

# Developing and Evaluating the “MTSC-PS” Module to Promote Mental Toughness and Sport Courage among Football Players in Secondary Schools

Jinyu Lan

School of Educational Studies, Universiti Sains Malaysia  
Email: lanjinyu@student.usm.my

Rabiatul-Adawiah Ahmad Rashid

School of Educational Studies, Universiti Sains Malaysia  
Corresponding Author Email: r\_adawiah@usm.my

DOI Link: <http://dx.doi.org/10.6007/IJARPED/v15-i1/27364>

---

**Published Online:** 13 January 2026

## Abstract

Despite the recognized importance of psychological skills training (PST) in sport, a significant gap exists in culturally relevant and structured PST resources for secondary school aged football players in China. Therefore, this study uses the ADDIE model as a guiding framework to create a valid and highly practical module to improve students' mental toughness and sport courage. The module's content validity was evaluated by a panel of six experts, demonstrating excellent content validity ( $S-CVI/UA = 0.83$ ;  $S-CVI/Ave = 0.98$ ). The module was also delivered to a secondary school football team ( $N=36$ ), resulted in significant improvements with large effect sizes in the players' mental toughness and sport courage. In conclusion, by rigorously applying the ADDIE model, a theory-driven, context-relevant, and highly effective MTSC-PS module was developed, which helps to fill an important resource gap in the development of secondary school football players

**Keywords:** Psychological Skills Training, Mental Toughness, Sport Courage, ADDIE Model, Secondary School Football Players, Teaching and Learning

## Introduction

Football has evolved into a complex sport in which excellence is achieved only when multiple factors—including physical fitness, technical skills, tactical strategy, team dynamics, and psychological skills—operate synergistically (Miçooğullari & Ekmekçi, 2017). Permadi et al. (2021) identify physical, technical, tactical, and psychological attributes as fundamental foundations for success in both players and teams, emphasizing that psychological skills training (PST) is equally essential as the other three components in football training. Empirical studies on PST in football are growing, confirming its positive impact on performance (Thelwell et al., 2010). Specifically, mental toughness (MT) and sport courage (SC) are pivotal

psychological constructs that enable athletes to sustain high-level performance under pressure and adversity (Konter et al., 2019). PST serves as a formal, multimodal method to cultivate these qualities, and its early integration into athlete development is considered crucial (Gross et al., 2018; Nesti, 2010).

The number of empirical studies in applied sport psychology to reveal positive effect of PST on sports performance especially in context of football is rising (Thelwell et al., 2010). Harwood et al. (2015) investigated the role of coach in youth athletes' psychological skills development and indicated its positive influences. Some researchers try to support coaches by providing PST package integrating psychological skills with practical training (Feddersen et al., 2021). Certain modules have been developed to construct football PST programs which may involve various psychological skills like self-regulation, relaxation, imagery, communication, self-talk, concentration, and confidence (Diment, 2014).

### **Problem Statement**

Despite this recognized importance, the systematic application of PST in routine football training remains more of a supplement than a standard practice in many contexts (Konter et al., 2019). This gap is particularly pronounced in China. Although the Chinese Football Association's "Five-Ring Model" formally elevates psychology as a development cornerstone (CFA, 2022), practical implementation lags. Currently, psychological development in Chinese youth football often relies on incidental, coach-driven moments rather than a systematic curriculum. Coaches, while well-intentioned, frequently lack formal training in PST, leading to an unstructured and potentially ineffective approach. Guo (2021), a member of the National Youth School Football Expert Committee, also emphasized that enhancing psychological skills training is essential, particularly in building mental toughness.

Critically, while cultural and environmental factors influence MT and SC development, there is a significant lack of localized, empirical research and structured, culturally relevant PST resources for youth football within the Chinese context. Existing Western modules are not directly transferable, and the national youth training program (CFA, 2022) offers no detailed PST guidance for coaches. Therefore, an urgent need exists for a systematically developed, evidence-based, and culturally contextualized module that can be seamlessly integrated into the existing training ecosystem of Chinese youth football.

