

Experimental Study on Balance Ability of Aerobics Athletes Based on Modern Educational Technology

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Keywords: Aerobics; Balance Ability; Technical Level; Athletics

Abstract: If we want to achieve better results, we need to improve the methods of competition and training, thoroughly understand and analyze the structure of athletes' competitive ability and the related factors, so that athletes' competitive ability can be fully developed and improved. Today, with the development of Competitive Aerobics in full swing, the research of competitive aerobics is increasingly refreshing. Balance ability test and evaluation is an important evaluation index for competitive aerobics athletes. Good physical quality is the basis for displaying complex and difficult competitive aerobics. By attaching importance to and strengthening the physical quality training of aerobics, the quality of complete sets of movements can be improved, thus improving the level of sports technology. Based on the assistance of modern educational technology, this paper discusses the influencing factors and testing methods of calisthenics athletes' balance ability, providing digital theoretical basis for scientific selection, training and technical diagnosis of athletes.

1. Introduction

Modern calisthenics entered our country in the 1980s. After decades of development and promotion in our country, calisthenics has been widely promoted in our country [1]. Aerobics is a rapidly developing competitive sport in China, especially in various domestic and foreign competitions in recent years. From the competition results, it can be seen that China's competitive aerobics level has already been in the forefront in the world rankings [2]. The test and evaluation of balance ability is an important evaluation index for competitive aerobics athletes. With the development of competitive calisthenics in full swing, the research on competitive calisthenics is increasingly refreshing [3]. With the pace of keeping pace with the times, the gear for the development of competitive calisthenics in China adheres to the training concept of attaching equal importance to competition and science, and courageously advances to meet the challenges of international competitive calisthenics. The technical level of competitive calisthenics is influenced by athletes' physical quality, psychological quality, technical ability, musical sense, expressive force and other factors [4]. In this situation, athletes must clearly define the components of aerobics athletes' athletic ability in order to achieve excellent athletic performance in the competition, so as to improve the athlete's own athletic ability in a targeted manner [5].

Good physical quality is the foundation of complex and difficult competitive aerobics. By attaching importance to and strengthening the physical fitness training of aerobics to improve the quality of the set of movements, and then to improve the level of sports technology [6]. The development of competitive aerobics is quite rapid, especially from the aerobics competitions at home and abroad in recent years. It can be seen that competitive aerobics has developed to a fairly high level [7]. Competitive ability is the main influencing factor affecting the training of aerobics athletes and the basis for achieving good athletic performance. The core strength training impacts the singularity of the traditional waist training content and the high intensity of the load, and abandons the weakness of the traditional training. The core strength training that retains its advantages can improve the athlete's ability to balance and stabilize the control [8]. Through research to improve the athletic ability of aerobics athletes, it is of great significance to improve the overall movement of aerobics, and it can also promote the vigorous development of aerobics in China [9]. This paper is based on modern educational technology to explore the influencing factors

and test methods of aerobics athletes' balance ability, and provide digital theoretical basis for athletes to select materials, training and technical diagnosis.

2. Definition and Characteristics of Balance Ability of Competitive Aerobics Athletes

Competitive ability of competitive aerobics athletes refers to the ability that athletes have to participate in competitive aerobics training and competitions. It is the coordination and unification of athletes' physical ability, skills, intelligence, psychological ability, performance ability, body posture and related elements. Competitive calisthenics, like gymnastics, rhythmic gymnastics, synchronized swimming, martial arts routines and other sports, belong to skill-oriented sports groups that show difficulty and beauty. Athlete's competitive ability is mainly reflected in technology, physical ability, psychology and performance. Mechanically, balance refers to a state in which an object is placed when the resultant force for the object is zero, which is related to both the position of the center of the human body and the supporting area of the human body. Competitive aerobics is a highly artistic and performing sport with its own special sports and forms of expression. When a person's balance ability is normal, he can maintain his posture, adjust his posture in random motion, and respond to external interference safely and effectively. The ability of the human body to automatically adjust and maintain posture in motion or under external forces belongs to dynamic balance. The competitive ability of Competitive Aerobics athletes not only has the characteristics of general competitive ability, but also reflects the characteristics of competitive aerobics.

Good physical fitness can make athletes fully mobilize the functions of various organs before competition and timely adjust and recover after competition. In aerobics, the range and intensity of physical activity are relatively large. But it can be effectively controlled by adjusting the movement route, direction and load. At the same time, it can effectively reduce body fat on the basis of enhancing students' muscle quality. The training of sports teams is in the early stage of training, so special training is mainly about physical fitness and technical ability. All of these require athletes to develop their physical fitness and athletic ability. Since the development of aerobics, the physical factors of athletes have become more and more important. From the coaches of various teams to the athletes, physical training is placed in the first place. Athletes must maintain a specific range of motion or quality of action throughout the competition. Technical movements that violate the principles of biomechanics may increase the damage of muscles, ligaments and soft tissues. The test of aerobics athletes' knees, knees and other sports strengths can be used as one of the indicators for special strength evaluation. The muscle contribution rate of different methods is compared as shown in Fig. 1.

