Analysis of Learning Obstacles for High-Performance Student Athletes in Chinese Universities during the COVID-19 Pandemic

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Abstract

Efforts to control the spread of the coronavirus pandemic have led to the suspension of mass gatherings, including in universities, which have strong population flows and high aggregation. Consequently, universities have faced significant challenges in operational mechanisms. Against this background, students' learning situation has attracted widespread attention. However, relatively little discussion has occurred on high-performance student athletes (HPSAs) who excel in sports but underperform in academic courses. A country's sports strength is equal to its citizens' overall physical fitness level; the higher the national physical fitness level, the stronger the sports strength, and the more developed the economy. Based on attribution theory and using a snowball sampling method, this study selected 15 HPSAs from Chinese universities for semi-structured interviews. The initial survey subjects were artificially selected, and then qualified survey subjects were provided by sports talents. Then, these people provided the third batch of survey objects, and so on, and the sample gradually increased, just like a snowball, and the respondents were all representative sports students. Material from the initial 12-person interviews was first individually coded, analysed, conceptualized and reviewed, followed by analysis of 3 material from the second round of interviews. No new concepts were developed in the analysis of the second round of interviews, thus achieving theoretical saturation and allowing the construction of a coherent explanatory profile (Corbin & Strauss, 2008).

From the interviews, we extracted themes related to the learning obstacles student-athletes have faced during the pandemic and analyzed the factors at play during the pandemic. Four types of factors were revealed: pandemic, personal, school, and career development factors. Among them, epidemic factors and personal factors are relatively high.

To help student-athletes overcome learning obstacles and balance their learning and training, it is necessary to increase emphasis on academic courses, consolidate knowledge and skills training, reasonably arrange study and training time, enhance interpersonal communication skills, and effectively plan for career development, To discover the various troublesome factors faced by HPSAs in learning.

Keywords: attribution theory, high performance student athletes, learning obstacles, pandemic, universities

1. Introduction

At the end of 2019, the sudden novel coronavirus (COVID-19) outbreak had a huge impact on people's lives due to its highly contagious and easily transmissible nature (Donnelly et al., 2022). In the short term, large-scale population movement was restricted, and various gatherings were suspended (Han et al., 2020), significantly impacting people's health, daily life, learning, and work. The pandemic also presented significant challenges to education (Delardas et al., 2022; Li et al., 2022). As of the end of 2022, the COVID-19 pandemic remains a significant obstacle in the academic and personal lives of university students. In response, many universities have implemented measures such as ending the semester early, compressing the teaching schedule, suspending classes and examinations, and encouraging students to return home (Rao et al., 2022). The sports industry, which has close ties with higher education, has also undergone tremendous changes, with many school sports activities unable to proceed normally, resulting in a large number of games being canceled or postponed, leading to challenges for HPSAs and a lack of motivation to continue training (Bielec & Omelan, 2022). Levine et al. (2022) found that HPSAs lacked the motivation to participate in competitions under such circumstances, which delayed their athletic peak; those scholars

also found that some HPSAs may face the option of retiring, which could have a significant impact on their career and profession.

Additionally, according to statistics compiled by the Enrollment Office of the Ministry of Education of China (2020), there are 275 universities that recruit high-level sports teams, 289 universities that offer a sports major, and 94 and 54 universities that, respectively, offer sports training and an ethnic traditional sports major. This is demonstrative of the country's emphasis on the sports industry and shows that the cultivation of HPSAs in higher education institutions is also of great educational significance (Levine et al., 2022). Specifically, athlete training programs are proposed based on the needs of high-level college sports teams and are approved by the Ministry of Education. Students participate in regular college admissions examinations and are specially recruited if they possess athletic abilities that meet a given college's annual enrollment requirements (Zimmerman, 2002). This is not only conducive to promoting the development of a sports curriculum but also helps achieve the teaching objectives of quality education courses, laying the foundation for Chinese higher education institutions specialized in physical education and high-level sports teams . While pursuing honors, schools should pay attention to the learning situation of HPSAs in cultural courses and put forward academic early warning measures in time(Leal Filho et al., 2019). Therefore, HPSAs play an important role in the development of China's sports industry (Liao et al., 2022).

However, due to the pandemic, sports students in their growth period have been quarantined at home with limited space for activities. Under such circumstances, they may not train adequately and could potentially use incorrect techniques, fail to meet training standards, and even become lethargic or experience learning obstacles. This not only makes their emotions susceptible to fluctuations but also affects their physiology and psychology (Vučković et al., 2022). Moreover, sports students face increasingly fierce competition in the job market because the nature of sports disciplines requires relevant skills testing, making employment prospects more challenging (Theis et al., 2021). Similarly, many sports students had low scores when they entered school and had to becomeacademic performance poor students, making it difficult to meet the requirements of the new management standards. Such students face pressure and resistance to training. HPSAs must spend a lot of time engaging in specialized training to attain honors for their school, which inevitably conflicts with academic courses, further exacerbating the contradictions between academic and athletic pursuits (Brecht & Burnett, 2019). Additionally, many specialized training programs cannot be conducted indoors and involve teamwork issues. When sports training cannot be effectively carried out, students may develop negative attitudes toward academic courses, leading to difficulties in both learning and training (Jeong & So, 2020).

