

ORIGINAL ARTICLE

An autonomous circulatory model of athletic buoyancy of Chinese collegiate athletes

Liwei Fang¹, Huiting Liu², Yan Li³, Yutong Shen³, Jingyuan Liu³, Pei Sun^{4,*}

¹Center for Mental Health Education and Counseling, Shanghai Film Art Academy, Shanghai 201203, China

²Changsheng Police Station, Public Security Bureau, Jian'an District, Xuchang 461100, Henan Province, China

³Center for Counselling and Psychological Development, Tsinghua University, Beijing 100084, China

⁴Faculty of Health and Wellness, City University of Macau, Macau 999078, China

ABSTRACT

Athletic buoyancy is a recent concept in sports psychology. This study adopted a qualitative research method to explore the concept of athletic buoyancy and its components in Chinese collegiate athletes. In-depth semi-structured interviews were conducted with eight collegiate athletes. Four core categories of athletic buoyancy were established based on grounded theory, including self-confidence in ability, breakthrough ability, tolerance of loss of control and recovery, and internal drive. Based on the first author's own sports training experience and observations, an autonomous circulatory model of athletic buoyancy was constructed. The model consists of two paths, the first path is a basic cycle and the second path is a progress cycle. The basic cycle begins with self-confidence in ability, through breaking through setbacks and challenges, and tolerating uncontrolled conditions and recovering from them. The progress cycle starts once the setbacks and challenges are resolved in the basic cycle or no longer exert a negative impact on training and competition. Our study suggested that athletic buoyancy could be defined as athletes' ability to effectively cope with daily setbacks and challenges in a competitive sports environment and to enhance sports skills or performance while experiencing loss of control.

Key words: athletic buoyancy, collegiate athletes, effective coping, loss of control, grounded theory

INTRODUCTION

Buoyancy, a concept derived from positive psychology, refers to an individual's ability to cope successfully with everyday setbacks and challenges, and has been applied to education and the workplace to explain how individuals can handle adversity in performance settings effectively (af Ursin *et al.*, 2020; Collie *et al.*, 2017; Hoferichter *et al.*, 2021; Martin & Marsh, 2008a; Martin & Marsh, 2008b; Martin & Marsh, 2009; Putwain *et al.*, 2020). As positive psychology concepts are gaining popularity among sport psychology researchers, buoyancy has also been extended to the domain of sports. For example, Calhoun and colleagues (2017) investigated the generalisability of buoyancy from

academics to athletics and indicated a multidimensional buoyancy structure across two domains.

Previously, how athletes deal with stressor events was mainly studied under the framework of athletic resilience, emphasizing protecting an individual from the potential negative effects of stressors (Fletcher & Sarkar, 2013). Using citation network analysis, a systematic review of athletic resilience studies between 2008-2018 showed that developing models to assess resilience in the sports context ranked in the top positions (Bicalho *et al.*, 2020). Importantly, a clear trend can be seen in these recent theoretical attempts, *i.e.*, how athletes deal with adverse situations positively, observed in characteristics such as positivity, competitiveness, commitment,

*Corresponding Author:

Pei Sun, Faculty of Health and Wellness, City University of Macau, Macau 999078, China. Email: peisun@cityu.edu.mo; <https://orcid.org/0000-0002-5938-8180>

Received: 7 July 2025; Revised: 19 August 2025; Accepted: 13 October 2025

<https://doi.org/10.54844/wsr.2025.1027>

 This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License, which allows others to copy and redistribute the material in any medium or format non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

maturity, persistence, and passion for sport have been included (Brown *et al.*, 2015; Pedro, 2016; Sarkar & Fletcher, 2014).

Till now, only a few studies have addressed athletic buoyancy directly. For example, Calhoun and colleagues (2017) showed that athletic buoyancy is vital in the field of sports, can help collegiate athletes effectively navigate setbacks and challenges, and predict their psychological well-being and athletic performance. Furthermore, they showed that athletic buoyancy may have a unique structure that consists of two factors: Composure (presented inversely through sport anxiety levels) and fear of failure (Calhoun *et al.*, 2017; Calhoun, 2020).

It should be noted that the stressors faced by athletes may originate from a variety of sources (e.g., Arnold & Fletcher, 2012; Thelwell *et al.*, 2007) and how athletes deal with these stressors is influenced by socio-cultural factors and context (Wagstaff *et al.*, 2016). Because athletic buoyancy has previously been explored with only two groups, athletes in U. S. collegiate athletic clubs and adult athletes in social-level recreational sports leagues, this study expands to a sample of Chinese collegiate athletes.

