

A Study on Successful Experience and Sustainable Development of Chinese Women's Gymnastics Performance

—Taking the Gymnastics Games in Last Five Olympic Games for Instance

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Abstract—Taking the gymnastics games in last five Olympic Games (27th-31th) for instance, this paper uses the methods of literature consultation and mathematical statistics to study the successful experience and sustainable development of Chinese women's gymnastics performance and to summarize the new trends of women's gymnastics games in last five Olympic Games by comparing with the rivals of Chinese women's gymnastics in order to provide a theoretical basis and practical value for the further development of Chinese women's gymnastics.

Keywords—China; Women's gymnastics; Performance; Experience; Sustainable development; Olympic Games

I. RESEARCH PURPOSE

Gymnastics has been classified as a formal event since the first Olympic Games in 1896. The women's gymnastics was the first official event at the 9th Olympic Games in 1928 in Amsterdam, Netherlands, but only for team event. At the 10th Olympic Games in 1932, the women's gymnastics event was canceled. At the 11th Olympic Games in 1936, the women's gymnastics was re-classified as an event and it had been a team event until the 14th Olympic Games in London in 1948. In the 15th Olympic Games in 1952, it became an event including team, individual all-around, four individual items (free gymnastics, uneven bars, balance beam and vault). The women's gymnastics has gradually improved and grown matured and it has become a sport event with an independent system and its own provisions.[1]

Taking the gymnastics games in last five Olympic Games (27th-31 th) for reference, this paper uses the methods of literature consultation and mathematical statistics through the collection of related literature from China Knowledge Network (CNKI) to study the successful experience and sustainable development of Chinese women's gymnastics performance and to summarize the new trends of women's gymnastics games in recent five Olympic Games and to reveal the various internal relations and laws of the gymnastics movement by comparing with the rivals of Chinese women's gymnastics so as to promote the development of the theory and practice of competitive gymnastics and to provide a theoretical basis and

practical value for the further development of Chinese women's gymnastics.

II. RESEARCH SUBJECTS AND METHODS

A. Research Subject

The successful experience and sustainable development of Chinese women's gymnastics performance

B. Research Methods

1) Literature consultation

Books, periodicals and related information about physical education, logic, education, psychology, sociology and talent have been referred to through the CNKI and other databases and have been systematically collated and analyzed. The research status can be understood more comprehensively thus providing a sufficient theoretical basis for the study of the subject.

2) Mathematical statistics

In the process of applying mathematical statistics, the data needed to be analyzed in the study are processed by statistical methods, and the results are made into tables and various graphs.

3) Logical reasoning

The obtained literature and related data are analyzed, inducted and summarized in the forms of conceptualization, reasoning and judgments.

III. RESULTS AND DISCUSSIONS

A. Chinese women's gymnastics performance in last five Olympic Games

In recent years, the competition in the World Series has intensified and there has been a new change in the setup of women's gymnastics. The multi-polarized distribution of medal has become relatively focused. The level of gymnastics in different countries has generally improved. International Federation of Gymnastics' reform on gymnastics and changes in scoring rules of competitive gymnastics are promoting the

continuous improvement and development of gymnastics technology.

TABLE I. GOLD MEDALS FOR CHINESE WOMEN'S GYMNASTICS IN LAST FIVE OLYMPIC GAMES

Medals	Year				
	27 th Olympic Game(2000)	28 th Olympic Game(2004)	29 th Olympic Game(2008)	30 th Olympic Game(2012)	31 th Olympic Game(2016)
Gold	1	2	2	1	0
Silver	1	0	0	2	0
Copper	2	3	3	0	1
Total	4	5	5	3	1

As shown in Table 1, from 2000 to 2008, the overall development of Chinese women's gymnastics is on the rise; the strength of Chinese women's gymnastics has been close to world-class level and is steadily improving. From the data above it is obvious to see that China's women's gymnastics is in its rapid development and occupies an important position in China's competitive sports. It is also an advantage event for the "Olympic Glory Plan". The overall level of China's gymnastics reached its peak especially in the 2008 Beijing Olympic Games. After the 2008 Beijing Olympic Games, Chinese women's gymnastics performance began to decline [2].

