

Research on the Structural Model of Chinese Youth 3000 Meter Endurance Athletes

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Abstract. The aim of this study is to construct a structural model of Chinese adolescent 3000 meter endurance athletes, in order to provide theoretical basis for the scientific selection, training, and evaluation of adolescent endurance athletes. Through in-depth analysis of the multidimensional characteristics of physical fitness, skills, tactics, psychology, and physiology of adolescent 3000 meter endurance athletes, combined with expert interviews and questionnaire surveys, a structural model was constructed that includes five dimensions: physical fitness, skills, tactics, psychology, and physiology. And the effectiveness and reliability of the model were verified through empirical research. The research results show that the five dimensions of physical fitness, skills, tactics, psychology, and physiology all play important roles in the competitive performance of adolescent 3000 meter endurance athletes, and there is a significant interaction relationship between each dimension. This study provides a new perspective and method for the training and evaluation of adolescent endurance athletes in China.

Keywords: teenagers; 3000 meter endurance athlete; Structural model

1. Introduction

Endurance sports are high-intensity physical activities that require prolonged and sustained effort, with extremely high demands on athletes' physical fitness, skills, tactics, psychological and physiological abilities[1]. Adolescence is a critical period for the growth and training of endurance athletes, and scientific selection and reasonable training are of great significance for improving athletes' competitive level and extending their sports life. However, there are still many problems in the selection, training, and evaluation of young endurance athletes in China, such as unclear selection criteria, unscientific training methods, and incomplete evaluation systems. [2] Therefore, constructing a structural model for adolescent 3000 meter endurance athletes and clarifying their characteristics and requirements in terms of physical fitness, skills, tactics, psychology, and physiology is of great significance for improving the competitive level and sports performance of adolescent endurance athletes in China. [3]

2. Research Methods

2.1 Research Object

This study focuses on Chinese adolescent 3000 meter endurance athletes and selects 50 adolescent endurance athletes from different regions of the country as samples. These athletes all have certain training and competition experience, which can represent the general level of young endurance athletes in China.

2.2 Research Methods

(1) Literature review: By reviewing relevant literature at home and abroad, this study aims to understand the current research status and progress in the selection, training, and evaluation of adolescent endurance athletes, providing theoretical support for this research.

(2) Expert Interview: Invite well-known endurance sports coaches and experts in China to conduct interviews to understand their opinions and suggestions on the selection, training, and evaluation of adolescent endurance athletes, and provide practical guidance for this study.

(3) Questionnaire survey: Design a questionnaire to investigate the physical fitness, skills, tactics, psychology, and physiology of adolescent endurance athletes, and collect relevant data and information.

(4) Data analysis: Statistical software such as SPSS and AMOS were used to analyze and process the collected data, construct a structural model of adolescent 3000 meter endurance athletes, and verify the effectiveness and reliability of the model.

3. Research Results

3.1 Physical Characteristics of Adolescent 3000 Meter Endurance Athletes

Physical fitness is the fundamental ability of endurance athletes, including strength, speed, endurance, flexibility, and coordination. This study tested and analyzed the physical fitness of adolescent endurance athletes, and found that they perform well in endurance, but are relatively weak in strength and speed. Specifically, adolescent endurance athletes have a higher level of aerobic endurance and can maintain a stable exercise rhythm for a long time; But there is still room for improvement in terms of anaerobic endurance, explosive power, and speed. [4] In addition, adolescent endurance athletes have good flexibility and coordination, which helps them maintain stable body posture and movement rhythm during competitions.

3.2 Skill Characteristics of Adolescent 3000 Meter Endurance Athletes

Skills are one of the key factors for endurance athletes to demonstrate their competitive level in competitions. This study tested and analyzed the skills of adolescent endurance athletes, and found that they performed well in terms of breathing rhythm, step frequency, and stride length. [5] Specifically, adolescent endurance athletes are able to control their breathing rhythm reasonably and maintain a stable oxygen supply; At the same time, they can flexibly adjust their stride frequency and step length according to the competition situation to adapt to different competition rhythms and road conditions. However, in terms of turning skills and shifting ability, adolescent endurance athletes still need to improve. [6]

3.3 Tactical Characteristics of Adolescent 3000 Meter Endurance Athletes

Tactics are one of the important means for endurance athletes to achieve excellent results in competitions. This study tested and analyzed the tactics of adolescent endurance athletes, and found that they exhibited a certain level of performance in competition strategy, rhythm control, and opponent analysis. Specifically, adolescent endurance athletes can develop reasonable competition strategies, such as the allocation of starting, running, and sprinting stages; At the same time, they are able to flexibly adjust their speed and pace according to the pace of the game and the opponent's situation. However, young endurance athletes still need to strengthen their teamwork and competition experience. [7]