Although, both China Student Sports Federation (CSSF) and the National Collegiate Athletes Association (NCAA) of American follow the principle of amateurism, where student-athletes participate in sports competitions and other activities as amateurs, under the management of the NCAA, American college sports become an important component of the education system, which is also an important basis for athlete development (China Student Sports, 2025; National Collegiate Athletic Association, 2025; Wang, 2019). The NCAA officials show that 220 current or former NCAA student-athletes are representing their countries at the 2022 Winter Olympics in Beijing. In comparison, only a few are seen for Chinese collegiate athletes competing at elite level events such as the Olympics. This apparent discrepancy can be attributed to the important role of the NCAA, which provides student-athletes with nearly \$350 million in athletic scholarships each year, plus systematic support in hiring elite-level coaches, collaborating with top medical organisations, providing dietary coverage, mental health resources, injury prevention guidelines and more (National Collegiate Athletic Association, 2025). Therefore, it is important to find out how Chinese collegiate athletes have managed to cope with setbacks and challenges with relatively limited resources and support.

In the present study, we explore the structure of athletic buoyancy on a Chinese collegiate athletic sample using a qualitative approach. We constructed a novel model of an autonomous cyclic model of athletic buoyancy from a

process perspective using grounded theory (Cheng, 2000; Glaser & Strauss, 1967; Strauss & Corbin, 2015; Glaser & Strauss, 1967). Furthermore, we discussed the linkage and difference between our model and the two-factor model proposed by Calhoun (2020).

METHODS

Participants

Eight collegiate student-athletes (4 females; 23.00 ± 2.83 years) were recruited from Tsinghua University, Beijing, using a purposive sampling method. They consisted of students from diverse academic backgrounds, including first-year undergraduates through to graduate students; the average training time was 9.94 ± 1.97 year). Their sports included athletics, shooting, and basketball. Recruiting stopped when data reached saturation (when there is no new finding; Sparkes & Smith, 2013).

Data collection

Semi-structured interviews were used for data collection. The interview outline consists of step-by-step questions around the definition of athletic buoyancy. The first part of the interview outline is to find out the daily setbacks and challenges in training and competition and their impacts on athletes. The second part focuses on athletes' responses and difficulties in overcoming daily setbacks and challenges. The third part is to understand the resources that athletes need and discuss the environmental impacts on athletes. Finally, athletes are invited to share additional content that they think is important or special. The interview outline was determined through discussions with Ph. D. students and professors in psychology (see Appendix).

During the interview, the participants were invited into the interview room, and a briefing section explaining the purpose of the study and the principles of privacy was provided. Then, every participant read the informed consent and signed it. A typical interview lasted approximately 1.5 h. In particular, benefiting from the lead researcher's experience in sport for over a decade, she is perceptive in picking up on key points in the conversation and asking further questions. After the interviews were completed, the audio recordings were transcribed into verbatim texts manually. This research was approved by the Ethics Committee of the Department of Psychology, Tsinghua University (approval number 2022-23). Informed consent was gained from each participant before their participation.

Data analysis

Manual coding was used to transcribe all audio data into verbatim texts before further analysis, with two coders working together throughout the process. The lead researcher is a graduate student majoring in clinical and counselling psychology and a collegiate student-athlete

with expertise in qualitative methods. The co-coder is another graduate student in the same major with experience in qualitative research.

Coding was conducted using NVivo 12 Plus, developed by QSR International Pty Ltd (Vic, Australia). Two coders worked together to conduct a three-level coding (open, axial and selective coding) based on grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 2015), writing memos at any time during the coding and having regular discussions to ensure coding reliability.

For open coding, two coders read the original text separately, performed open coding, and searched for nodes. The initial nodes were the smallest meaningful units that the coders extracted from the textual material, where repeated or similar nodes were found. The coders focused on factors for athletes to effectively cope with daily competition, training setbacks, and challenges, checking the initial nodes and comparing, merging, and categorizing them to arrive at the concepts. For axial coding, coders followed the principles of being faithful to the textual material of the interviews, integrating spindle categories through comparisons between concepts, and combining the athletes' process of facing daily setbacks and challenges. For selective coding, the coder fuses the original text again with the spindle categories to determine the meaning and associations of the spindle categories. Then, extracting core categories (See Table 1 for the coding processes).

For theoretical construction, core categories were first explored, based on a coding paradigm that includes causal conditions, lineages (situations), mediating conditions, actions/strategies, and outcomes (Corbin & Strauss, 2015). Then, a theoretical model was constructed from a process perspective.