### **Research Motivation**

The systematic development of psychological skills is increasingly recognized as a cornerstone of athletic excellence in football. However, within the context of Chinese youth football, there exists a significant disconnect between this recognized importance and the availability of structured, culturally relevant training protocols. Motivated by this critical gap, the present study was initiated with the urgent objective of moving from general advocacy to actionable intervention. Its primary aim is to develop, implement, and empirically validate a psychological skills training module that is specifically designed for and contextualized within Chinese youth football programs.

### *Research Objectives*

This study is guided by the following primary objectives:

1. To systematically develop, using the ADDIE instructional design model, a theory-driven

MTSC-PS module tailored for secondary school football players in China.

2. To empirically evaluate the newly developed MTSC-PS module and assess its effectiveness in enhancing participants' mental toughness and sport courage.

### Methodology

This module was developed following the systematic five-phase ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), as illustrated in Figure 1 (Branch & Varank, 2009). The ADDIE instructional design model was initially developed in 1975 by Florida State University for military training purposes within the U.S. Army (Branson et al., 1975). Since its inception, it has evolved into a fundamental and widely adopted framework for systematically developing instructional courses and training materials across diverse fields. Scholars note that the model's strength lies in its adaptable, interactive, and dynamic nature, which allows it to be effectively tailored to meet different learning goals and contexts (Kurt, 2017). Its systematic structure is recognized for supporting the development of high-quality training programs (Dick et al., 2005) and enabling the consistent creation of well-organized courses (Mayfield, 2011).

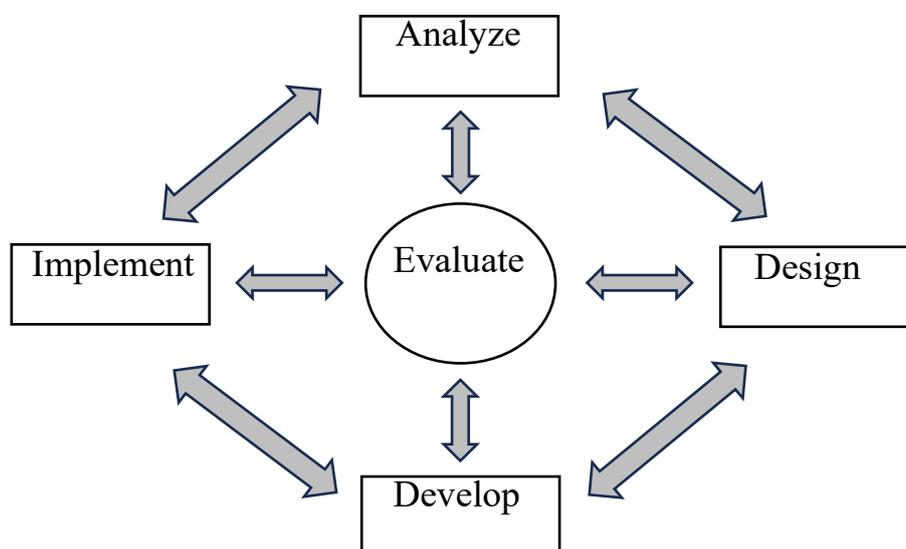


Figure 1. Core elements of ADDIE model (Branch & Varank, 2009)

The ADDIE model provides a dynamic, adaptable, and empirically grounded instructional design framework for integrating theoretical principles into specific contextual applications (Branch, 2009). Informed by a synthesis of literature, expert input, and practical insights, this approach ensures methodological rigor at each phase and enhances the overall efficacy of the developed module. Guided by this foundation, the present study applied the ADDIE framework to systematically develop the MTSC-PS Module, clarifying the focus and tasks for every stage.

#### Phase 1: Analysis

The Analysis phase commenced with a systematic needs assessment. This study first conducted a literature review to establish the current state regarding mental toughness and sport courage among secondary school football players in China. Semi-structured interviews were conducted with eight (n=8) active youth football coaches from the Shenzhen Youth

Football Training Centre. Interviews aimed to identify specific psychological deficiencies in players and to assess coaches' existing knowledge and use of PST. Based on the clarified needs, the instructional objectives, assessment methods and tools, and the target audience were subsequently defined.