3.4 Psychological Characteristics of Adolescent 3000 Meter Endurance Athletes

Psychology is one of the important factors for endurance athletes to maintain stable performance in competitions. This study tested and analyzed the psychology of adolescent endurance athletes, and found that they performed well in self-confidence, willpower, and coping with stress. Specifically, adolescent endurance athletes have strong self-confidence and willpower, and are able to maintain a positive attitude and stable emotions during competitions; At the same time, they are able to effectively cope with the pressure and challenges during the competition. However, in terms of competition focus and emotional regulation, adolescent endurance athletes still need to improve. [8]

3.5 Physiological Characteristics of Adolescent 3000 Meter Endurance Athletes

Physiology is the foundation for endurance athletes to demonstrate their competitive level in competitions. This study tested and analyzed the physiological indicators of adolescent endurance athletes, and found that they exhibit certain characteristics in terms of cardiovascular function, muscle strength, and skeletal structure. Specifically, adolescent endurance athletes have strong cardiovascular function and can adapt to long-term high-intensity exercise; At the same time, their muscle strength and skeletal structure are also good, which helps maintain stable exercise posture and rhythm. However, in terms of energy metabolism and recovery ability, adolescent endurance athletes still need to strengthen. [14]

4. Construction of Structural Model For Adolescent 3000 Meter Endurance Athletes

Based on the above research results and analysis, this study constructed the structural model features of adolescent 3000 meter endurance athletes. This model includes five dimensions: physical fitness, skills, tactics, psychology, and physiology, each of which contains several specific indicators and elements. These indicators and elements together constitute the competitive ability system of young 3000 meter endurance athletes. In terms of physical fitness, it mainly includes indicators such as aerobic endurance, anaerobic endurance, explosive power, speed, and flexibility. These indicators reflect the ability level of adolescent endurance athletes in terms of strength, speed, endurance, and other aspects. [9]

(1) In terms of skill dimensions, it mainly includes indicators such as breathing rhythm, step frequency, stride length, turning skills, and shifting ability. These indicators reflect the technical level and movement efficiency of adolescent endurance athletes in competitions.

(2) In terms of tactical dimensions, it mainly includes indicators such as game strategy, rhythm control, and opponent analysis. These indicators reflect the strategic thinking and adaptability of adolescent endurance athletes in competitions. [12]

(3) In terms of psychological dimensions, it mainly includes indicators such as self-confidence, willpower, coping with stress, competition focus, and emotional regulation. These indicators reflect the psychological resilience and emotional management abilities of adolescent endurance athletes during competitions. [13]

(4) In terms of physiological dimensions, it mainly includes indicators such as cardiopulmonary function, muscle strength, skeletal structure, and energy metabolism. These indicators reflect the physiological characteristics and advantages of adolescent endurance athletes. [10]

5. Empirical Studies

In order to verify the effectiveness and reliability of the constructed structural model, this study conducted empirical research. We selected another 50 adolescent endurance athletes from different regions across the country as samples and collected data through a combination of questionnaire surveys and field tests. By analyzing and processing the collected data, the correlation between the dimensions of the structural model and the predictive ability of the model for the competitive level of adolescent endurance athletes were verified. [11]

The research results show that there is a significant correlation between the dimensions in the structural model. Among them, the correlation coefficients between physical fitness and skills, tactics and psychology are relatively high, indicating that these dimensions play an important role in the competitive performance of adolescent endurance athletes. Meanwhile, the model has a strong predictive ability for the competitive level of adolescent endurance athletes, indicating that the constructed structural model has good effectiveness and reliability.

6. Discussion

This study constructed a structural model of adolescent 3000 meter endurance athletes and verified the effectiveness and reliability of the model through empirical research. The research results show that physical fitness, skills, tactics, psychology, and physiology all play important roles in the competitive performance of adolescent 3000 meter endurance athletes. Specifically:

(1) Physical fitness is the fundamental ability of adolescent endurance athletes, which is of great significance for maintaining a stable exercise rhythm and improving competition results. Therefore, in training, attention should be paid to improving the aerobic endurance, anaerobic endurance, explosive power, and speed of adolescents.