Learning difficulties refer to the various psychological difficulties college students experience that affect their learning potential, resulting in unsatisfactory learning outcomes and significant negative experiences (Saha et al., 2021). Staying at Home During COVID-19 , HPSAs often face the problem of lack of self-discipline, and it is difficult to maintain good study habits. The sense of participation in online courses is not strong, and the lack of learning time arrangement and learning task management ability leads to confusion and inefficiency in learning plans.

Learning difficulties among college students are not caused by low intelligence but are rather a product of various factors that interact with each other, such as their unique learning environment, learning tasks, and physical and mental development characteristics (Sekreter, 2019). Furthermore, learning difficulties encompass the difficulties students face in their learning process due to school, society, or other uncontrollable factors. Faced with difficulties related to learning courses, learning methods and habits, and learning-related emotions, students become worried and frustrated and unable to concentrate on their studies, resulting in poor academic performance and severely affecting academic achievements and learning motivation (Giner-Gomis et al., 2023; Caligiuri et al., 2020)

Sports research has found that the reasons for learning obstacles among HPSAs often stem from multiple factors. According to Park and Ramirez (2022), individuals, including HPSAs, facing external pressure or difficulties from personal, family, social, and school-related aspects may develop anxiety regarding and become frustrated with the learning process, making it difficult for them to focus on their studies, resulting in poor academic performance, and affecting their learning outcomes. According to Heider's (1985) attribution theory, in order to live better in a complex society, people need to control their environment and anticipate others' behavior. Weiner (1972) believed the key to anticipating others' behavior is to analyze the reasons for their behavior or related events. Heider (1985) believed that everyone strives to find causal explanations for people's behavior and identify the causes of events, which are often due to internal and external factors. Additionally, According to Weiner (1972), the reasons for people's behavior can be divided into two types based on their source: internal factors and external factors. Internal factors include a person's abilities, efforts, motivations, emotions, attitudes, and moods, and external factors include

task difficulty, luck, and the influence of others (Wang et al., 2018). People usually explain others' behavior based on these two reasons (Hewett et al., 2018).

Regarding the sources of learning difficulties, they are typically attributed to internal or external factors affecting individuals, and thus, scholars, both domestically and internationally, have different views on the sources of learning difficulties. Kabir et al. (2018) asserted that the main factors influencing students' academic achievement are environmental and personal factors. Glazer (2018) offered that the factors causing learning difficulties originate from individuals, families, and schools, with individual factors being the most important. Furthermore, types of learning difficulties can be classified as low achievement, unstable or declining performance, easy distraction, subject selectivity, and learning confusion. For example, Ding et al. (2022) argued that learning difficulties refer to individuals experiencing bottlenecks in their learning progress due to internal personal factors or external environmental factors during their cognitive development or behavioral change processes, resulting in feelings of frustration and helplessness toward learning.

2. Materials and Methods

2.1 Theoretical Framework

This study adopted Heider's attribution theory as its theoretical framework. Using internal factors and external factors, this theory teaches how to think about a certain behavior of others from a more objective perspective and interpret the behavior at that time from the standpoint or situation of others.

Regarding the research methodology, we employed semi-structured thematic analysis. Attribution theory explains why people behave in certain ways and suggests that individuals typically seek appropriate explanations for their actions by posing questions such as "Why did I do that?" or "Why did that happen?" Attribution theory divides the causes of human behavior into two main categories: dispositional attribution and situational attribution. When people attribute behavior to others, they tend to emphasize dispositional attribution, or personality attribution, but when attributing behavior to themselves, they tend to focus on situational factors. In other words, individuals often believe their behavior is influenced by external factors, whereas they attribute the behavior of others to internal traits. Therefore, this study divided the factors affecting the learning obstacles faced by HPSAs amidst—and thus under the influence of—the COVID-19 pandemic into internal factors, such as personal factors and career goals, and external factors, such as the pandemic and school-related factors.

2.2 COVID-19 Factors

Because of the sudden onset of the COVID-19 pandemic, some sporting events were canceled or postponed indefinitely, which forced HPSAs to adjust their training schedules (Mocanu et al., 2021). Consequently, their training became relaxed, and their motivation to participate in competitions diminished. Some HPSAs experienced a delay in their athletic career, and some senior HPSAs faced the choice of retiring or graduating (Hertel et al., 2021). The pandemic has brought mainly negative psychological effects on HPSAs, primarily manifested in concerns about declining athletic performance, the inability to generate a sense of self-satisfaction and achievement, and increased economic pressure for some college athletes whose main income depends on competition prize money (Sbai et al., 2021). During the pandemic, many schools had to resort to online teaching. However, the absence of regular face-to-face interaction between teachers and students during virtual learning has posed significant challenges. Teachers were unable to promptly identify and address students' difficulties and concerns, leading to a less than optimal learning experience (Fu, 2020). Therefore, this study assumed that the sustained impact of the pandemic would bring challenges to the learning and lives of HPSAs.