#### Phase 2: Design

A comprehensive literature review was conducted to identify the core components of MT and SC and evidence-based PST techniques. The module's content is grounded in theories of mental toughness and sport courage and is structured around four evidence-based psychological skills training (PST) themes: (1) arousal regulation, (2) imagery, (3) goal setting, and (4) self-talk. An innovative dual-activity instructional strategy was adopted, comprising indoor knowledge sessions for introducing and teaching sport psychology concepts and skills, and outdoor training sessions dedicated to applying and practicing these skills within football-specific scenarios.

#### Phase 3: Development

The Development phase focused on creating and validating the content and materials for the MTSC-PS Module. Following the construction of a detailed 12-week lesson plan, a panel of six experts—with backgrounds in sport psychology, physical education, and elite football coaching—evaluated the module for its relevance, clarity, and practicality. Quantitative data were analyzed using the Content Validity Index (CVI), while qualitative feedback was collected for iterative refinement.

#### Phase 4: Implementation

During the Implementation phase, the MTSC-PS Module was operationalized through two primary components. Firstly, a training program for physical education teachers and coaches was conducted. This included a 60-minute indoor instructional session and an expert evaluation, ensuring that the instructors who would deliver the intervention were thoroughly familiar with the module's knowledge base, skills, and training protocols. Secondly, the module was delivered to a secondary school football team (N=36, Age=14.82, ±0.39). This practical implementation integrated indoor theory sessions with outdoor practical sessions, allowing athletes to learn and immediately apply the psychological skills within authentic football training contexts.

#### Phase 5: Evaluation

The Evaluation phase primarily involved measuring and quantitatively analyzing the effectiveness of the MTSC-PS Module. This summative assessment focused on changes in the young football players' mental toughness and sport courage. Data collected from pre-test and post-test administrations of these scales were subjected to statistical analysis to determine the intervention's impact.

### Results

The content validation of the module, guided by Russell's (1974) criteria, yielded a high agreement rate of 96.7% (see Table 1). The results indicate that the content of the MTSC-PS Module is well-aligned with the identified needs of the target population. It is deemed suitable for effective implementation within the designated timeframe to enhance

psychological skills and foster improvements in mental toughness and sport courage among secondary school football players.

Table 1

*Content Validity of MTSC-PS Module based on Russel's (1974) Suggestion*

No.	Statement	Percentage (%)	Decision
1	The content of the module is suitable for the target population	100	Accepted
2	The content of the module can be implemented	100	Accepted
3	The module is suitable for the allocated time	83.3	Accepted
4	The content of the module can improve the psychological skills that help athletes develop mental toughness and sport courage	100	Accepted
5	The content of the module can improve athletes' mental toughness and sport courage	100	Accepted
<b>Cluster percentage</b>		96.7	Accepted

Paired-samples t-tests were conducted to compare the pre-test and post-test scores on Mental Toughness (MT) and Sport Courage (SC) of the players who completed the MTSC-PS module. As summarized in Table 2, post-intervention MT scores were significantly higher than pre-intervention scores, with a mean increase of 2.89,  $t(35) = -11.09$ ,  $p < .001$ . Similarly, a significant improvement was found for SC scores, with a mean increase of 2.53,  $t(35) = -8.84$ ,  $p < .001$ . These results indicate a statistically significant enhancement in both mental toughness and sport courage following the intervention.

Table 2

*Paired sample t-test of MT and SC*

	Paired Differences					Effect Sizes		
	Mean	Std. Deviation	t	df	Sig. (2-tailed)	Point Estimate	95% Confidence Interval	
							Lower	Upper
MT_Pre - MT_Post	2.889	1.563	11.086	35	.000	-1.848	-2.384	1.302
SC_Pre - SC_Post	2.528	1.715	-8.842	35	.000	-1.474	-1.942	-.994

## Discussion

This paper detailed the rigorous development of the first systematically designed PST module specifically for Chinese secondary school football players. The application of the ADDIE model ensured the MTSC-PS Module was born out of a genuine, empirically identified need, moving beyond a purely theoretical exercise. The excellent content validity indices confirm that the module is perceived by experts as highly relevant and practical for its target context. The dual-activity structure is a pivotal feature, directly addressing the classic "theory-practice gap" in PST by ensuring skills are not just understood but are automatized within the sport environment. By starting with the local ecosystem's needs and involving coaches in the

development process, the MTSC-PS Module has a high potential for adoption and sustainability.