B. Analysis of Internal Influential Factors of Chinese Women's Gymnastics Performance

1) China's Sound Institutional Advantages

In the first place, Chinese gymnastics team must notice how to ensure the quality while pursuing the difficulty of movements, how to arrange the movements more sensibly, how to guarantee the scientific training and how to keep in a good mood. Chinese gymnastics team should be more focused on the perfection of ability with both difficulty and quality while showing their expressive force to the full. Moreover, International exchange should be strengthened. Currently, the internal mechanism of Chinese gymnastics has not been perfected thus international referees of high level should be involved in arrangement of movements from the perspective of scoring. It is a "bringing in and sending out" process. It is also urgent to strengthen the talent construction and training for referees and coaches. Last but not the least; it is scientific training through competition. In the past we mobilized and stressed the importance before each competition and set a higher tone for the Olympic Games; while our competitors get trained and adjusted through competitions and tried their best in the last game. Perhaps, we should view the entire preparation period from another perspective. We should position the team reasonably, arrange for it scientifically, and allocate and develop the whole team in accordance with the law of sports [3]. Sports diplomacy is also very special. We have to fight for international discourse, not to fight for our own interests, but to maintain fairness and justice.

It is estimated that the current talent stocks in traditional sports schools and sports teams can barely meet the needs to the year 2024. With the progression of social and historical development, sports schools will recruit less and less students and China's competitive sports will be faced with great challenges. The reform period has come. If children's interest is cultivated through the "happy gymnastics", there will be more "Gym People". Then it is natural that there are more living space for clubs, referees, coaches and other gymnastics

practitioners. Now there are 100 million preschool children in China, and "this is a big market." With children's growing up, gymnastics construction can be gradually reinforced in primary schools, secondary schools or even universities.

With the mass base and top-of-the-pyramid athletic sports, Chinese gymnastics is moving towards the top level of development.

2) Support of National Economic Development to Chinese Women's Gymnastics

China's economy has been prospering since the reform and opening up, and the development of China's sports has also been greatly promoted. People are increasingly concerned about sports events, and more funds have been invested in China's competitive sports. In addition to China's annual investment in basic construction, over 800 million Yuan are invested in sports. It costs three million per year to cultivate an Olympic gold medalist from the process of training to competitions, and in a real sense, it takes about ten years from selecting a potential competitor to training him up. In this period, the country's life-support expenses on an athlete are far more than three million Yuan.

3) Advantages of Talent Reserve for Women's Competitive Gymnastics in China

Scientific training is a necessary condition for achieving excellent results, and scientific talent selection is equally important. In this paper, by referring to relative literature, we have learned that researches about the physical form (weight and height) of the world-famous women gymnasts in recent years are relatively less and most of researches focus on the age characteristics of athletes. The domestic studies mainly elaborate on the age characteristics of excellent gymnasts from the aspects of elementary training age, training period, age of movements' innovation, age of achievements and so on. In view of the continuous decline of the total number of Chinese athletic sportsman, athletes' low literacy, and the unreasonable distribution of coaches' age and literacy, career title structure and teams, the systematicness of women's gymnastics, the complementarity of events and the regionalization of the talent selection are attached more and more importance. Two major modes of training high-level athletic gymnasts, namely physical education and professional team training have become indispensable training modes for excellent women gymnasts in China. According to characteristics of women's gymnastics, scientific theories and methods, and advanced selection and training models should be used to select female children gymnasts of required physical conditions in order to improve the quality of athletes and to reduce the elimination rate [4]. The results showed that in terms of the average age of the top 8 athletes in group and individual all-around competitions, men

are nearly 24 years old and women are over 18 years old. The average age of the men's rings and free gymnastics individual medalists is over 27 years old and 25 years old, and the eldest is 34 years old; the average age of women entering the vault finals is over 19 years old and the silver medalist is 26 years old. It can be considered that the men and women gymnastics

have respectively entered the period of adult and the period of youth in times of new Beijing Olympic Games [5].

C. Analysis of the Factors Influencing the External Competitors of Chinese Women's Gymnastic

TABLE II. MEDALS IN WOMEN'S GYMNASTICS IN THE 27TH – 31ST OLYMPIC GAMES (G=GOLD S=SILVER C=COPPER T=TOTAL)

Country	The 27 th Olympic Games				The 28 th Olympic Games				The 29 th Olympic Games				The 30 th Olympic Games				The 31 st Olympic Games			
	G	S	C	T	G	S	C	T	G	S	C	T	G	S	C	T	G	S	C	T
China	1	1	3	5	0	0	1	1	2	0	4	6	1	2	0	3	0	0	1	1
Russia	3	3	2	8	0	1	2	3	0	0	0	0	1	2	3	6	1	2	1	4
Romania	2	2	1	5	4	1	1	6	1	0	1	2	1	1	1	3	0	0	0	0
U.S.A	0	0	0	0	1	4	1	6	2	5	1	8	3	1	1	5	1	0	0	1