2.3 Personal Factors

Many HPSAs show deviation with respect to their learning goals (Bielec & Omelan, 2022). Some HPSAs believe that, as a sports-specialized student, sports performance is the priority and it is sufficient just to obtain a passing grade in academic subjects (Jeong & So, 2020). Moreover, unclear learning goals also have adverse effects on HPSAs by weakening their motivation and proactivity in academic course learning, leading to negative behaviors (Leisterer & Jekauc, 2019). Zimmerman (2002) pointed out that HPSAs also have deficiencies in terms of developing study habits. Therefore, this study assumed that HPSAs may lack perseverance in learning academic subjects, leading to slow progress in academic learning; hence, it is recommended that HPSAs balance their training and academic achievements.

2.4 School Factors

Regarding school factors, coaches often prioritize athletically talented students' training and competition performance and place their academic studies in a secondary position. This entails frequently requesting school leave to prepare for and participate in sports competitions, resulting in HPSAs' lack of interest in learning and the belief that focusing on their sports specialty is sufficient, whereas academic learning is unnecessary (Gavala-González et al., 2019). Gunter et al. (2018) pointed out that schools prioritize sports competitions and consider it sufficient for HPSAs to bring honor to the school through their participation in such events. Hence, studying is often delayed until after competitions, leading to students having incorrect perceptions of learning, completely losing interest in studying, and failing to properly allocate their time to both studying and training. The majority of HPSAs view completing their academic work as challenging (Hastie & Sinelnikov, 2006). Therefore, this study assumed that schools systematically prioritize athletic performance over academic performance, thereby demotivating HPSAs regarding performing well in their academic studies.

2.5 Career Factors

Career factors are also a special concern for HPSAs because they are a unique group who not only study in school but also participate in various public competitions, thus attracting widespread attention to their employment issues (Simiyu, 2010). Ainscow (2020) pointed out that the main reasons for the poor employment situation of high-level athletes in China are their suboptimal academic course foundation, their busy learning and training schedule that leaves them with no social and practical experience, and the insufficient emphasis on their academic learning in schools. Oglesby et al. (2020) claimed many people are pessimistic about high-level athletes' employment situation. The present study suggests HPSAs may face employment crises, difficulties, and pressure after graduation.

2.6 Research Design

2.6.1 Research Methodology

In this study, 15 sports-specialized students from three Chinese universities were selected as the research subjects. The researchers used snowball sampling to find participants who met the study's selection criteria. Recruitment of interviewees began with athletes from the sport of boules and then expanded to other sports fields where suitable interviewees could be identified. Before conducting the interviews, the participants were informed about the purpose of the study and were asked for their consent. The interviews were conducted both online and in person, with each session lasting no less than one hour. With the participants' permission, each interview was recorded in full. During the data analysis process, the interviewees were assigned numbers, and the recorded data were transcribed verbatim. The interviews were divided into two phases. In the first phase, 12 participants were selected and asked about the factors that affected their learning during the COVID-19 pandemic. Their responses were analyzed and transcribed. In the second phase, three more participants were interviewed based on the transcript to collect more data until theoretical saturation was reached.

2.6.2 Study Participants

In this study, 15 sports-specialized students from three universities in the Chinese provinces of Beijing, Shaanxi, and Gansu who met the following criteria were interviewed:

(1) regarding China's sports levels, a second-level athlete or above;

(2) at least 4 years of sports experience;

(3) mediocre to low grades in their classes.

The first 12 interviewees were numbered T1 to T6 and S1 to S6, and the three additional interviewees were denoted by F1, F2, and E1. The interviewees came from different sports fields and focused on different sports projects. Among them, there were six females and nine males, including one international champion, two national champions, six first-level athletes, and six second-level athletes, as shown in Table 1.

Table 1. Research Subjects' Profiles

No.	Code	Gender	Specialty	Level	Accrued honors
1	T1	Female	Boules	International athlete	World Championship winner
2	T2	Female	Boules	National Fitter	Asian National Cup champion
3	T3	Male	Curling	National Level 1	Third place in the Canadian Club League
4	T4	Female	Baseball and softball	National Level 1	National Youth Games champion
5	T5	Male	Martial arts	National Level 1	Gansu Province team champion
6	T6	Male	Tae Kwon Do	National Level 1	Gansu Province champion
7	S1	Female	Artistic gymnastics	National Level 1	Shaanxi Province team champion
8	S2	Female	Shot put	National Level 1	Shaanxi Province champion
9	S3	Male	Basketball	National Level 2	Lanzhou City team champion
10	S4	Male	Basketball	National Level 2	Lanzhou City team champion
11	S5	Male	Soccer	National Level 2	Zhengzhou City team runner-up
12	S6	Male	Soccer	National Level 2	Zhengzhou City team runner-up
13	F1	Male	Track and field	National Level 2	In the top three in competitions in Hebi City
14	F2	Female	Track and field	National Level 2	In the top three in competitions in Xi'an City
15	E1	Male	Skiing	National Level 2	In the top three in competitions in Taiyuan City

