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A Review of the Relationship Between Gymnastics and Self Efficacy

Haoyuan Li

School of Physical Education And Sports, Central China Normal University, Wuhan, China
15296815907@163.com

Abstract. Gymnastics, a sport characterized by high skills, risks, and intensity, demands not only exceptional physical fitness but also tests athletes' psychological resilience, particularly their self-efficacy. Self-efficacy refers to an individual's belief in their ability to succeed when facing specific tasks, and it has been widely proven to play a crucial role in athletic performance. This article systematically reviews the impact mechanism of gymnastics training on self-efficacy, summarizes the main findings of cross-sectional and intervention studies, and analyzes the moderating effects of factors such as age, gender, coaching style, and family support on the relationship between the two. Research has found that gymnastics training significantly enhances athletes' self-efficacy by providing successful experiences, emotion regulation exercises, and target challenge situations. At the same time, this article also proposes practical application suggestions in education and training, emphasizing the organic integration of psychological intervention strategies and skill training, which is of great significance for improving the psychological quality of young gymnasts. Finally, this article highlights the challenges of cultural differences and the limitations of long-term tracking in current research, and calls for further exploration of multi-path mechanisms and cross-disciplinary applications in the future.

Keywords: self-efficacy, Sports psychology, Adolescent development, Psychological intervention, Coach style

1. Introduction

Gymnastics combines technicality and ornamental value, with high difficulty, high risk, and high intensity as its prominent characteristics. It requires athletes to have excellent strength, flexibility, and balance abilities, and to be able to complete precise and coherent combinations of movements in a short period. In training and competition, athletes not only challenge their physical limits, but also endure psychological tests. By continuously overcoming fear and breaking through movement bottlenecks, this process is not only the polishing of skills, but also the tempering of psychological qualities.

In the field of sports psychology, individual confidence in their abilities is a core variable that receives much attention. Research has shown that those who firmly believe in their own abilities are more likely to stick to their goals and actively cope with difficulties, which is particularly crucial in high-standard events such as gymnastics, directly affecting athletes' performance goals, training

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attitudes, emotional reactions, and recovery ability after failure. In practice, gymnasts accumulate successful experiences through repeated training and self-challenges, constantly strengthening their trust in their abilities. The continuous cycle formed by this makes gymnastics training an effective path to enhance self-confidence and psychological resilience.

This article aims to review the research results related to gymnastics and individual ability beliefs, explore the role of gymnastics training in enhancing confidence, and its promoting effect on sports performance and psychological development. By reviewing empirical data from different research methods and sample backgrounds, this study attempts to reveal how gymnastics training collaboratively shapes athletes' development trajectories from both technical and psychological dimensions.

2. Theoretical basis and research perspective

2.1. Bandura's theory of self-efficacy

The formation and development of self-efficacy mainly stem from the following four aspects:

1. Successful Experience: Previous experiences of success and failure are the strongest source of self-efficacy information. Perceived success enhances self-efficacy, while failure reduces it. People who attribute success to internal or controllable factors have a stronger sense of self-efficacy. Gymnasts gain successful experiences through continuous practice of movements, thereby enhancing their self-efficacy [1].

2. Vicarious experience: Observing behaviors of others that are similar to oneself, the observer will judge their performance in similar situations based on this. Seeing teammates or classmates complete a certain action will strengthen the belief that they can also do it and enhance their self-efficacy [1].

3. Verbal persuasion: Verbal persuasion from others, such as encouraging words or performance feedback, can enhance an individual's self-efficacy in the context. Encouragement and praise from coaches, teachers, or teammates have a positive impact on an individual's psychological state, thereby enhancing self-efficacy [1].

4. Emotional physiological state: Positive emotions (such as excitement and confidence) and good physiological state (such as energy and physical health) make individuals feel capable of coping with challenges and improving self-efficacy. Negative emotions such as anxiety, tension, and fatigue may lower self-efficacy. Gymnastics promotes the secretion of "happiness hormones" by releasing endorphins, dopamine, serotonin, and other substances, enhancing positive emotions and potentially supporting self-efficacy [2].

2.2. Self-challenge is the driving force for improving self-efficacy

Self-challenge is the driving force for improving self-efficacy. Gymnastics training constantly sets and attempts to surpass individual limits of ability, allowing athletes to break through themselves and enhance their confidence in their abilities, thereby promoting the improvement of self-efficacy. Sense of achievement is an enhancer of self-efficacy. The sense of achievement generated after completing self-challenging tasks is a positive feedback on the athlete's abilities and efforts, greatly enhancing self-confidence and self-identity, and further consolidating and improving self-efficacy. Athletes with higher self-efficacy are more willing to take the initiative to face challenges. They believe they can overcome difficulties, view training challenges with a positive attitude, and see

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them as opportunities to improve their abilities. They focus on playing to a higher level, making it easier to gain a sense of achievement and forming a virtuous cycle.