### **Research Significance**

The research addresses a critical practical gap by providing coaches with a ready-to-use, validated tool (the MTSC-PS module) to integrate psychological training into daily practice. Furthermore, by targeting secondary school football players during a key developmental period, it lays a foundation for long-term psychological resources and provides empirical evidence to inform curriculum and policy improvements aimed at elevating psychological preparation standards in Chinese youth football.

### **Conclusion**

The systematic and iterative process of applying the ADDIE model has successfully resulted in the MTSC-PS Module—a theory-driven, evidence-based, and contextually relevant intervention. This module provides a validated, ready-to-implement tool that addresses a critical resource gap in Chinese youth football. It empowers physical education teachers and football coaches with a structured curriculum to foster the psychological development of their athletes, ultimately contributing to the holistic development of more resilient and courageous players.

### **References**

- Branch, R. M., & Varank, İ. (2009). *Instructional design: The ADDIE approach* (Vol. 722, p. 84). New York: Springer.
- Branson, R. K., Rayner, G. T., Cox, J. L., Furman, J. P., King, F. J., & Hannum, W. H. (1975). *Interservice procedures for instructional systems development: Executive summary and model* (p. 0188). ERIC Clearinghouse.
- Chinese Football Association Youth Training Program. Thecfa.cn. (2022). Retrieved 18 April 2022, from <https://www.thecfa.cn/qsn/20201126/29099.html>
- Dick, W., Carey, L., & Carey, J. O. (2005). *The systematic design of instruction*.
- Diment, G. M. (2014). Mental skills training in soccer: A drill-based approach. *Journal of Sport Psychology in Action*, 5(1), 14-27.
- Feddersen, N. B., Keis, M. A. B., & Elbe, A. M. (2021). Coaches' perceived pitfalls in delivering psychological skills training to high-level youth athletes in fencing and football. *International Journal of Sports Science & Coaching*, 16(2), 249-261.
- Gross, M., Moore, Z. E., Gardner, F. L., Wolanin, A. T., Pess, R., & Marks, D. R. (2018). An empirical examination comparing the mindfulness-acceptance-commitment approach and psychological skills training for the mental health and sport performance of female student athletes. *International Journal of Sport and Exercise Psychology*, 16(4), 431-451.
- Guo, W. (2021). Scientific development of football need the improvement of mental and social ability [Chinese]. *Soccer News*, (3776), 10-11.
- Harwood, C. G., Barker, J. B., & Anderson, R. (2015). Psychosocial development in youth soccer players: Assessing the effectiveness of the 5Cs intervention program. *The Sport Psychologist*, 29(4), 319-334.
- Konter, E., Beckmann, J., & Loughhead, T. M. (2019). *Football psychology: from theory to practice*. Routledge.
- Kurt, S. (2017). ADDIE model: Instructional design. *Educational Technology*, 29.

- Mayfield, M. (2011). Creating training and development programs: using the ADDIE method. *Development and Learning in Organizations: An International Journal*, 25(3), 19-22.
- Miçooğullari, B. O., & Ekmekçi, R. (2017). Evaluation of a psychological skill training program on mental toughness and psychological wellbeing for professional soccer players. *Universal Journal of Educational Research*, 5, 2312–2319. doi:10.13189/ujer.2017.051222.
- Nesti, M. (2010). *Psychology in football: Working with elite and professional players*. Abingdon,
- Permadi, A. A., Subarjah, H., Sidik, D. Z., & Nuryadi, N. (2021). The Influence of Psychological (Mental) Training to Improve the Performance of Football. *JUARA: Jurnal Olahraga*, 6(2), 162-170.
- Russell, J. D. (1974). *Modular Instruction: A Guide to the Design, Selection, Utilization and Evaluation of Modular Materials*.
- Thelwell R, Weston N, Greenlees I. Examining the use of psychological skills throughout soccer performance[J]. *Journal of sport behavior*, 2010, 33(1): 109-127.
- Weinberg, R. S., & Gould, D. (2023). *Foundations of sport and exercise psychology*. Human kinetics.