2.6.3 Interviews

The primary data collection method was semi-structured interviews, following the literature on sports-related topics in the context of the pandemic, including Peña et al. (2021), Li et al. (2021), Parczewska (2021), Hartshorne et al. (2020), and Rea and Parker (2014), among others. An interview guide was developed based on these references. A panel of experts consisting of five university professors, including one international coach with several years of experience with the Chinese national team, reviewed the interview guide prior to the study. After the expert panel review, the guide was revised based on the panelists' comments and suggestions. The modified interview questions are shown in Table 2. The questions were designed to be open-ended to avoid limiting interviewees' thought flow. Additionally, the questions were designed to solicit the same information in different ways to achieve depth and completeness through triangulation. The face-to-face mode of the interviews allowed interviewees to share and narrate their perceptions freely and comfortably, which yielded rich, in-depth information that helped to achieve triangulation through constant comparison, with the interviewers returning to the interviewees to clarify and further explain the research topic as needed (Snyder, 2012).

Table 2. Interview Outline

No.	Questions
1	How did you adjust your training plan and mindset during the COVID-19 pandemic?
2	How did the prolonged pandemic impact your training?
3	What obstacles do you face during your training?
4	How did the pandemic impact Chinese and international competitions?
5	Have any exchange activities been held during the COVID-19 pandemic? If so, what replaced the activities after they were canceled?
6	How has the ratio of the time you dedicate to academic studies versus training changed during the COVID-19 pandemic?
7	How have you coped with the demands of academic studies and training during the COVID-19 pandemic?
8	What has been your experience with online courses?
9	Did you experience stress and anxiety while the strict COVID-19 countermeasures were in effect? If so, what methods did you use to relieve those feelings?
10	Do you think the pandemic has impacted your career planning? If so, how?
11	What methods have you used to solve problems encountered during learning and training due to the pandemic?

2.7 Data Processing and Analysis

Thematic analysis. The analytical strategy adopted in this study was based on grounded theory (Corbin & Strauss, 2008). We simplified the analytical strategy so that it comprised three main steps: open coding, axial coding, and selective coding. Analysis was performed in NVivo, and, given its significant coding capabilities, the researchers were able to quickly capture information points contained in the transcripts (Su et al., 2020). First, we independently coded, analyzed, conceptualized, and reviewed the materials derived from the first 12 interviews and then analyzed the materials derived from the second round of interviews. No new concepts were developed in the course of analysis of the second round of interviews, and we achieved theoretical saturation, enabling the construction of a coherent interpretive dataset (Corbin & Strauss, 2008). To avoid the influence of the researchers' subjectivity on the objectivity of the coding process, the first and third authors coded the same interview transcripts separately, and the second author subsequently conducted checks. Differences of opinions were discussed and negotiated until the standards were refined and consistent. Open coding refers to the practice of breaking down data and describing concepts to represent the original data blocks (Corbin & Strauss, 2008).

After considering all possible meanings, carefully examining the context, and repeatedly comparing the materials derived from the first 12 interviewees, we gained a broad understanding of the data, generated interpretive concept labels, and synthesized similar low-level concepts into categories. Next, initial concepts with the same or similar essence were combined to construct 31 categories. For example, the concept label "The pandemic disrupted motivation for training" derived from the F1 interview material stating that "Competition cancellation deprived us of the motivation [to engage in] sports and training," and the concept label "The pandemic reduced learning motivation" derived from F2 material stating that "The fluctuations of the pandemic made people feel dull and lack motivation." Next, the essence of these two concept labels was extracted and synthesized into the following category label: "The pandemic affected learning motivation and enthusiasm." Other categories were synthesized in the same way, under the three authors' joint supervision (Table 3 shows some examples of open coding). Similar categories were repeatedly differentiated and merged to form nine axial categories, and finally, four core codes were established at a high level of abstraction (as shown in Table 4).

Table 3. Open Coding of Learning Obstacles Faced by High Performance Student Athletes in Chinese Universities During the COVID-19 Pandemic (Partial)

Code	Open code label	Example from interview material
F01	Low self-discipline affected learning efficiency	"Everything has its pros and cons, and online learning is no exception. This is especially true for us HPSAs. Some students experience a significant decrease in learning efficiency when participating in online learning because there is no classroom atmosphere around them, which makes it harder for them to absorb and digest knowledge. Some self-disciplined students will complete learning tasks even without a teacher's supervision, but those who lack self-discipline will deceive themselves and not [undertake] learning tasks seriously. The biggest disadvantage of online learning is that it polarizes students, with good students becoming better and poor students becoming worse."
F03	The pandemic affected the development and execution of study plans	"The pandemic [has had] a certain impact on overall training. Some training venues that are usually available [have been] closed, and without a good training place, athletes' mentality may change, leading to impatience and anxiety. The training plan is also not very well established."
F06	The pandemic affected the implementation of in-person training courses	"Under the influence of the pandemic, the [amount of time I dedicate to] my academic studies increased while [my] training [time] has shown a downward trend. In the course arrangement [that has been in effect for] the past two years, to reduce gatherings and limit the number of people allowed at a venue, the time allotted for training each week has also been restricted. As a result, the time [allocations to] academic studies and training changed."
F11	The pandemic affected the effectiveness of the guidance coaches provided	"The continuous fluctuations [during] the pandemic have led to constant communication between me and the coach. Although the coach still assigns tasks every day, it is impossible [for the coach] to pay attention to every individual. I have to communicate with the coach constantly about my physical sensations after training and the situation [regarding] the training environment. Due to the excessive time spent on coordination, my training efficiency has been affected to some extent."
F17	The pandemic presented challenges for future career planning	"I believe that the pandemic has had an impact on my career planning. For example, there are many professions that are particularly challenging for me in the pandemic environment. Previously, I was very interested in working in the field of marketing, but due to the pandemic, I cannot travel around and market [things] everywhere, which has had a serious impact on my career planning."
F25	Anxiety about future career prospects	"For me, the biggest difficulty [has been] not being able to train according to my wishes; I can't use the equipment I need, and exercising at home can only maintain my physical condition to a certain extent. It also impacts my daily frame of mind. For example, sometimes, I think that if the pandemic continues, my prime will be wasted, which will affect my career in the future."