3. Research on the influence of gymnastics training on self-efficacy

3.1. Cross-sectional study

Multiple cross-sectional studies have explored the relationship between gymnastics training and self-efficacy, and the results show that gymnasts may have higher task-specific self-efficacy scores than athletes in other events. The high intensity, precision requirements, and body control training in gymnastics enable athletes to perform complex movements accurately, thereby enhancing their confidence and self-efficacy [2]. For example, gymnasts need to constantly adjust their movements and steps to cope with difficult movements, which not only exercises their physical abilities but also enhances their psychological resilience when facing challenges. In addition, the training of psychological skills such as breath control and emotion regulation involved in gymnastics training further enhances athletes' self-efficacy [2].

Related studies also show that gymnasts' high self-efficacy is not limited to the arena. In daily life, gymnasts often demonstrate a stronger sense of control and coping ability when facing other life challenges. This indicates that gymnastics training, through long-term skill practice, can significantly enhance an individual’s self-efficacy, which in turn affects their emotional management and stress coping strategies [2].

3.2. Intervention research

Intervention studies in gymnastics training have shown that systematic psychological skill training can effectively enhance athletes' self-efficacy. In the high-intensity skill learning stage, gymnastics training decomposes complex movements and creates opportunities for "incremental mastery experiences", allowing athletes to gradually master the technical essentials and improve their self-efficacy. For example, the training of the vault project divides the movements into four stages: run-up, takeoff, flight, and landing. By gradually improving the skill level of each stage, it helps athletes experience a sense of continuous progress and inspire higher self-confidence.

In addition, research on gymnastics training interventions for adolescents has shown that participation in gymnastics can significantly improve their self-management and self-confidence. For example, teenage gymnasts constantly challenge themselves during the training process, break through skill bottlenecks, and gradually accumulate successful experience. These successful experiences not only enhanced their physical abilities, but also significantly improved their self-efficacy in other areas of life. Through these interventions, adolescents not only improve their athletic performance, but also their psychological resilience and emotional regulation abilities are positively enhanced.

4. Factors affecting the relationship between gymnastics and self-efficacy

4.1. Age and developmental stage

The impact of gymnastics training on self-efficacy among athletes of different age groups is significant. Children and adolescents are in a stage of rapid physical and mental development, and gymnastics training can not only improve their physical coordination, flexibility, and strength, but also promote the development of their psychological qualities. For example, teenagers often

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experience a strong sense of progress after completing challenging actions, which greatly enhances their self-efficacy. However, the individual's psychological development at the adolescent stage is not yet fully mature, and their self-efficacy is greatly influenced by the surrounding environment (such as coaches, family, peers, etc.).

Research has shown that gymnastics training can strengthen children and adolescents' sense of role identity, help them find self-identity during training and competition, and enhance their confidence. Especially in team training, mutual support and competition among athletes can help enhance individual self-efficacy [3]. In addition, the challenges faced by children and adolescents in gymnastics training not only enhance their physical skills, but also cultivate their psychological resilience to cope with stress and setbacks, laying the foundation for their subsequent psychological development and self-efficacy improvement [4].

4.2. Gender differences

Female gymnasts have stronger self-efficacy in emotional regulation, which may be related to society's greater encouragement of women's emotional management abilities, prompting them to actively learn and apply emotional regulation strategies. In women's gymnastics training, female coaches emphasize psychological skills, integrate psychological training into daily practice, and strengthen female athletes' emotional regulation self-efficacy. Women's gymnastics teams tend to share emotions and provide mutual assistance, offering more opportunities for emotional regulation, imitation, and learning [3].

4.3. Coaching style and feedback mechanism

The feedback style of coaches has a significant impact on athletes' emotional regulation self-efficacy. Especially coaches with an autonomy-supportive coaching style will provide gymnasts with the right to choose, explain the significance of each training session, and acknowledge the athletes' perspectives. These practices can significantly improve athletes' intrinsic motivation and self-efficacy [5]. Further research on adolescent programs suggests that controlling or punishment-oriented coaching methods can weaken the aforementioned positive psychological resources.

In high-precision events such as balance beam and uneven bars, when coaches create a training atmosphere centered on mastering progress, athletes practice for longer periods of time and have lower rates of retirement or abandonment [4]. A positive coach–athlete relationship can further enhance efficacy beliefs by establishing trust and open communication [5]. Informative feedback and task-focused, such as "slightly bending your knees to absorb the impact when landing", is more effective in enhancing self-efficacy than general praise or criticism [6]. Negative, personality-focused evaluations can increase anxiety and weaken confidence in adolescent athletes [7]. When the action memory is still vivid, using timed video replay in conjunction with brief self-assessment can help gymnasts quickly correct technical errors and strengthen their cognition of "successful controllability". By visualizing minor improvements through progress record cards or mobile applications, coaches can provide athletes with clear evidence of progress, thereby maintaining their beliefs and performance during high-pressure training phases [8].