1) Analysis of Competitive Strength of Romanian Women's Gymnastics Team

The 18 medals in the 27th Olympic Games are relatively centralized, obtained by three countries. Confronted with the powerful Russian team, the Romanian team showed strong stability by winning the all-around champion by a slim margin of 0.2 after 16 years. Although La Duncan was deprived of the all-around championship because of doping problem after the game, yet the championship belonged to the original runner-up Amaner. Finally, it can be seen from table 2 that Romania gained a total of five medals including 2 gold medals, 2 silver medals and a copper medal. The 28th Olympic Games was probably the most brilliant Olympic Games for Romania, and most of the credit went to Bonuoer. After defending the group championship, Bonuoer beat the competition in his strengths events: balance beam and free gymnastics. Romania gained four gold medals in total with the young athlete Rosu winning the champion in vaulting horse in the end. The 18 medals obtained by 6 countries are comparatively decentralized but Romania and the United States gained 6 medals respectively.

But in the 29th Olympic Games, the three-time team champion Romania suffered a downturn after the retirement of Bonuoer and other famous athletes. It is worth mentioning that at the gymnastics test event in the 2016 Rio Olympic Games, strong Romanian women team were out and failed to get the qualifications for Rio Olympic Games. Nevertheless, since the 1976 Montreal Olympic Games, the Romanian women's team has been the only successive gold medal winner. Even at the Beijing Olympic Games where they have few top athletes, they can also rely on Izbasa's super-level performance to win the champion in free gymnastics. They are strong rivals of Chinese women gymnasts.

2) Analysis of Competitive Strength of American Women's Gymnastics Team

American women's gymnastics team is one of the world's strongest teams, subordinate to the American gymnastics team. Their opponents include Russian team, Romanian team and Chinese team [6]. American team gained a team silver medal at Beijing Olympic Games, and since then, they have been striving step by step with rapid progress. As a result, they gained no medal at the 27th Olympic Games but gained 6 medals at the 28th Olympic Games and 9 at the 29th, ranking the top [7]. At London Olympic Games, the U.S team only reaped 2 gold medals, 1 silver medal and 1 bronze medal with a total of four. At Rio Olympic Games, they gained a team gold medal. As can be seen, the future situation of the world women's gymnastics will be Sino-US competition and that will not change in a short time. Chinese team won more bronze medals and has more difficulty in gaining gold medals. Therefore, Chinese team must be trained hard with confidence and courage in striving for gold medals and be fully prepared for the Tokyo Olympic Games because it is likely for Chinese team to rank as the top two.

3) Analysis of Competitive Strength of Russian Women's Gymnastics Team

Russia, which once dominated the world sports for half a century, declined continuously after getting the third place in team competitions. They gained no gold medals but only got the fourth place in team competitions this time. After 2004, Khorkina retired and Zama Rock ova's performance also appeared to decline. During this period, the Russian gymnastics teams mainly rely on young athletes to compete, entering a new Russian period. Pavlova, as the debut player by the last Olympic period, has become the core player in this Olympic period. She participated in three singles in 2008 Olympic Games and entered the final. In 2012 she gained 1 gold medal, 2 silver medals and 3 copper medals. At 2016 Olympic Games she reaped 1 gold medal, 2 silver medals and 1 copper medal.

In addition, the Russian women's gymnastics team in Beijing Olympic Games showed a sign of revival: they ranked the third in group preliminaries and there are players who entered the final in all events. But on the whole, there is no way for Russian team to compete with the United States and Chinese team. In this situation, Russian team with better strength suffered a critical miss and got reversed by the opponents. There is still a long way for Russia to reach the top level in singles. In this period, while in competitions with Romania, Russian team is at a disadvantage several times because of psychological problems.

IV. CONCLUSIONS

A. A Summary of Experience from the Achievements Made by Chinese Women's Gymnastics in Last Five Olympic Games

(1) In terms of personnel training, Chinese women's gymnastics has had a conception of innovation and has established a new model for training reserve talents; the construction of gymnastics clubs for teenagers should be consolidated; personnel training mode in line with China's conditions for gymnastics reserve talents should be actively explored.

(2) In terms of training innovation, training methods should be created actively.

(3) In terms of coach training, excellent gymnastics coaches should be trained and the structure of coaches for women's competitive gymnastics should be optimized.

(4) In terms of researches in gymnastics, interdisciplinary research achievements of good quality should be made in bold

attempts and innovation, with integration to interdisciplinary subjects.

B. Maintenance of Sustainable Development from the Achievements Made by Chinese Women's Gymnastics in Last Five Olympic Games

(1) In general, theory should be linked with training practice and theory provides direction for practice.

(2) In practice, there should be further expansion and innovation to movement arrangement, the convergence of difficulty movements and the choice of movements and music from the perspective of inter-discipline in breadth and depth.

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