods, this study only used the semi-structured interview method to study the learning difficulties of university sports students. In the future, a questionnaire survey could be administered to verify the degree of influence of these factors.

Most college student-athletes face difficulties in completing their academic studies, but there exists the exception of top athletes who excel academically. It is recommended that future research focus on this group; that is, studies can pay attention to top student-athletes who have completed their university studies, especially focusing on their employment situations after concluding their sports careers, and explore what level of employment success rate they ultimately achieve after retiring from athletics. Using the interview format, their specific personal approaches to balancing sports and academics and achieving academic success could be uncovered.

While the qualitative methodology employing semi-structured interviews provided rich, in-depth data crucial for understanding the nuanced academic difficulties faced by elite sports students, the study's findings must be considered within the context of its methodological limitations, particularly concerning sample size and generalizability. The research utilized a snowball sampling technique to recruit 15 participants from three Chinese universities, a sample size appropriate for achieving thematic saturation in qualitative inquiry but which inherently limits the statistical generalizability of the results. The participants, while diverse in their sporting disciplines and achievement levels, represent a small, non-random subset of the elite sports student population in China. Consequently, the identified factors, namely personal, school, family, and career factors, may not fully capture the experiences of all elite athletes in higher education, particularly those from regions or sports not represented in the sample. The reliance on self-reported data also introduces the potential for recall and social desirability biases. Therefore, the findings are not intended to be universally representative but rather to provide a foundational, contextualized understanding that illuminates key areas of concern. The transferability of these insights is tentative, and the proposed tutoring strategies should be viewed as suggestive frameworks requiring further validation. Future research employing mixed-methods approaches with larger, randomly selected samples from a broader range of institutions is necessary to quantitatively verify the prevalence and relative weight of these factors and to enhance the external validity of the conclusions for wider application across the Chinese higher education system.

Conflict of interest

The authors declare no conflict of interest

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