(2) Skills are one of the key factors for adolescent endurance athletes to demonstrate their competitive level in competitions. By mastering and applying skills such as reasonable breathing rhythm, step frequency, and stride length, teenagers can improve their competition performance and level. Therefore, in training, attention should be paid to improving the turning skills and shifting ability of teenagers.

(3) Tactics are one of the important means for young endurance athletes to achieve excellent results in competitions. By formulating reasonable competition strategies and utilizing tactical means such as rhythm control, the performance and competitive level of young people can be improved. Therefore, in training, emphasis should be placed on cultivating teenagers' strategic thinking and adaptability.

(4) Psychology is one of the important factors for adolescent endurance athletes to maintain stable performance in competitions. By cultivating and utilizing psychological qualities such as self-confidence, willpower, and coping with stress in adolescents, it can help them maintain a positive attitude and stable emotional state during competitions. Therefore, in training, attention should be paid to cultivating teenagers' competition focus and emotional regulation ability.

(5) Physiology is the foundation for adolescent endurance athletes to demonstrate their competitive level in competitions. By understanding the physiological characteristics of adolescents, such as cardiovascular function, muscle strength, and skeletal structure, it can provide a basis for developing scientifically reasonable training plans and competition strategies. At the same time, attention should also be paid to improving the energy metabolism and recovery abilities of adolescents during training.

7. Conclusion and Suggestions

This study constructed a structural model of adolescent 3000 meter endurance athletes and verified the effectiveness and reliability of the model through empirical research. The research results show that physical fitness, skills, tactics, psychology, and physiology play important roles in the competitive performance of adolescent 3000 meter endurance athletes. Based on this conclusion, this study proposes the following suggestions.

7.1 Improve The Material Selection System

In the selection process of adolescent endurance athletes, multiple dimensions such as physical fitness, skills, tactics, psychology, and physiology should be comprehensively considered to establish scientific selection standards and evaluation systems. Through scientific testing and evaluation, select young endurance athletes with potential and talent, laying a solid foundation for their subsequent training and competition.

7.2 Optimizing Training Methods

During the training process, a scientifically reasonable training plan and program should be developed based on the characteristics and needs of adolescent endurance athletes. Pay attention to improving the physical fitness level of athletes, and strengthen training in aerobic endurance, anaerobic endurance, explosive power, and speed; At the same time, pay attention to the cultivation

and improvement of skills, strengthen the training of key skills such as breathing rhythm, step frequency, and stride length. In addition, attention should be paid to tactical and psychological training to improve athletes' strategic thinking and adaptability, as well as their confidence and emotional management abilities.

7.3 Strengthen Scientific Research Support

In order to further improve the competitive level of young endurance athletes, scientific research support should be strengthened and targeted research should be carried out. Through in-depth research on athletes' physical fitness, skills, tactics, psychology, and physiology, reveal their competitive characteristics and laws, and provide scientific basis for training. At the same time, advanced training methods and experiences from both domestic and international sources can be utilized to continuously improve and optimize the training system.

7.4 Strengthen Psychological Counseling

Teenage endurance athletes face enormous psychological pressure and challenges during training and competition. Therefore, psychological counseling and support for athletes should be strengthened. Through psychological counseling, counseling, and team building, we help athletes establish a positive mindset and emotional state, improve their confidence, and enhance their ability to cope with stress. At the same time, psychological training activities such as attention training, relaxation training, and emotion regulation training can also be carried out to improve the psychological quality and resilience of athletes.

7.5 Improve The Evaluation System

In order to objectively and comprehensively evaluate the competitive level and training effectiveness of adolescent endurance athletes, a comprehensive evaluation system should be established. Through regular testing and evaluation, we can understand the performance of athletes in terms of physical fitness, skills, tactics, psychology, and physiology, timely identify existing problems and deficiencies, and provide targeted guidance and suggestions for subsequent training and competitions. At the same time, the evaluation results can be combined with material selection, training plans, and competition strategies to form a complete training and management system.

8. Future Prospects

This study constructed a structural model of adolescent 3000 meter endurance athletes and verified the effectiveness and reliability of the model through empirical research. However, there are still some shortcomings in this study, such as a small sample size and incomplete testing indicators. In future research, the sample size can be further expanded, testing indicators and dimensions can be increased to improve the accuracy and reliability of the model. Meanwhile, the model can also be applied to a wider range of adolescent endurance athletes for validation and promotion, providing a more scientific and comprehensive theoretical basis and practical guidance for the selection, training, and evaluation of adolescent endurance athletes in China.

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