After obtaining 31 open-ended codes, similar concepts were merged to form axis categories. After repeated analysis and merging, nine axis categories were formed (as shown in Table 4).

Finally, a highly abstract core code was established by analyzing the relationships between axis categories. Prior to selective coding, this study conducted interviews with athletes who gained special admission to a university to briefly summarize the factors related to their learning difficulties and provide references for selective coding as a supplement to the relevant literature. Most interviewees stated that their learning difficulties encompassed many factors related to the individual and external environment. Based on repeated analysis of the main axis categories, four highly abstract core codes were extracted (as shown in Table 4).

Table 4. Three-Tiered Coding of Learning Obstacles Faced by HPSAs in Chinese Universities During the COVID-19 Pandemic

Selective coding	Axis coding	Open code label
Impact of the pandemic	In-person participation in competitions	Uncertainty in the competition schedule due to the pandemic
		Inability to meet with classmates from different regions due to the pandemic
		Inability to participate in competitions in person due to the pandemic
		Complex approval process for in-person activities due to the pandemic
	Professional training courses	No in-person training due to the pandemic
		Limited to physical training due to the pandemic
		Decreased motivation for training due to the pandemic
		The pandemic affected the implementation of in-person training courses
		Relatively scattered approach to training due to the pandemic
Personal factors	Personal mindset	Excessive worry about contracting COVID-19
		Development of anxiety due to the pandemic
		Development of negative emotions due to the pandemic
		Decreased learning drive and motivation due to the pandemic
	Personal study habits	Inadequate home learning environment leading to lower learning efficiency
		The pandemic affected the development and execution of study plans
		The pandemic exacerbated the impact of low self-discipline on learning efficiency
School factors	Instructors' teaching approach	Inconvenient to seek guidance from teachers due to COVID-19 countermeasures
		Less teacher supervision and question-and-answer opportunities in online courses
		Decreased coaching efficiency in online courses
		The pandemic affected the effectiveness of the guidance coaches could provide
	Curriculum design	Increased focus on academic courses
		Tentative training schedule due to the pandemic
	Efficiency of online courses	Low participation in online courses
		Inadequate learning atmosphere in online courses
		Lower efficiency in online learning
	Impact of work accumulation	Increased emphasis on academic courses
		Inability to participate in international competitions due to the pandemic
Career factors	Career planning	Anxiety about future career prospects
		Difficulty finding employment due to the pandemic
		The pandemic presented challenges for future career planning
		Disruption of postgraduation employment choices due to the pandemic

Professional sports training for athletes is a repetitive and long-term process that is necessary to maintain their best performance on the field; however, COVID-19 countermeasures instituted during the pandemic led to unpredictable changes in factors such as training venues and schedules, seriously affecting athletes' motivation to train and resulting in lower learning efficiency.

Regarding individual factors, during the stay-home period of a pandemic, HPSAs tend to be prone to laziness, which reduces their initiative and efficiency in learning. Because of restrictions on training venues, personal skills cannot be improved correspondingly (Li & Luo, 2022), and the negative emotions that arise can significantly affect learning effectiveness. Most HPSAs have a high consensus on the importance of sports competitions and honors attained through sports as outranking good performance in academic courses, and they view this as an undeniable fact. Compounding this, during their school years, they hear the instruction "train well" more than they hear "study hard," which reinforces this ideology (Benítez & Martínez, 2020). Moreover, compared to other students, after experiencing the passion and excitement of the sports arena, HPSAs regard studying in a quiet corner of the library as a waste of time and believe that winning honors in sports competitions is a better way to serve the country (Nguyen et al., 2020). This cognitive bias in learning and recognition poses a significant challenge to student-athlete educators in terms of addressing the difficulties in academic course learning.

Regarding school factors, the pandemic situation disrupted athletes' fixed training schedule and replaced it with tentative training venues and coaching time. Because of accumulated experiences with scheduling changes amidst the pandemic, most of the interviewees learned to wait for confirmation of a venue and a coach before actually going to training. Having formed this thinking habit, HPSAs' extra free time due to pandemic-induced training deficits was rendered bewildering and directionless. Online teaching is a great test of students' self-discipline, but it is apparent that 80% of the students interviewed lack self-discipline. This may be related to the growth experience of HPSAs, who have been participating in training since they were young and have spent most of their time training. The illusion surrounding training versus academia seems deeply ingrained and, coupled with the fact that academic courses contain a lot of theoretical knowledge, it places great teaching demands on instructors.

