

# The development of Chinese Swimming Leagues in recent years

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**Abstract.** So this study aims to explore and examine the future development and prospects of the Chinese Swimming League. This study provides some novel approaches to quantifying; the first is to analyze the current situation of the Chinese swimming team and why China's swimming strength is not as good as that of the US and Australia teams. What can we learn from them? Second, collect the number of prize winners in current China's key leagues, analyze how to do better in the next competition, and learn other countries' strategies. The third is to compare the training ways of the Chinese swimming team with other countries swimming. Moreover, providing suggestions to promote swimming in the school or society to train more outstanding swimmers. Although the history of the Chinese Swimming League is not long, there is a measureless development space in the future. It still takes time and relatively strives to catch up with the world's first-place swimming team. Everyone firmly believes that Chinese swimmers will achieve better results in major international games in the next few years.

**Keywords:** Chinese Swimming League; Future development; Current situation; USA; Australia.

## 1. Introduction

Swimming leagues have gained worldwide attention in recent years, and it is an important event. In addition, swimming is a competitive event in the Olympic Games.

Yet, China's swimming skills are not dominant in the world rankings. For example, compared with the United States or Australia, there is still a big difference, like others have a complete and professional swimming system and strategic training. These are all things that we can refer to and learn from. In addition, the swimming league has also brought a lot of benefits to our country, its value is not only to win gold in all competitions and win glory for the country but also to encourage people to participate in it. For example, through swimming contests, people can get why sports are important and make them know more about the spirit of sports, which makes people exercise more and keep fit. It is significant to start with these goals. There are certain problems in the training and management of swimming teams in my country's swimming league or other contest. We will analyze these issues, discuss, and give some corresponding suggestions and viewpoints.

## 2. What are the defects of the domestic league

### 2.1 Why is China's swimming capacity not as good as the United States and Australia?

In the past 20 years, with the development of society, the theory of science and technology being good at swimming and preparing for the next Olympic Games has had particular practical significance. Due to the improvement of swimming levels, the update of swimming training methods, and the improvement and perfection of swimming techniques. The overall level of swimming has been continuously improved, the gap between elite athletes has become smaller and smaller, and the competition in swimming competitions has become increasingly fierce [1]. We cannot deny that American sports culture is one of the best in the world. Mainly American swimming can dominate the world for a long time as follows: The management system and system of competitive swimming in the United States are efficient, such as USA Swimming. A complete swimming training competition system is conducive to discovering and cultivating talents: professional coaches, psychologists, referees, advanced scientific training, and physical training [2]. And they provide

numerous swimming resources and competitions to students, such as middle school, high school, or university. For example, about 500,000 registered athletes in competitive swimming in the United States, of which 290,000 are teenage athletes and 20,000 college athletes who insist on professional swimming training and competition all year round, which creates a large pool of reserve athletes. At the same time, there are nearly 3,000 member clubs of swimming associations, which includes possessing the nation's swimming talent. USA Swimming mainly promotes swimming in society, so they have a mass base, which means they can get more high-level professional players from the crowd. American college swimmers are the primary source of the national team [3]. Therefore, domestic is still necessary to popularize swimming for young people. There is a gap between Chinese swimmers and American and Australian athletes concerning body shape and health; they are taller, have better nutrition, and have strong immunity. The test found that many female athletes in our country are too young and their physical development is not mature enough, resulting in unqualified height and weight, but they are still far better than Japanese athletes, which affirms the gap in the performance of Chinese and Japanese athletes. It is not a gap in physical conditions; the improvement of the trunk shape of Chinese athletes is more in line with the movement mode of the human body in water, effectively reducing the morphological resistance, and is closer to the body shape of the elite athletes in the United States and Australia; the body fat of Chinese athletes. The increase has a certain negative impact [4].

On the contrary, there is a severe shortage of swimming talents in China. First, they do not pay much attention to developing school swimming events. The second is that the cost of investing in swimming is high, and no one is willing to invest. In addition, the USS (United States Swimming) system is complete and professional. They have a career development department, a career operation department, a member service department, and a national competition department. At the same time, they will have competition classification, divided into four levels: Club Invitational, State Competition, Divisional Competition, and higher standard competitions (national competition, professional competition), the standard of professional competition is the highest [5].