To enhance the credibility of the study, the manuscript was emailed to participants, inviting them to check the findings or provide additional information. Three participants gave their feedback with no questions or additional content. Among them, S5 indicated that the manuscript was accurate in its understanding and explanation of the content of the interview, and S7 indicated that after self-reflection, he realised that he should indeed avoid the misconceptions of performance and gold medal above all, and instead find the positive impact that the sport itself brings to him. The other 5 participants did not give feedback.

RESULTS

Coding

The original data for this study consisted of eight recorded interviews with an average duration of 1.62 h, combining a set of textual materials of 212,500 Chinese characters. We conducted bottom-up coding based on

grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 2015). The final manual included 1068 initial nodes, 72 concepts, 17 spindle categories, and 4 core categories (Table 2). The coding reliability (inter-rater consistency) is higher than 80% in all cases.

Theoretical construction

Core categories of athletic buoyancy

Match performance is emphasized in competitive sports, and a result orientation is relatively more urgent, planting a belief in success in the minds of athletes. Our results showed that there are four core categories of athletic buoyancy, namely self-confidence in ability, breakthrough ability, tolerance of loss of control and recovery, and internal drive.

The self-confidence in ability has 39 nodes, with Practical perception covering the five areas of confidence: Performance, winning, ability, form and self; and interactive perception including the affirmation of coaches and teammates. The number of nodes in the two axial genera differed significantly, with 36 nodes in practical perception and 3 nodes in interactive perception. Among the concepts within the practical perception category, performance confidence had 15 nodes, nearly twice as many as self-confidence, which was in second place.

The examples below present changes in self-confidence in the ability of the athlete S1. The self-confidence in ability was gained from past successful experiences. Also, it is maintained and built up through training and competition.

S1: "I really don't think about giving it up, or not practicing... There is a confidence in me, although it sometimes hits, but more or less still have in, the confidence."

S1: "I think I have this strength, maybe sometimes the voice is relatively light, but it should always exist."

S4: "In this process, how do I deal with the problems I face, how do I judge, and finally if the result is good, I will feel that I have done a good job, a self-affirmation, I will feel that I have done a good job, which may increase my confidence, such affirmation."

The Breakthrough ability has 320 nodes, and the five axial categories involved a high number of nodes: 108 for self-adjustment, 82 for reflection and 71 for perseverance. The concepts with the highest number of nodes were 55 for active concern, 35 for self-reflection and 37 for doing one's best.

S4: "I'm going to focus more on the problem itself, or simplify it, rather than complicate it."

Table 1: Example of initial coding

Verbatim text	Initial code
Example 1 S1: Then, the university competition. Only a few days before the competition, I threw 60 meters. I never had this situation. I just threw 60 and 59 meters, which is simply impossible to happen before. I cannot be worse than the javelin out to throw 60 meters, right? Not to 60 meters! Then there was a throw, maybe it was just a blindfold, and it was 67 meters. How could the javelin fly so unsmoothly? Just the javelin flew very unsmoothly. I used to throw the javelin very smoothly. The javelins I threw before the competition were very unsmooth. Very unsmooth. Once they went out, I pulled the javelin, and it was pulled down.	Pre-race training results shocked me.
Example 2 S3: I might feel a little more confident with the results, especially in the first throw. For example, I have a total of three throws. If my technique is not very good in the first throw, but I have a result, maybe the second throw will be normal, and I can adjust quickly. Because I have the result, I am not afraid of fouling on all three throws, so I can complete my technique and not be afraid of hitting the net.	With the results more confident and not afraid to hit the net.

Table 2: Core category coding processes

Core category	Spindle category	Significance and relevance
Self-confidence in ability	Practical perception Interactive perception	Successful experiences are the foundation of an athlete's self-confidence in ability, and evaluation influences changes in self-confidence in ability.
Breakthrough ability	Persistent efforts Injury management Reflect Self-adjustment Ask for external help	Ensuring continuous practice and improvement is the habit and goal of athletes, who like to rise to challenges and achieve their goals through hard work. Moreover, the ability is the basis for achieving goals.
Tolerate loss of control and recover	Confusion Out of control Behavior Emotional bumps Cognitive disorientation Interruptions Continuity Limitations of realistic conditions Regain control	In the process of autonomously coping with setbacks and challenges, realistic results are influenced by individual internal factors and external environmental factors, which are vital tests for athletes to break through successfully.
Internal drive (connecting properties)	Purpose (sustained motivation) Positive experience (original motivation)	Intrinsic motivation naturally grows in the process of past successful experiences and autonomous coping.