Regarding career factors, HPSAs have not been slackening in the face of the normalization of pandemic prevention and control measures; in fact, they have been seeking workarounds. However, it is evident from the interview data that they lack systematic employment guidance and reasonable self-planning. The pandemic has had a huge impact on HPSAs' employment prospects, and employment pressure and anxiety have become the main factors inducing psychological problems among them. Specifically, HPSAs at the employment stage are prone to psychological confusion and negative attitudes. Over-reliance on sports may be the biggest career planning challenge for student-athletes, as many want to achieve a certain rank before retiring and forming a club to promote their sport.

Reliability. To ensure the reliability of the results of this study, several measures were taken, including the following: (a) soliciting the opinions of five education experts through a survey to inform the establishment of the study's subject selection criteria; (b) to ensure a smooth interview process, experienced interviewers provided the interviewers with interview-skills training prior to the formal interviews and informed them about potential issues that could arise during an interview; (c) prior to coding, we analyzed numerous research articles on the learning obstacles HPSAs face and summarized four factors based on the literature. We also used thematic analysis to extract coding terms, which is a more comprehensive method than other approaches (Nagy et al., 2021).

3. Results

This study used interviews as an instrument to analyze and summarize the training and learning content of sports specialties during the COVID-19 pandemic. The study explored four major factors, namely, pandemic factors, personal factors, school factors, and career factors. The following subsections explore each of these factors in depth, providing excerpts from the interview transcripts to illustrate key points. The alphanumerical codes following each comment from an interviewee consist of an English abbreviation of the interviewee's name and a specific code assigned to the interviewee.

3.1 Pandemic Factors

In this study, pandemic factors represent the pandemic's impact on HPSAs' learning and participation in sports events. The coded data show that pandemic factors include two aspects: in-person participation in sports competition and professional training.

3.2 In-Person Sports Competitions

The results of coding analysis showed all the participants mentioned the tentative nature of competition schedules during the pandemic, requiring HPSAs to be at the ready to adjust their training plans in response to the cancellation or postponement of various events. Additionally, team members were unable to gather for in-person team events, resulting in a lack of precompetition urgency and motivation, which led to complacency and distress. Furthermore, Mocanu et al. (2021) and Hertel et al. (2021) also found that, during the COVID-19 pandemic, HPSAs with special skills experienced training disruptions and problems arising from being unable to participate in competitions. Interviewees remarked on this as follows:

The October college football super league matches were postponed until December due to the pandemic, which disrupted many people's training and learning. (I-D1-004)

3.3 Professional Training

As reflected in the coding analysis results, the interviewees indicated the pandemic led to reduced or stagnated in-person training, which had a negative effect on physical fitness and dampened athletes' enthusiasm for training. Indeed, training for professional athletes requires high repetition over the course of long-term practice to maintain athletes in their best state on the field. This is consistent with the conclusion Quarta et al. (2022) drew: HPSAs have been affected by the pandemic, resulting, specifically, in the emergence of uncontrollable factors such as venue and time, a condition that has significantly lowered both training enthusiasm and learning efficiency. Regarding this, two interviewees commented as follows:

During the first half of 2020, when the pandemic just began, and in May to June of last year, as well as after the comprehensive lifting of pandemic control measures in December of this year, training was basically stagnant, with only basic physical training remaining. (B-D2-001)

3.4 Individual Factors

Individual factors refer to the COVID-19 pandemic's impact on HPSAs' mindset and learning effectiveness. The results of coding analysis showed individual factors include two aspects: personal mindset and personal learning habits.

3.5 Personal Mindset

As reflected in the coding analysis results, most participants expressed concerns about being infected with COVID-19 at the height of pandemic and even after the strict measures were lifted because contracting the virus could affect their physical abilities. This worry led to negative emotions such as anxiety and pessimism, ultimately impacting their motivation and drive to learn and train. This finding is similar to that of Pillay et al. (2020), who found the pandemic significantly impacted HPSAs' psychological and physiological well-being. Regarding this, two interviewees remarked as follows:

[My COVID-19-related anxiety manifested as] feeling physically uncomfortable, always feeling anxious and short of breath, sometimes wanting to cough, heightened vigilance, sensitivity to bodily sensations, disrupted sleep, decreased appetite, sometimes experiencing high blood pressure, dizziness, menstrual irregularities, and so on. (A-A1-001)

3.6 Personal Study Habits

According to the coding data, student-athletes' personal study habits during the home quarantine period of the pandemic were characterized by a lack of self-discipline, which, in turn, affected the students' academic studies, toward which the majority of the interviewees reported having a lower level of enthusiasm. Leisterer and Jekauc (2019) also concluded that the negative effects of online teaching include lower course quality, reduced content availability, and a lack of interaction with peers. Regarding this, two interviewees remarked as follows:

During the pandemic, my progress in academic courses learning was very slow. After all, staying at home was quite boring, and I relied on mobile phones and computer games. I still got some sports training, but academic courses were arranged relatively less [frequently]. The atmosphere was simply not conducive to learning, and it was impossible to concentrate. (J-A2-002)

3.7 School Factors

School factors refer to the various learning barriers that HPSAs face during the online learning process adopted due to the pandemic. These include inconveniences accessing teacher guidance, no standardized sports movements, and insufficient teacher classroom control. The coding results indicated school factors encompass three aspects: faculty teaching, curriculum setting, and learning efficiency.