However, they have their own foundation. The USA Swimming Foundation serves as the philanthropic arm of USA Swimming and is dedicated to supporting the pursuit of excellence for swimmers at all levels across our sport, from those just learning to swim to age-group swimmers to U.S. Olympic hopefuls. By funding teams, athletes, and programs, the USA Swimming Foundation works to build champions and create a legacy for future generations of swimmers [6]. Because threshold that may be relatively low because swimming talents are relatively scarce. Moreover, the US professional competition has bonuses and will contract all training and participation costs. These funds come from USA Swimming's partners, long-term sponsors, and the Olympic Committee's funding for the project, which will give athletes a sense that It motivates and encourages people to swim [3]. According to the 14th World Championships, the Chinese team's results are not good, and the strength is second only to the United States and Australia. Now, through in-depth analysis of the performance characteristics of the Chinese team, we can find the shortcomings, make breakthroughs one by one, and improve the overall strength. Moreover, the United States' primary opponent is Australia. The United States has won 214 swimming gold medals in the 25 Olympic Games. In addition, Australia has won 56 swimming gold medals in the 26 Olympic Games it participated in. Except for the 1896 Olympic Games, the United States and Australia did not win awards. The United States lost gold medals to Australia in the 1900 and 1956 Olympic Games, and the United States was absent from the 1980 Olympic Games. The United States Swimming has defeated Australia by an absolute advantage in all previous Olympic Games. The training methods of the Australian swimming team can also refer to. For example, the Australian swimming team will conduct altitude training before the competition, especially before the Olympic Games, for 21 days, with a day off in between. Besides, according to the 14th World Short Course Championships, the Chinese team's results are not good; the strength is second only to the United States and Australia. In the gold medallist of the 14th World Short Course Championships, the United States 117, Australia 79, and China 42 rank in the top three, respectively, and the gold medals of the three countries account for 42.96% of the total gold

medals. The gold medals of the three countries in the World Championships have different trends. Since the fifth session, the number of gold medals in the United States has gradually increased, occupying first place in the gold medal list as many as seven times, with a maximum of 21 gold medals in one session. Australia's performance in the first nine sessions was relatively stable, ranking first in the gold medal list five times. But from the 10th session, it showed a cliff-like decline, and its performance continued to be sluggish, with an average of one gold medal in each of the past four sessions. Now, through an in-depth analysis of the performance characteristics of the Chinese team, we can find the shortcomings, make breakthroughs one by one, and improve the overall strength [7]. Plateau training, as a kind of training to improve the performance of athletes, is welcomed by many people. This training method comes from Australia. The training includes 34 water training sessions, four land training sessions, and four cardio walks.

according to Australia coach-Denis Cotterell's training method, 1) Technical training combines diagnosis of key technology with athletes' experience. 2) Core strength and small muscle strength were balanced during land training. 3) Multi-segment training program was used, and a positive training atmosphere was created. 4) Small period and high-intensity training were adopted effectively. 5) Effective motivation and control were in training management. This training concept of Denis Cotterell helped Chinese swimming coaches to improve their training concepts and training methods; also, it provided a reference for promoting the development of Chinese swimming events [8]. Besides, we find that some athletes' heart rate, time, and lactic acid during exercise will be observed. Coaches actively communicate with athletes, discuss test results with physiology experts daily, and revise training plans for the practice. Meta-analysis shows: compared with before the altitude training, after it, blood RBC, Hb, HCT, stroke volume, ejection fraction, and other indices were significantly increased and may continue to before competition; body immune function indices, testosterone levels were significantly decreased during the altitude training, but adjust back to level before altitude training after being back to the plains for two to three weeks. If something is wrong, it is corrected immediately, which is an efficient training method [9]. In recent years, Australia has achieved good results in international swimming competitions. For example, in 2015, at The World Swimming Championships, there were six major and 42 minor events. Produced 42 gold medals, 42 silver medals, and 45 bronze medals, a total of 129 medals. China has 51 athletes who participated in 42 events and won 5 golds, one silver, and seven bronzes, ranking third in the medal table. Australia won seven gold medals, while the United States only had six, ranking second in the gold medal list [10].

## **2.2 What are the benefits of a swimming league?**

The organization of the Chinese Swimming League can achieve not only excellent results and win glory for the country, but also the rich experience has laid the foundation for the rapid growth of the Chinese swimming team. The economic improvement has promoted technological innovation, such as improving the swimming environment, resource allocation, and attracting more fans, making swimming more widespread. There are the following points: The first league has a large scale and significant influence, which can increase the popularity of local swimming teams. Second, swimmers can compete with swimming teams from different countries; they can see each other's strengths and gaps to improve their level. Third, that is an excellent way to spread the spirit of swimming to make more people know about swimming, make them like sports, and strengthen their bodies. Athletes in the league have to face the world, so regardless of their psychological endurance and strength, their training time will be longer and more detailed. Therefore, the most urgent task is to do an excellent job in the training of the national team, adjust the interests of the country, and analyze the reasons for the failure of the Olympic Games and swimming leagues. That will not only improve the international level of the Chinese swimming team but also promote the development of swimming in our country [11].