S4: "Yes, yes. Although the process is painful, it is also a lot of struggle, but also persevering."

S3: "Just a couple of times. Twice a week. Yeah. At least once, but twice more. Practice makes perfect. First, make your technique stable."

Breakthrough ability was the core factor that determined athletes' ability level and competitiveness. The interview conversations present how athletes must not only endure pain and struggle, but also face problems and improve their sporting skills.

The tolerance loss of control and recovery has 670 nodes, accounting for more than half of all nodes. The axial categories with a high concentration of nodes were affective volatility with 240, cognitive disorientation with 143 and recovery control with 159. At the conceptual

level, the number of nodes in the axial category of affective fluctuations was 101 for performance emotions and 77 for interpersonal emotions, while the number of nodes in the axial category of recovering control was 64 for professional support and 63 for the impact of the campus environment.

S3: "Nets, hitting nets, just nets, the sight of nets scares me. Even when I was training, I couldn't perform with the net. When I was training it was better because there were no rules, so it was better. But when there are rules, I have problems frequently."

S3: "I'm just more into it and love sports. So, I think enjoying the process is the one thing that made me choose in the beginning. Without any other thoughts, it's slowly coming back to the previous me."

S4: "So it's more about being affected by emotions, maybe I'm anxious or annoyed at the time, then through outside help for me, I might then my mood will be calm. If there is still a little bit left, I may digest and adjust on my own, and if there is no more, I may also be able to continue to maintain (calm) for a while. Just from the target problem alone, I can also continue to maintain calm for a while."

In the state of losing control, tolerance of loss of control and recovery were the key to maintaining stability and fully exerting their skills. S3 is overly fearful of fouling zeroes, but in reality the chances of him scoring a zero are very small. By the time he sees the net and gets scared, S3 is very much out of control. He struggles to focus on his movements and it becomes difficult for him to perform at a high level. But the athletes are able to regain control when personal factors and environmental influences come into play.

The internal drive has 36 nodes. There were 17 nodes for the axial category purpose and 19 for positive experiences. The highest number of nodes in the concept was for achieving self-worth, with 14.

S2: "Because now road running, such as marathons, more people participate in it, that is, the population base is relatively large. If we can use our expertise to help more people, it may be a reflection of self-worth for us."

S6: "It gives me a sense of pride, a sense of honour. The feeling of playing a game with people cheering for me, cheering me on. The feeling of achievement."

S1: "There is also a love for it, I think. It has become part of my life and I feel uncomfortable and not used to it if I don't practice, so I feel used to it."

The connecting property of internal drive is reflected as follows: (1) Positive experience initiates physical coping; (2) achievement desire supports athletes to persist in practice; (3) self-worth supports athletes to adjust and adapt to the loss of control, achieve the physical breakthrough, and move toward self-actualization.

It should be mentioned that these four core categories are interlinked. Together, they provided athletes with continuous positive psychological energy to effectively cope with daily setbacks and challenges and achieve parallel development of psychology and reality.

An autonomous cyclic model from process perspective

Our analysis obtained four features of the coping process: Similarity, phasing, developmental, and continuity. A process-oriented theoretical model, the athletic buoyancy autonomous cycle model, was constructed by combining

the characteristics and the role of the four core categories (Figure 1).

As shown in Figure 1, the theoretical model contains two pathways: A basic cycle and a progress cycle. The basic cycle begins and ends with self-confidence in ability. The internal drive drives the athlete to deal with setbacks and challenges autonomously. However, the out-of-control challenge causes stagnation or attrition of self-confidence in ability and is in a state of tentative sway.

Psychological development is the key to moving from the basic cycle to the progress cycle. The pathway could be described as tolerating psychological imbalance and continuing physical coping under physical and psychological out-of-control challenges, thus forming a combined psychological and physical coping force. Athletes at this stage seek to transcend themselves, cope independently, never give up and focus more on coping with physical issues.

With the vital influence of the campus environment and professional support (mainly the influence of coaches), the athletes' breakthrough ability is enhanced extensively. Self-awareness promotes the development of a sense of independence (S2: "You have a clearer perception of what you want to do, well. I think it is given to us by this campus environment."), helping athletes to deal with setbacks and challenges more positively and autonomously, especially when they did their best to improve their skills and pursue a better performance independently (S8: "By getting better on my own, I feel like it will work well for stress and setbacks.").