3.8 Faculty Teaching

As reflected in the coding analysis results, most of the interviewees reported facing difficulties seeking guidance from their coaches regarding correct movements via phone calls or WeChat video and indicated the effectiveness of online instruction could not compare with that of in-person teaching. For HPSAs in group projects, many techniques for various movements require the assistance and guidance of coaches to be completed effectively. It is evident face-to-face instruction yields better results compared to online guidance, which may appear inadequate to students. This is consistent with the conclusion Norma and Soezin (2018) drew: HPSAs are unable to communicate with their coaches face-to-face during a pandemic, which can result in less specific and precise guidance regarding certain movements. Regarding this, two interviewees commented as follows:

When encountering issues, communicating with the teacher via phone or WeChat as much as possible is recommended. The teacher may also provide video guidance. In cases where face-to-face communication with the coach is not possible, guidance on certain movements may be less specific and precise compared to in-person instruction. (C-B1-002)

3.9 Curriculum Setting

Analysis of the coding data indicated that a majority of respondents reported a change in the balance between academic coursework and training as well as variability in the availability of training facilities and the amount of time spent with coaches and instructors. These factors led to a lack of coordination between academic pursuits and athletic training. It seems student-athletes tend to focus on training, but due to the impact of the pandemic, they have had to spend more time on academic studies, which presents its own challenges. Radu et al. (2020) also found student-athletes experienced academic disengagement and a lack of integration between learning and training during the COVID-19 pandemic. Regarding this, two interviewees commented as follows:

During the school closure, there has been a significant change in the ratio of [time spent on] my academic and training pursuits. I have been focusing more on academic studies during this period, while my training has come to a standstill. (G-B2-001)

3.10 Learning Effectiveness

The interviewees indicated the online courses lacked a sense of participation, provided an inadequate learning atmosphere and insufficient teaching support, and had a low level of efficiency overall. Mocanu et al. (2021) concluded that, during the COVID-19 pandemic, HPSAs enrolled in online courses faced problems such as inadequate teaching adaptability, poor teacher–student interaction, and ineffective supervision. Regarding this, two interviewees commented as follows:

In my experience of online classes, the most significant challenge is the lack of a strong sense of participation. While the teacher delivers their lecture, students tend to focus solely on themselves, and when the teacher poses a question, there is often no response from the students. Without a sense of interaction, it becomes challenging for me to feel motivated to pay close attention during class. (J-B3-001)

3.11 Career Factors

Career factors refer to a situation where HPSAs selectively acquire relevant skills when facing employment choices or decisions that are important to shaping their future. HPSAs' career paths are shaped by guidance from their predecessors and their own rational planning. The coded interview data suggested career factors include two aspects: employment guidance and career planning.

3.12 Career Guidance

Regarding employment guidance, the interviewees reported that career guidance counsellors made very few appearances during the pandemic and coaches served as part-time career counsellors. This is consistent with Rossi and Rosli's (2015) results. Although there are many evaluation indicators at the national level that stipulate the proportion of career guidance personnel in universities, the actual effectiveness reflected in universities still needs further exploration. Regarding career guidance during the pandemic, two interviewees commented as follows:

I have encountered significant obstacles in promoting my athletic program due to the COVID-19 pandemic. While there is a wealth of online resources available, limitations on physical venues have restricted outdoor activities, leaving me with a sense of being unable to utilize my skills effectively. (D-C1-001)

3.13 Career Planning

Sports expertise is an integral part of a student-athlete's identity. Although most of the research subjects possessed the basic skills required for their future career in sports, the majority doubted whether they possess other abilities required for success in the workplace. This is consistent with the findings of Mocanu et al. (2021), which indicated HPSAs lack systematic career guidance and rely too heavily on their sports skills. Regarding this, two interviewees commented as follows:

Besides sports, what else can I do? When rumor had it that this sport would be canceled, I felt really down. (A-C2-001)

4. Discussion

This study aimed to explore the main factors that have hindered HPSAs' learning during the COVID-19 pandemic. The results showed that the main hindrances were personal factors, school factors, career factors, and pandemic factors. The following subsections explain the present study's findings and discuss recommendations based on the results.

4.1 Conclusions

Since the COVID-19 outbreak, HPSAs' learning and training have been greatly affected. This study used grounded theory to explore the core structure of the learning obstacles HPSAs have faced through the following process: labeling → conceptualization → category → main category → core category. The core structure includes four categories, namely, pandemic factors, personal factors, school factors, and career factors, as well as nine classes and 31 subclasses. This structure comprehensively reflects the main influencing factors of learning obstacles encountered by HPSAs during the COVID-19 pandemic, and the categories are independent yet interrelated, forming a complete relational system.

