Research on Segmental Physical Energy Allocation of Swimming Projects

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Abstract: Based on the results of collecting the international and domestic influential international and domestic swimming competitions this year, this paper comprehensively analyzes the physical distribution of the world's top athletes and Chinese athletes. Through the results of the winners, the speed coefficient is obtained through a certain form of conversion, and the size of the speed coefficient is used to reflect the characteristics of the athlete's segmented travel physical energy distribution. On this basis, it sums up the tactical application rules of the world's top athletes, and provides detailed swimming part segmented travel physical energy distribution mode, to provide assistance for the improvement of the overall level of swimming in China, and to provide reference for preparing for the Olympic Games.

1. Introduction

Swimming, especially competitive swimming (freestyle, backstroke, breaststroke, butterfly) has become an important project in today's sports after years of development. Over the years, the swimming standards of all countries in the world have made great progress. Many large-scale swimming events have forced athletes to continuously develop their potential and speed up swimming. Competition in the Olympic Games has become more intense. One of the most prominent highlights of the 2000 Sydney Olympics was the swimming competition, which broke 14 times in 8 days, 13 world records in 1 time, and broke 24 Olympic records in 35 times, creating a glorious chapter in the history of Olympic swimming. Become a milestone in the world of swimming into a new era. Swimming is a conscious activity that relies on the interaction of the athlete's own body movements and water to cause the athlete to float and advance on the water. The swimming environment is different from the environment in which humans engage in other sports. When swimming, the athlete floats in the water, and the water is a liquid fluid, which has the characteristics of fluidity, viscosity and difficulty in compression. These fluid characteristics of water are correct. People who swim in the water also generate propulsion and resistance. It is true that the improvement of swimming performance depends on the two parts of technology and physical fitness. Physical fitness is the material basis for mastering technology, and advanced and reasonable technology can give full play to athletes' physical fitness. At present, in order to improve sports performance, the world swimming world has experienced a conceptual update and progress, mainly from subjectively improving the scientific and technical content of training, making swimming movement techniques and training methods more reasonable and perfect, maximizing excavation The potential of athletes continues to create new achievements. To improve the level of swimming, the improvement of technical efficiency is as important as the distribution of reasonable physical energy. The physical training methods and methods of today's competitive sports periodic projects are developing in an ever-changing manner, and the physical fitness of athletes has been greatly improved. However, even the best physical fitness in the game must be rationally applied through technical and tactical, in order to play its best role. Correct and reasonable distribution of physical strength, so that good physical fitness can be fully utilized in the competition, is a link that can not be ignored in the excellent project competition, and is also used by elite athletes.

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2. Analysis of segmental physical energy allocation characteristics of medley

In the individual medley program, the swim styles used by each segment of the athlete are different. The swimming sequence is the first segmented butterfly stroke, the second segmented backstroke, the third segmented breaststroke, and the fourth segmented freestyle. According to the speed of the four swimming styles, the fastest is freestyle, followed by butterfly stroke, then backstroke, the slowest breaststroke. We can see that the top players in the international, Asian and Chinese countries have a more consistent trend in the segmental physical distribution of the project. This feature is partly determined by the sequence of the four swimming styles that make up the project. In the individual medley program, the most discussed by the researchers is the question of which type of swimming capacity level contributes to the final score. Our data analysis can reflect some problems on the side. First, define a standard value, average the speed coefficients of the top three players in the world, and then compare the speed coefficients of each type of player with the average value. The value of + above 0.5 is recorded as a strong item. It is a weak term; a weak item between ±0.25 and ±0.5; a value between 0 and ±0.25 is considered moderate; a value of more than 2 is recorded as a strong term, and a value is recorded as a weak term. It can be seen that the world's first butterfly and freestyle are strengths, breaststroke is weak, and backstroke is moderate; the second backstroke is a strong item, the other swimming styles tend to average; the third one is strong in disc, frog and frog, freestyle It is a weakness. China's top players' butterfly and freestyle are strong (excessive), and backstroke and breaststroke are weak (too weak). Asian players have a strong butterfly stroke, a weak backstroke, and other swimming styles. Qi Hui uses the first segmentation fast (speed coefficient 13.6458), the second segment is slow (speed coefficient -4.2671), the third segment is slow (speed coefficient -10.5020), and the fourth segment is fast (The physical energy distribution method of speed coefficient 4.3671). The difference between the front and rear speed coefficients is 7.5608; the average speed is 1.5161; the range of variation is 24.1478; the standard deviation is 10.5063. Qi Hui is a famous medley in China. His breaststroke ability is very strong, his butterfly swimming ability is strong, his freestyle ability is medium, and backstroke is a weak item.

In general, the segmental physical energy distribution of different players is greater than the same. The difference in the ability of the four swimming styles is relatively close, and the difference characteristics are not obvious. In comparison, the international first butterfly and backstroke are strengths, breaststroke is weak and the freestyle is weak; the second butterfly is slightly strong, the backstroke is weak, the breaststroke is weak, the freestyle is medium; the third butterfly is weak, the backstroke is weak, the breaststroke For strengths, the freestyle is very strong. The top athletes in Asia are very strong in butterfly stroke (2.63), the backstroke is weak, the breaststroke is weak, and freestyle is a weakness. China's top players in the project are butterfly and breaststroke, which are weak, backstroke micro-strong (2.18), and freestyle.