DISCUSSION

In this study, we interviewed eight collegiate athletes and developed the autonomous cycle model of athletic buoyancy based on grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 2015). Four core categories were indicated and an autonomous cyclic model consisting of two coping pathways was constructed from the process perspective.

Calhoun and colleagues distinguished athletic buoyancy from the academic buoyancy for the first time, and proposed a new model of athletic buoyancy with two factors: Composure and fear of failure (Calhoun *et al.*, 2017; Calhoun, 2020). Compared with this original model, four categories have been indicated in our study. The integration of two more categories or factors (*i.e.*, tolerance of loss of control and recovery) beyond the original two emotional factors in our study is a crucial contribution to the related fields. Each affection matters, and there are individual differences in effective

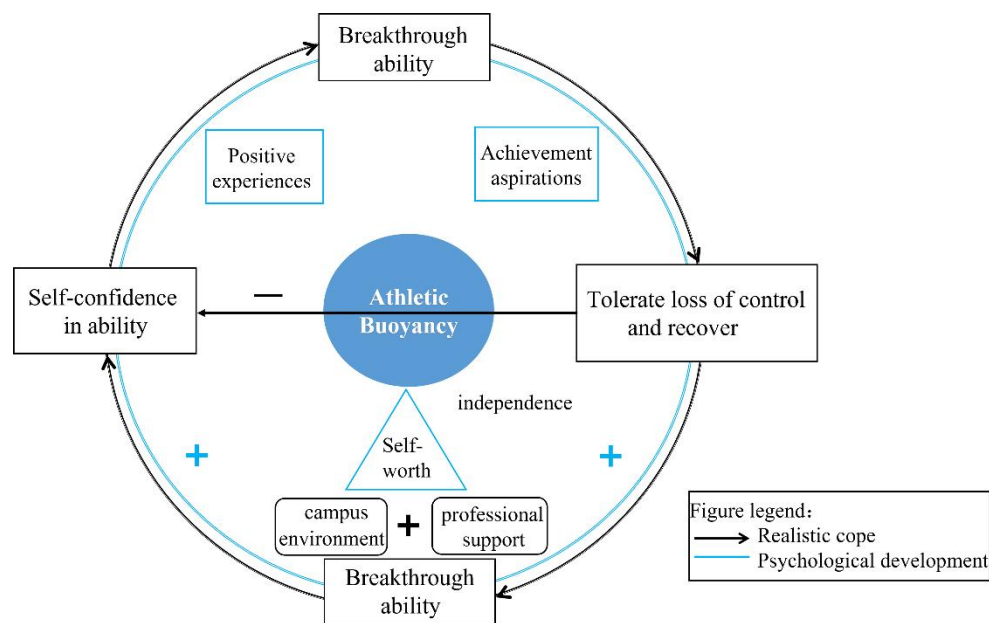


Figure 1. Athletic buoyancy autonomous circulation system.

responses between athletes even when facing the same setbacks and challenges. The setbacks and challenges faced by athletes are unique to each individual, making it difficult to list them out one by one. Therefore, we advocated not only judging the quality of emotions but also focusing on athletes' ability to control and regulate emotions. Note that our view originates from the theory of constructed emotion, as Barrett (2017) argued that emotions are constructions of the world, not just reactions, which clearly depend on how individuals interpret the stressful event they face.

In addition, from the process perspective, we explored the dynamic changes of athletic buoyancy and proposed the autonomous cyclic model with two coping pathways. Our model integrated the consideration of psychological development with the two core concepts of independence and co-development of mind and body. Cyclic coping is the core approach, including skill and psychological training. Once athletes can cope with setbacks and challenges by themselves, they have accomplished a full basic cycle that starts from "self-confidence in ability" and ends with "self-confidence in ability", where the end of the previous cycle is also the new starting point of the next cycle. This positive cycle of focusing on "I can" and "how to" is practiced, and a continuous effort is made to achieve self-transcendence. In the autonomous cycle, the athlete's inner self continues to develop. The inner self development also influences athletes' perception of sports, avoiding the misconceptions of performance and gold medal above all and engaging in sports with a healthier and more positive mental state, promoting a more positive inner power in a fiercely competitive environment, and gaining

positive experiences in persistence.