### 2.3 The current problems of the Chinese Swimming League

As we know, the 2022 Swimming Championships, the World Swimming Championships is currently the highest-level special swimming event in the world:

First, the rhythm of the contest is disrupted. Against the background of repeated postponement and adjustment of international affairs, the Chinese swimming team, which should have focused on preparing for the Hangzhou Asian Games, suddenly had to change its training plan and focus on the World Swimming Championships, which also made the team members who needed intensify training to establish their state of competition seemed good. Zhang Yufei, a famous swimmer in China, said: To be honest, the preparation training this time was too inadequate, and the pressure was very heavy.

Second, there are few opportunities for the second competition. In the first half of this year, because of the postponement of the national match, the Chinese swimming team did not participate in any official contest. That is unfavorable for athletes to adjust their game state. European and American players have participated in extensive competitions. For example, Hesk, the gold medalist who defeated Zhang Yufei, participated in many competitions, and there is a clear gap in the state of the two sides;

Third, the famous players are absent. Compared with the 18th World Swimming Championships three years ago, the number of athletes participating in the Chinese swimming team this time significantly reduced. For example, Ye Shiwen, Fu Yuanhui, and other athletes are all, due to different factors such as injury, state, and age, unable to participate in this competition. The point is that China has produced few new swimmers in recent years, and there are only a few reserve players.

Fourth, domestic swimming lacks professional teams, such as head coaches, nutritionists, psychological consultants, etc. And it is also because the national team has limited funds.

## 3. Solution

### 3.1 Referring to the regularization of leagues in the United States, how should China improve?

USA Swimming is a professional organization, starting from basic Swimming, laying a solid foundation, and then to the top national team. As we know, the United States has the complete training system in the world: the combination of the swimming training system and education system in the United States has formed a considerable reserve talent team and has professional trainers and teams. Therefore, the following suggestions are given in combination with context analysis:

1) Set up a swimming management organization, such as a membership service department, national competition department, media department, finance department, foundation, and other departments, and hire professional staff, including athletes, coaches, and volunteers at all levels.

2) Create a competition network platform to allow more swimming enthusiasts and even athletes to have the opportunity to participate in the competition. For example, set up a teenage swimming club. The age group competition is usually divided into eight years old, 9-10 years old, and 11 years old. - 12-year-old, 13-14-year-old, 15-16-year-old, and another grouping. Alternatively, the middle school system organizes swimming leagues for middle school students in each city, the participating units are school representatives, and players of each grade usually compete. Furthermore, college athletes can also participate in the competition; enriching experience and improving technical level have played a significant role [3].

3) Strengthen the construction of the national team, make training more professional, hire more full-time staff, including coaches, general managers, sports scientists, and psychologists., set up competition tasks and goals, and train hard.

4) Create a club. The swimming club is the reserve talent training base for the swimming team. It can focus on holding activities in various universities to attract swimming talents. Secondly, the US swimming club is built and operated by social investment.

5) Technology promotion, for example, the Los Angeles area has opened several swimming schools for children aged 0-5. In 1988, the American Swimming School Association was formed. In 2008, the association's member schools grew from 36 to 362, of which the best 47 employed a total of about 1,500 full-time and part-time staff and provided swimming education to 43,000 infants and young children every week [6]. Increase publicity to make more people know about Swimming, and then build swimming pools in multiple schools to provide an environment for students, identify talented students and encourage them to participate in swimming competitions.