The swimming sequence of the 400m individual medley is the same as the 200m individual medley. The difference is that the 400-meter individual medley uses a swimming style every 100 meters, that is, the athletes need to complete the 100-meter butterfly, 100-meter backstroke, 100-meter breaststroke, and 100-meter freestyle. The 200-meter individual medley is Convert one swim line every 50 meters, ie 50m butterfly, 50m backstroke, 50m breaststroke, 50m freestyle. We can see that the international first butterfly is medium, the backstroke is strong, the breaststroke is the strength, the freestyle is the weak item; the second butterfly is medium, the backstroke is the strong, the breaststroke is strong, the freestyle is the weak; the third butterfly is the strong, backstroke Weak, breaststroke is a weakness, and freestyle is a strength. The Asian butterfly is weak, the backstroke is weak, the breaststroke is a strong point, and the freestyle is very strong. Chinese athletes' butterfly and breaststroke are strengths, and backstroke and freestyle are weak. Qi Hui butterfly middle, backstroke (3.89), freestyle (2.15) is a weak item, breaststroke is a strong item (4.75). RANK1 exhibits the first segmentation fast (speed coefficient 9.7078), the second segment is slow (speed coefficient -1.7205), the third segment is slow (speed coefficient -1.9603), and the fourth segment is fast (speed coefficient) 8.5503) The physical energy distribution method. The

difference between the front and rear speed coefficients is 7.0944; the average speed is 1.4427; the variation range is 22.8837; the standard deviation is 10.6131. Qi Hui uses the first segmentation fast (speed coefficient 9.6227), the second segment is slow (speed coefficient -5.3239), the third segment is slow (speed coefficient -8.7867), and the fourth segment is fast (The physical energy distribution method of speed coefficient 6.9272). The difference between the front and rear speed coefficients is 3.1555; the average speed is 1.4372; the variation range is 18.4094; the standard deviation is 9.0304. In the Qihui butterfly stroke, the backstroke and freestyle are weak (difference 3.89), and the breaststroke has obvious advantages (difference 4.75).

The world's top first players, butterfly (1.31) and backstroke (1.28), are strong, breaststroke (-1.11) and freestyle (-1.07) are weak; second butterfly is weak (-2.47), backstroke, breaststroke (1.02) Freestyle (0.76) is the strength; the third butterfly is the strength (1.16), the backstroke is the weak (-1.33), breaststroke, freestyle and so on. Asian top butterfly (4.17), breaststroke (0.70) are strengths, backstroke is weak (-3.58), and freestyle is weak. China's top athletes showed a slight butterfly (0.18), a weak backstroke (0.91), a breaststroke, and a freestyle (0.57). RANK1 exhibits the first segmentation fast (speed coefficient 10.7961), the second segment is fast (speed coefficient 0.5209), the third segment is slow (speed coefficient -13.7916), and the fourth segment is fast (speed coefficient 6.1171) The way of physical energy distribution. The difference between the front and rear speed coefficients is 10.2846; the average speed is 1.5958; the range of variation is 24.5877; the standard deviation is 10.6669. The ASN uses the first segmentation fast (speed coefficient 13.6610), the second segment is slow (speed coefficient -4.3382), the third segment is slow (speed coefficient -11.9866), and the fourth segment is fast (speed) The physical energy distribution method of coefficient 6.7227). The difference between the front and rear speed coefficients is 7.4367; the average speed is 1.5466; the range of variation is 25.6476; the standard deviation is 11.6375. CHN uses the first segmentation fast (speed coefficient 9.6757), the second segment is slow (speed coefficient -1.6741), the third segment is slow (speed coefficient -12.3874), and the fourth segment is fast (speed) The energy distribution method of coefficient 7.7602). The difference between the front and rear speed coefficients is 7.0321; the average speed is 1.5310; the variation range is 23.0620; the standard deviation is 10.3936.

3. The overall segmental energy distribution feature matrix of the overall project

In the many swimming projects, we divide the projects of different distances into four segments according to the average ratio. Each segment score can reflect the athlete's physical distribution during the whole game. Some players are in the first score. The segmental force distribution is the most, the speed of the first segment is also the fastest, and the second segment is the fastest, and the third segment is the fastest, and the fourth segment is the fastest. In fact, through analysis, we found that the speed structure characteristics of each player in the competition are very different, in order to understand the speed distribution of each player, that is, the relationship between the segmental physical energy distribution characteristics and the achieved results. This article is based on the statistical calculations of the 2006 World Championships and the Athens Olympic Games and the 2006 National Championships and the 10th National Games Swimming Competition and the 2006 Doha Asian Games. The following 12 competitions were obtained. Speed structure pattern diagram (personal medley, relay, 1500m freestyle, 50, 100m project is not included in the statistics). Each mode is represented by two parameters: the fastest segment and the slowest segment. For example, an athlete's first segment is the fastest, and the fourth segment is the slowest, which can be expressed as "1-4", that is, the previous number represents the fastest segment, and the latter number represents the slowest segment. Another example: “4—1” stands for, the fourth segment is the fastest, and the first segment is the slowest. These 12 modes can be given in a matrix. The columns of the matrix represent the fastest segments (from 1 to 4), and the rows of the matrix represent the slowest segments (from 1 to 4).

4. Conclusion

The execution of good tactics depends on the usual training accumulation. Without the usual targeted training, it is impossible to complete the pre-arranged tactics. Therefore, it is very necessary to integrate the tactical training into the ordinary training and cultivate the tactics of the athletes. Literacy. In addition, the use of tactics must also consider individual differences, and must not be generalized. Through the comparative study of the tactical use of elite athletes in the above-mentioned swimming 200m project, I hope that the coaches can find out the most suitable match according to the characteristics of Chinese athletes. Tactics, of course, the tactical arrangement of each athlete is not absolute, but also according to the opponent's situation and the natural conditions of the game to make corresponding changes.

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