Furthermore, a balanced view between competition and training is taken in this study. The American Collegiate Athletic League is highly visible within the country, where athletes receive a high level of public attention, leading to public attention-stress. With the combination of intense competition, high motivation, and high exposure, it is understandable why the mental health of American college student-athletes is starting to be a concern (Hagiwara *et al.*, 2017). In comparison, an integrative way of athletes' competition and training is dominant in Chinese coaches and athletes (K. Zhang & L. W. Zhang, 2011; L. W. Zhang & K. Zhang, 2011). The process-orientation contains the length of time and ensures that the athletes have room for development. The result-oriented approach is more like a fully stretched bow, focusing on the target and ready to be fired. The relationship between the two is like the unity of opposites emphasized in ancient Chinese dialectical thoughts, with ongoing changes and developments in mutual transformation (Pang, 2008).

The process orientation and the two pathways model are meaningful when intervention is taken into consideration in practice. It has been shown that the two variables indicated in Calhoun's model can only explain about 50% variance of athletic buoyancy (Calhoun, 2020). Based on our model, a possible intervention plan for fear of failure and anxiety is: First, locate the problem in the out of control tolerance and recovery, and then go beyond the emotion itself. Under the realization of self-worth drive, external support, and environmental influence, keep practicing to improve the

ability to break through. Thus, the loss of self-ability and self-confidence will be transformed into recovery and promotion. For different athletes, the intervention plan can be further customized according to this framework and individual conditions. We believe that the holistic perspective is more helpful for relevant personnel to understand the concept of athletic buoyancy than the local perspective, and has the advantage of being more appropriate to the actual situation in practical application, which can improve sports buoyancy to a greater extent.

Finally, this study's positive, process, and resource orientation aligns with academic buoyancy's emphasis on positive coping, ability enhancement, and increased resources (Martin & Marsh, 2008a). The model proposed by Skinner *et al.* (2016) of motivational susceptibility distinguished between academic adaptation and non-adaptation from a bystander perspective. This study takes a practical perspective and focuses on enhancing athletic buoyancy. This perspective not only benefits athletes in coping with setbacks and challenges proactively and effectively but also helps athletes isolate ineffective coping distractions. Therefore, the autonomous cycle system of athletic buoyancy serves as a guide for athletes to self-improve and provides a more understanding mindset for coaching teams to support athletes in training and competition.

The frustration coping mechanism of Chinese college athletes is rooted in the "relational self" shaped by the collectivist culture, whose self-concept is deeply bound to the expectations of significant others and collective honor, forming a unique "external feedback-collective goal-intrinsic motivation" transmission path. In the face of limited resources, this cultural trait encourages athletes to transform personal adversity into a collective mission, strengthen the motivation to persevere in practice by internalizing the value orientation of "competing for the team", and reconstruct the cognition of frustration by relying on the guidance of coaches and the collaboration of teammates and other social support. In contrast, Western "independent selves" rely more on individual efficacy and professional institutional support, and are less directly driven by collective belonging, and their coping strategies under resource constraints are more focused on personal goal adjustment and integration of external services.

The synergistic effect of field-dependent cognitive style and collectivist culture further optimizes the utilization efficiency of limited resources. Chinese college athletes can adjust their behaviors by capturing external cues such as coaches' instructions and the team's emotions, which reduces their dependence on scarce resources such as professional psychological services. At the same time, with the help of shared training programs, collabora-

tive analysis of the reasons for failure and other collective wisdom, to reduce the consumption of resources for independent trial and error, and to achieve the "cognitive-cultural-resource" adaptive transformation. This "collective buffer" mechanism contrasts sharply with the "individual resource integration" path under the independent cognition of the Western field, which not only highlights the deeper impact of cultural differences on the coping strategies of frustration, but also provides a "low-cost and high-efficiency" solution for the practice of physical education under the situation of limited resources. This not only highlights the deeper impact of cultural differences on frustration coping strategies, but also provides a "low-cost and high-performance" Eastern experience for physical education practice in resource-limited settings.

There are several limitations in our study. First, participants recruited from one university are an efficient way but may represent only a school-specific phenomenon. Second, the applicability of the findings for collegiate student-athletes to the professional athlete population requires further investigation. In addition, this study mainly ensures the reliability of the research through collaborative coding, memorandum writing, discussions, and interviewees' verification. The findings need to be tested in practice and revised on an ongoing basis. Future studies can be extended to more student-athletes in other campus environments and professional athletes, and will provide stronger psychological support for the athlete community.