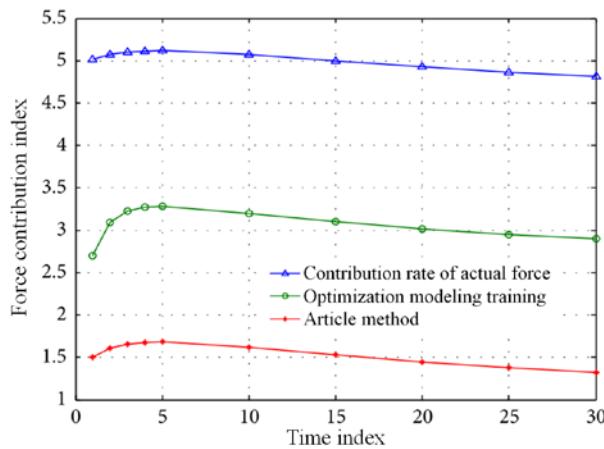


Fig.1. Contributing rate comparison

At the present stage, competitive aerobics requires athletes to have excellent physical ability. With physical ability, they have high-level competitive ability and can achieve excellent results in competitions. Whether athletes are physically fit or not is directly related to their level of competitive ability and competition results. It is also the basis for athletes to bear heavy load and

high intensity sports in training and competition and to maintain a good state of mind. The maintenance of human body balance mainly depends on the information input of vestibular, visual and proprioceptive systems, the integration of information by central nervous system and the control of motor effectors [10]. The maintenance of balanced posture requires the cooperation of vestibular organs, visual organs and proprioceptors. Balance movement is an important content to measure the athletes' physical control ability and constitute difficult movements. Steady lower limb support is an important guarantee for Aerobics athletes to complete difficult movements. Competitive aerobics is an athletic sport that shows the athletes' exquisite skills and graceful physique. Athletes' healthy physique and strong muscles are not only conducive to the completion of movements and the exertion of techniques, but also can increase the aesthetic feeling and artistic value of complete sets of movements.

3. The Need of Developing the Competitive Level of Aerobics Athletes

3.1 Test Method of Balance Ability

The assessment methods of human balance ability are increasing, and the test results are becoming more accurate. According to the different measuring means, the assessment methods of balance ability can be divided into instrumental assessment and non-instrumental assessment. In the competition, no matter how complex and changeable the movements are, they must be controlled within the range conducive to the healthy development of the body. All movements, including difficult ones, must show the correct shape and standard position of the body. Instrumental assessment refers to the quantitative assessment method which can accurately quantify and analyze the balance function of the subjects by means of instruments and equipment. The computer processes various indexes related to the center of gravity swing through a special software system, and the more sensors the more accurate the data. The development of competitive calisthenics is to innovate continuously and to innovate in the arrangement. If calisthenics movements can be arranged innovatively in the competition, the movements will give people a smooth feeling. Competitive calisthenics is an anaerobic exercise that shows difficult and beautiful events. It requires athletes to complete difficult, complicated and difficult movements with high standard and high quality within a specified period of time.

Aerobics training includes difficult aerobics movements such as support, jumping and twisting. This puts forward extremely high requirements for the balance of the human body. In training practice, only by improving both muscle strength and muscle speed can the best effect of speed strength be achieved. High-quality completion of a set of technical movements requires athletes to have good upper and lower limbs, waist and abdomen strength, abundant physical strength and the ability to coordinate and accurately complete the movements. In experimental teaching, classroom learning is carried out by students through group learning and discussion. Guides the student to understand its movement load degree, and can carry on the self-regulation. Good balance of human body is an important factor to promote the correct posture of human body and to promote the efficient development of life and work. In aerobics training, various difficult movements such as support, jump and rotation will have a greater impact on the muscles of all parts of College students.

Athletes have good physical fitness as the basis, competition psychology can reach the best state, can calmly play their training level, to achieve the best results of the game. When the human body suffers from sports injury, it will change the body's shape, function and metabolism. The sports injuries of 50 Aerobics athletes were investigated, as shown in Table 1. The injury rate is 100%. It can be seen that the sports injury of Aerobics athletes is very serious.

Table 1 Sports injuries of aerobics athletes

	Number of injured	Number of uninjured persons	Total
The number of	43	7	50
Percentage (%)	86	14	100

3.2 Physiological Basis of Balance Ability

Balanced sensation is a comprehensive reflection of the functions of nervous system and motor system. The human body often takes part in sports training, and the function of proprioceptive receptors can be improved. Athletes with high technical level have high ability to analyze and control muscle activity. Competitive calisthenics is a competitive sport that requires high physical fitness of athletes. Athletes must have comprehensive physical fitness when completing complete sets of movements, that is, athletes must have comprehensive physical fitness. The athletes are hard at the usual training, and there will be an abnormal phenomenon in the playing field. This is mainly due to the poor psychological quality of the athletes. Aerobics athletes change the trajectory of the center of gravity by adjusting the body posture to adapt to different movement changes, regulate the movement speed, and complete the movement quickly and smoothly. In competitive aerobics competitions, athletes must have a full range of physical fitness in order to complete the complete set of movements. If aerobics wants to develop to a higher level, it is a very necessary condition to train athletes' special technical ability. Therefore, in order to develop aerobics, it is necessary to strengthen the training of aerobics.

4. Conclusion

Aerobics athletes' competitive ability is affected by many factors, which requires us to adjust and control these factors in normal training to improve athletes' competitive ability. Every aspect of competitive ability is determined not only by other aspects but also by the level of other aspects. Only by using complete and high-intensity special training methods can the potential of organs and systems closely related to special sports be fully exploited in an environment closer to the actual competition. To cultivate athletes' good psychological quality, to give timely incentives, to stimulate their enthusiasm for participation, to create all opportunities to consolidate the basic skills of athletes. In competitive aerobics training, the relationship between balance ability and development difficulty is emphasized, and the balance ability is the basis for developing difficult actions. In addition, motor skills, physical fitness and psychology are closely linked and mutually promoted and mutually constrained. Each training must take time to carry out the basic movements and technical movements to ensure adequate training time, stabilize the athlete's psychological quality, improve the ability to adapt, and ensure normal play. In the usual training, it is necessary to improve the athletes' special skills training, strengthen physical fitness exercises, improve the athletes' sports intelligence, and strengthen the athletes' artistic expression.

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