### 3.2 Eating habits and future meal plans

The manifestation of an athlete's physical qualities and athletic ability is not only from the athlete's talent and continuous training; nutrition is one of the most critical parts. A good sports nutrition diet is the basis of all athletes' training. It can give the athletes the energy needed by the body and help them have a better state and physical strength to exert their training effect and competitive ability. The diet of western countries is different from that of China. For example, every swimmer in the United States will have a professional nutritionist to arrange their diet and the athlete with the most medals and gold medals in Olympic history. Michael Phelps is the most famous swimmer in America. Moreover, his breakfast habit consisted of three omelet sandwiches with cheese, lettuce, tomato, fried onion, mayo, two cups of coffee, an omelet with five eggs, a bowl of grits, and three spreads of French toast with powdered sugar, three chocolate crepes; one pound of whole-wheat pasta for lunch, two large ham, and cheese sandwiches with mayo, a 1,000-calorie energy drink. One pound of pasta for dinner, one whole pizza, and several bottles of energy drinks, so it is calculated that he consumes about 10,000 calories a day [6]. Because swimmers need to overcome the resistance of sleeping and also receive the influence of water temperature, high intensity, and large daily exercise volume, their nutritional recovery is significant. Whenever they finish training, the glycogen in the muscles is almost depleted. Suppose Failure to replenish and restore in time will affect the state of the next game. The other side is the diet of Chinese athletes. There is no strict dietary control and arrangement, which leads to the athletes' physical weakness or poor physical condition, which affects the competition effect. For example, there are three major nutrients in the diet of Chinese athletes. The ratio is not suitable, the inhalation of trace elements is insufficient, and Water supplementation is not taken seriously. The reasons include the lack of correct awareness of diet and nutrition among athletes and coaches, the lack of professional nutritionists, the lack of nutrition education in physical education, and the lack of food security for athletes [9]. According to the research, the dietary nutrition problems of Chinese athletes are as follows: the first carbohydrate intake is seriously insufficient, the second vitamin intake is insufficient, the third water supplement is insufficient, and the proportion of three meals a day is unbalanced [10].

The following are some suggestions:

1) Properly increase the supply of carbohydrates. Carbohydrates are essential energy-supplying substances for the human body and can improve the speed of swimming, increase exercise time, and avoid speed of athletes' exhaustion. Because the lack of glycogen can easily lead to fatigue, there is no energy to complete the exercise. Therefore, regardless of training or competition, athletes should be provided with foods higher in carbohydrates during rest periods to supplement and improve glycogen stores.

2) Sufficient supply of protein. Protein is an integral part of tissue cells and is vital for athletes to exercise. And also directly affects the function of internal organs, muscles, and bones. Athletes need that more than the average person.

3) Replenish water because swimmers will consume much water during training and competition. If they do not replenish water in time, their physical strength will decline, which is easy to shock. So, it is necessary to drink timely and practical for swimmers before, during, and after exercise. For example, the amount of water in the early stage is 113 to 227 ml. the amount of water in the mid-term is 113 ml/15 minutes, and the amount of water in the later stage is 454 per and 454 grams of water ml.

4) The need for vitamins. Vitamins are organic compounds needed to maintain health, but the content of vitamins in food is limited. And vitamins mainly play a role in regulating the physiological functions of the human body, so it is necessary to ensure the daily supply of various vitamins to prevent athletes from missing specific vitamins.

As a result, the government should invest more money in swimming and hire more professional nutritionists to arrange the athletes' meals, which will help improve swimming performance and maintain a good competitive state. For example, three to six days before the competition, gradually increase the intake of carbohydrates; eat more sugary and starchy foods the day before the competition. Without professionals to arrange and match, it is difficult for athletes to control their diets on their own.

#### 4. Conclusion

We used an event study approach to explore this paper's impact empirically. We found that there is still a particular gap between the overall system, training methods, and publicity methods of Chinese swimming competitions compared with other countries. That can be explained by the fact that China's swimming competition strength has not been excellent, especially compared with the swimming powers of the United States and Australia. The USA team was in almost all leagues yearly, the country with the most gold medals. Australia is second only, so the gap is still huge. First, they have a complete swimming system, professional instructors, and proper and efficient pre-competition training, including diet.

Secondly, they cultivate children's sportsmanship early and provide more opportunities for them to contact swimming. Such as, their schools have swimming pools and clubs, which are conducive to discovering talents, and provide reserve athletes for the national swimming team. At the same time, they will also hold many swimming competitions, whether professional competitions, invitational competitions, or regional competitions, which provide athletes with more opportunities to exercise, strengthen their psychological quality, and exercise swimming skills. For the country, the most important thing for the swimming league is achieving excellence and winning glory. There are other reasons, such as improving the overall level of swimming competitions in the country, Spreading the spirit of sports, and having much space for development and prospects. In recent years, swimming has been loved by more and more people, more people are trying to get in touch with it, and many young people even take swimming as their development goal, all of which are positive development trends. This research first scientifically evaluates the current situation of the Chinese Swimming League. Compares it with other countries, analyzes its shortcomings and areas that need to be improved, and refers to their useful reference; Second, and suggests corresponding suggestions to improve, such as diet, league regularization, and swimming system.

Finally, as described in this study, Chinese swimming competitions have received worldwide attention. In recent years, they have achieved not-so-excellent results in all world leagues, while the United States and Australia have performed steadily. However, we believe that the development prospects of the Chinese swimming Leagues are still extensive, and the operation of the variables mentioned above can be further refined in the future to facilitate in-depth research on this topic.

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