CONCLUSION

This study further specified the definition of athletic buoyancy as the ability of an athlete to effectively cope with the everyday setbacks and challenges of the competitive environment, experience loss of control, and still enhance sports skills or sports performance. We identified four core categories of athletic buoyancy, including self-confidence in ability, breakthrough ability, tolerance of loss of control and recovery, and internal drive. Tolerance of loss of control and recovery is the key from the basic to the progress cycle of the autonomous cyclic system. Some collegiate athletes can tolerate the loss of control and keep training, while others finally choose to retire. The interviews presented the point that recovery or stopping is simply a decision resulting from a combination of factors. However, collegiate athletes still love their sport. To summarise, our model provides insight into athletes' physical and psychological abilities, especially when they face daily setbacks and challenges.

DECLARATION

Acknowledgement

The authors would like to thank Annebella Tsz Ho

Choi, Jie Ding, Chenhao Hu, Jiawei Li, Yi Liu, Zixi Sun, Zongxu Xie, Li Yang, Zeyun Yang & Jiting Liu for their comments and suggestions on manuscript preparation. Thanks to the University's Centre for Counselling and Psychological Development and the sports team for providing the interview venue.

Author contributions

Fang LW: Conceptualization, Data collection, Data curation, Methodology, Formal analysis, Writing—Original draft, Visualization. Liu HT: Methodology, Formal analysis. Li Y: Conceptualization, Writing—Reviewing and Editing, Supervision. Shen YT: Conceptualization, Writing—Reviewing and Editing, Supervision. Liu J: Conceptualization, Writing—Reviewing and Editing, Supervision. Sun P: Conceptualization, Writing—Reviewing and Editing, Supervision.

Source of funding

This research received no external funding.

Ethical approval

This research was approved by the Ethics Committee of the Department of Psychology, Tsinghua University, approval number 2022-23.

Informed consent

Informed consent was gained from each participant before their participation (See Appendix).

Conflict of interest

Sun P is the Associate Editors-in-Chief of the journal. The article was subject to the journal's standard procedures, with peer review handled independently of the editor and the affiliated research groups.

Use of large language models, AI and machine learning tools

No AI tools were used.