Regarding the pandemic factors, the cancellation and postponement of sports events disrupted HPSAs' training plans, deprived them of opportunities to showcase their talent, interfered with training results, challenged training goals, and created training-related difficulties. Among the personal factors, excessive illness-related concerns and negative emotions not only affected training effectiveness but also impacted online learning, which was characterized by a lack of self-discipline on the part of students as well as insufficient teacher supervision. Higher education institutions' low awareness of proactive learning and poor study habits among HPSAs contributed to learning obstacles.

Regarding school factors, it was found that not all coaches have a unified requirement for balancing HPSAs' physical fitness and academic performance. This research showed some HPSAs had difficulty learning and training during the COVID-19 pandemic due to an imbalance between sports performance and academic grades and institutions' inability to provide training facilities for all HPSAs during the pandemic as well as ill-equipped teachers coupled with the use of ineffective online guidance methods.

Additionally, the prolonged duration of the pandemic has prevented graduating students from returning to school for learning, which has raised concerns about their ability to graduate on time, which, in turn, could affect their employment prospects. Furthermore, stunted personal abilities and limited social experience can diminish sports-specialized students' confidence. because of the narrow range of industries and job positions available to these students, finding employment can be challenging. Most sports graduates choose self-employment, but this is not always effective, and they many end up working outside their field of expertise, which is a major factor causing confusion for sports students. High-quality physical education can bolster a person's confidence and sense of control, improve their coordination and teamwork skills, sharpen their ability to respond to the physical environment, and improve both verbal and nonverbal communication.

Although the pandemic is nearing its end, the factors that affect HPSAs' learning still deserve attention. Regarding individual factors, students' habits and student supervision measures need to be restructured. Regarding school factors, the traditional concept of emphasizing sports performance over academic performance needs to be changed, and attention should be paid to whether course settings and teacher resources can be calibrated appropriately. Additionally, career guidance for student-athletes requires school administrators' attention because solving HPSAs' employment problems is an effective way to reduce their learning difficulties.

4.2 Recommendations

From the perspective of individual students, under the pressure a pandemic brings about, HPSAs may experience various negative emotions such as anxiety, pessimism, anger, and irritability. For humans, this is a normal psychological response to stressful events and a reflection of the body's self-protection mechanism. However, the more one suppresses and denies these emotions, the more susceptible one will be to being dominated by them. When faced with negative emotions, HPSAs should avoid any inclination toward oversensitivity and nervousness. Moreover, instead of denying their feelings, HSPAs should actively seek to understand and accept the existence of negative emotions to better regulate their learning status, maintain a good training rhythm and a positive mindset, persevere, and strategically reorganize their original training plan to ensure they can quickly return to normal learning and training after the pandemic. Regarding academic courses, students should seek advice from peers who have an excellent performance record and listen to their learning experiences and insights. Furthermore, they should gain a thorough understanding of their learning characteristics, gradually explore learning methods suitable for their level and background, commit to the cultivation of the self-learning ability, and learn to properly manage their time to combine learning with training. Additionally, they should fully utilize classroom time to diligently take notes for repeated review.

Schools should prioritize changing the traditional view that overemphasizes the results of athletic competitions. While maintaining the value ascribed to athletic honors, schools should also ascribe value to HPSAs' academic performance. Additionally, it is important that schools issue timely academic warnings and solutions to HPSAs and urge them to study. For higher education institutions that offer a sports major, talent training programs should be supplemented to address HPSAs' learning characteristics. Furthermore, career guidance and other functional departments should include HPSAs' employment outlook in the assessment of various indicators and develop corresponding emergency response plans (such as during pandemics or other special periods) to help students solve their problems. Only then can the output of talent be ensured.

Regarding faculty, subject teachers should provide tailored assistance based on HPSAs' learning progress; this should be done in conjunction with the school's talent development program. Specifically, teachers should direct students to targeted learning software or educational videos, establish monitoring and feedback channels, and promptly solve students' learning problems. Moreover, schools' counseling staff should pay more attention to the psychological dynamics of HPSAs, especially during special periods such as a pandemic, given that HPSAs' anxiety levels may be higher compared to other students. Timely intervention is an effective way to ensure learning effectiveness among HPSAs.

4.3 Limitations and Future Research Suggestions

This study analyzed the influencing factors of the learning obstacles HPSAs in Chinese universities have faced during the COVID-19 pandemic through thematic analysis. The research has some reference value for promoting the learning of HPSAs in Chinese universities in the future. The selected sample consisted of 15 outstanding Chinese college athletes and was typical and representative, but the study still has some limitations.

First, regarding the research subjects, although the interviewees included top talent in various sports fields, the number of research subjects was insufficient to adequately reflect the vast number of HPSAs in Chinese universities. Therefore, future research could increase the sample size, perhaps by exploring HPSAs who have not received national honors or high grades and supplementing the data collected from HPSAs with interview materials gathered from teachers and school-level management personnel. Second, regarding the research methodology, this study only used semi-structured interviews to examine the factors that affect the learning obstacles HPSAs in Chinese universities face. In the future, questionnaire surveys could also be used to analyze and explore these factors.

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