4.4. The auxiliary role of family and social support systems

1. Emotional support from parents reduces anxiety. The secure attachment theory (Bowlby) suggests that unconditional support in the family can help athletes form a secure psychological attachment

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and become more focused during competitions. On the contrary, families that overly emphasize performance will increase the perfectionist pressure on athletes, leading to an increased risk of emotional breakdown [7].

2. The tolerance of social culture towards female emotional expression affects the emotional management strategies of female gymnasts. In a society that emphasizes"women should be gentle and restrained", gymnasts may be trained earlier to hide anger or frustration and instead adopt adaptive emotional strategies. But in recent years, the emotional expression of female athletes has gradually been accepted, which helps to reduce the negative impact of emotional suppression.

5. Education and training implications

5.1. Systematically introducing self-efficacy intervention strategies in adolescent gymnastics training

Integrate goal setting, imagery training, and emotion regulation techniques into daily training. For example, arranging weekly psychological skills classes to teach athletes how to cope with stress and manage emotions after mistakes; Using emotional logs to help athletes identify and record changes in their psychological state; By decomposing high difficulty movements, athletes gradually build confidence through phased success.

5.2. Suggest that coaches pay attention to the training principle of "skill decomposition - encouraging feedback - gradually challenging"

Breaking down complex movements into executable small steps ensures that athletes can experience success at every stage. Adopt concrete feedback to strengthen controllable improvement points. Gradually increase the difficulty based on the athlete's adaptability, avoiding frustration caused by attempting difficult movements too early [9].

5.3. Design a composite gymnastics course based on "psychological quality+skill improvement"

Based on embodied cognition theory and psychological resilience cultivation model, psychological quality training is embedded into the entire process of skill learning. Through a closed-loop design of skill challenge psychological stress cognitive reconstruction meta-skill transfer or psychological transferability, learners can simultaneously develop resilience and other psychological qualities while mastering gymnastics techniques, achieving an upgrade from action executors to psychological self-regulation. In the balance beam course, overcoming fear and improving rotational stability are set as parallel goals, and through psychological intervention and technical practice, a two-way improvement of technique and psychology is achieved.

6. Conclusion

Gymnastics has both physical and mental shaping value, and one of its core psychological benefits is to enhance self-efficacy. It enhances athletes' self-efficacy while shaping their body control through high-precision movement training, progressive challenges, and real-time feedback, which may be associated with athletic performance, academic adaptation, and perceived life control. Research has shown that skill breakthroughs, psychological resilience development, and social support in gymnastics training constitute a self-efficacy enhancement pathway. However, there is

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currently a gap in long-term tracking, cultural differences, and exploration of multivariate pathway mechanisms in current research.

Future research can combine longitudinal tracking and qualitative interviews, such as conducting 10-year athlete career observations and retrospective interviews with retired athletes, introducing neuroimaging techniques to detect changes in the cerebellar prefrontal junction, in order to reveal the dynamic formation and maintenance mechanisms of self-efficacy; At the same time, exploring the potential application of gymnastics derived psychological training models in general education also has practical value.

References

[1] Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman.
[2] Boecker, H., Sprenger, T., Spilker, M. E., Henriksen, G., Koppenhoefer, M., ... & Tolle, T. R. (2008). The runner's high: Opioidergic mechanisms in the human brain. Cerebral Cortex, 18(11), 2523–2531. https: //doi.org/10.1093/cercor/bhn013
[3] Bowlby, J. (1969). Attachment and loss: Vol. 1. Attachment. Basic Books.
[4] Mageau, G. A., & Vallerand, R. J. (2003). The coach–athlete relationship: A motivational model. Journal of Sports Sciences, 21(11), 883–904.
[5] Conroy, D. E., & Coatsworth, J. D. (2004). Coach training as a strategy for promoting youth social development. The Sport Psychologist, 18(2), 204–218.
[6] Jowett, S., & Poczwardowski, A. (2007). Understanding the coach–athlete relationship. In S. Jowett & D. Lavallee (Eds.), Social Psychology in Sport (pp. 3–14). Human Kinetics.
[7] Horn, T. S. (2002). Coaching effectiveness in the sport domain. In T. S. Horn (Ed.), Advances in Sport Psychology (2nd ed., pp. 309–354). Human Kinetics.
[8] Zhang Li (2020).A study on self-efficacy intervention for adolescent gymnastsJournal of Beijing Sport University, 45 (2), 123–128.
[9] Wang, K., Zhang, L., & Si, G. (2015).A study on the relationship between self-efficacy and athletic performance of gymnastsSports Science, 35 (5), 33–39.