Data availability statement

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

REFERENCES

- af Ursin, P., Järvinen, T., & Pihlaja, P. (2020). The role of academic buoyancy and social support in mediating associations between academic stress and school engagement in Finnish primary school children. *Scandinavian Journal of Educational Research*, 65(4), 661-675. <https://doi.org/10.1080/00313831.2020.1739135>
- Arnold, R., & Fletcher, D. (2012). A research synthesis and taxonomic classification of the organizational stressors encountered by sport performers. *Journal of Sport & Exercise Psychology*, 34(3), 397-429. <https://doi.org/10.1123/jsep.34.3.397>
- Barrett, L. F. (2017). The theory of constructed emotion: An active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. <https://doi.org/10.1093/scan/nsw154>
- Bicalho, C. C. F., Melo, G. F., Noce, F. (2020). Resilience of athletes: A systematic review based on a citation network analysis. *Cuadernos de Psicología del Deporte*, 20(3), 26-40. <https://doi.org/10.6018/cpd.391581>
- Brown, H. E., Lafferty, M. E., & Triggs, C. (2015). In the face of adversity: Resiliency in winter sport athletes. *Science & Sports*, 30(5), e105-e117. <https://doi.org/10.1016/j.scispo.2014.09.006>
- Calhoun, J. R. V. (2020). An investigation of athletic buoyancy in adult recreational and sport club athletes. *LSU Doctoral Dissertations*, 5265. https://doi.org/10.31390/gradschool_dissertations.5265
- Calhoun, J. V., Webster, E. K., & Garn, A. C. (2017). An investigation of the generalisability of buoyancy from academics to athletics. *International Journal of Sport and Exercise Psychology*, 17(4), 321-333. <https://doi.org/10.1080/1612197X.2017.1349823>
- Cheng X. M. (2000). [Qualitative research in social science]. Educational Science Press.
- Corbin J. M., & Strauss A. L. (2015). [Basics of qualitative (Zhu G. M., Trans.)]. Chongqing University Press.
- Collie, R. J., Ginns, P., Martin, A. J., & Papworth, B. (2017). Academic buoyancy mediates academic anxiety's effects on learning strategies: An investigation of English- and Chinese-speaking Australian students. *Educational Psychology*, 37(8), 947-964. <https://doi.org/10.1080/01443410.2017.1291910>
- China Student Sports. (2025, June 23). [Constitution of the Chinese Students' Sports Federation]. China Student Sports. Retrieved Sep. 30, 2025, from https://www.sports.edu.cn/web/institution/content_3386.shtml
- Fletcher, D., & Sarkar, M. (2013). Psychological resilience. *European Psychologist*, 18(1), 12-23. <https://doi.org/10.1027/1016-9040/a000124>
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine Publishing Company.
- Hagiwara, G., Iwatsuki, T., Isogai, H., Raalte, J. V., & Brewer, B. W. (2017). Relationships among sports helplessness, depression, and social support in American college student-athletes. *Journal of Physical Education and Sport*, 17(2), 753-757. <https://doi.org/10.7752/jpes.2017.02114>
- Hoferichter, F., Hirvonen, R., & Kiuru, N. (2021). The development of school well-being in secondary school: High academic buoyancy and supportive class- and school climate as buffers. *Learning and Instruction*, 71, 101377. <https://doi.org/10.1016/j.learninstruc.2020.101377>
- Martin, A. J., & Marsh, H. W. (2008a). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology*, 46(1), 53-83. <https://doi.org/10.1016/j.jsp.2007.01.002>
- Martin, A. J., & Marsh, H. W. (2008b). Workplace and academic buoyancy: Psychometric assessment and construct validity amongst school personnel and students. *Journal of Psychoeducational Assessment*, 26(2), 168-184. <https://doi.org/10.1177/0734282907313767>
- Martin, A. J., & Marsh, H. W. (2009). Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs. *Oxford Review of Education*, 35(3), 353-370. <https://doi.org/10.1080/03054980902934639>
- National Collegiate Athletic Association. (n.d.). History. National Collegiate Athletic Association. Retrieved Sep. 30, 2025, from <https://www.ncaa.org/sports/2021/5/4/history.aspx>
- Pang, P. (2008). [Eleven Lectures on Chinese Culture]. Zhonghua Book Company.
- Pedro, S. D. G. (2016). Athletes engagement, resilience, and rate of perceived exertion on Portuguese national- and international-level wrestlers. *International Journal of Wrestling Science*, 6(1), 5-10. <https://doi.org/10.1080/21615667.2016.1166299>
- Putwain, D. W., Gallard, D., & Beaumont, J. (2020). Academic buoyancy protects achievement against minor academic adversities. *Learning and Individual Differences*, 83-84, 101936. <https://doi.org/10.1016/j.lindif.2020.101936>
- Sarkar, M., & Fletcher, D. (2014). Ordinary magic, extraordinary performance: Psychological resilience and thriving in high achievers. *Sport, Exercise, and Performance Psychology*, 3(1), 46-60. <https://doi.org/10.1037/spy0000003>
- Skinner, E. A., Pitzer, J. R., & Steele, J. S. (2016). Can student engagement

- serve as a motivational resource for academic coping, persistence, and learning during late elementary and early middle school? *Developmental Psychology*, 52(12), 2099-2117. <https://doi.org/10.1037/dev0000232>
- Sparkes, A. C., & Smith, B. (2013). *Qualitative research methods in sport, exercise and health: From process to product*. Routledge. <https://doi.org/10.4324/9780203852187>
- Strauss A. L. & Corbin J. M. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage publications.
- Thelwell, R. C., Weston, N. J. V., & Greenlees, I. A. (2007). Batting on a sticky wicket: Identifying sources of stress and associated coping strategies for professional cricket batsmen. *Psychology of Sport and Exercise*, 8(2), 219-232. <https://doi.org/10.1016/j.psychsport.2006.04.002>
- Wagstaff, C. R. D., Sarkar, M., Davidson, C. L., & Fletcher, D. (2016). Resilience in sport: A critical review of psychological processes, sociocultural influences, and organizational dynamics. *The Organizational Psychology of Sport* (pp. 120-149). Routledge. <https://doi.org/10.4324/9781315666532>
- Wang, Y. (2019). Research on the athlete cultivation and welfare system in the United States. *Bulletin of Sport Science & Technology*, 27(9), 130-134. <https://doi.org/10.19379/j.cnki.issn.1005-0256.2019.09.056>
- Zhang, K., & Zhang, L. W. (2011). [Doctrine and method: What Chinese culture can contribute to athletes' psychological training and consultation]. *Journal of Tianjin University*, 26(3), 196-199. <https://doi.org/10.13297/j.cnki.issn1005-0000.2011.03.008>
- Zhang L. W., & Zhang, K. (2011). [The dialectic of self-control: Essential ideas to help athletes manage 8 pairs of relationships]. *Journal of Tianjin University*, 26(3), 185-190. <https://doi.org/10.13297/j.cnki.issn1005-0000.2011.03.00>