

A comparison of the table tennis capabilities of China and Sweden in the past century

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1 Introduction

The dawn of the 21st century saw the most important revolution on table tennis, the sport regarded as China's national sport. The bigger ball with the diameter of 40mm replaced the one with the diameter of 38mm. And the small one has become history. Since 1927, the year of the birth of the World Table Tennis Championships, three powerful teams won the Gold Medal: first came European teams, second was the Japanese team, then the Chinese team. However, since the 1970s, the competition became fiercer and fiercer. European and Asian teams became equally-matched opponents. From the end of the 1980s to the beginning of the 1990s, the European teams, especially Swedish men's team, mastered advanced techniques, so they won the 40th, 41st and 42nd world championships. At the same time, Asian teams such as China and Korea, made a rapid progress on improving their techniques, through training and studying, with which they could contend with European opponents, and China had the advantage. In the 43rd World Table Tennis Championship, China won the team title. And in the 44th World Table Tennis Championship, it won again. Because the International Table Tennis Association decided to introduce the big ball with the diameter of 40mm in the men's singles of World Cup on October 1, 2000, the 45th World Table Tennis Championship and the 26th Olympic Games were the last two major events adopting the small ball. Through analyzing and contrasting the scores of key athletes of the Chinese and Swedish teams, (Chinese: Kong Linghui & Liu Guoliang; Swedish: Waldner & Persson) with the method of evaluating indexes of different stages, this thesis tries to discover some problems, in which we can find out some disciplinarians. According to the situation after the bigger ball was adopted, this research tries to identify the trends in the tactics of playing, providing references for pertinent training of Chinese athletes and strengthening China's leading place in Table Tennis in the world.

2 Objects, Scope and Methods of Research

2.1 Subjects of research

Chinese Athletes: Kong Linghui, Liu Guoliang

Swedish Athletes: Waldner, Persson

2.2 Scope of research

2.2.1 Men's team Final of the 45th World Table Tennis Championship

2.2.2 Men's singles Semi-final and Final of the 26th Olympic Games

2.3 Methods of research

2.3.1 Documents & Data: looking up relevant books concerning the scientific analysis of table tennis matches and relevant publications published in last two years.

2.3.2 Statistics Through Videotapes: watching videotapes and then working out statistics of techniques.

2.3.3 Evaluating indexes of different stages. This method is the research achievement of Mr. Wu Huanqun, researcher of table tennis group, scientific research institute, Bureau of Physical Culture of China. According to this method, scores won in the matches can be classified into three stages: stage of attack after service, stage of receiving service and stage of being at a stalemate. Through analyzing the scores in these three stages, we can evaluate the athlete and his techniques. It is easy to be compared in longitudinal and transverse directions, and the analysis can be more precise. From the overall results, we can know the general strength of the athlete while from fine detail we can learn the strong and weak points of the athlete.

What's the using rate and score rate

(Total scores won and lost in a stage)

$$\text{Score rate} = \frac{\text{(Scores won in a stage + scores lost in a stage)}}{\text{(Scores won in a stage + scores lost in a stage)}} \times 100\%$$

(Scores won in a stage + scores lost in a stage)

$$\text{Using rate} = \frac{\text{(Scores won in a round + scores lost in a round)}}{\text{(Scores won in a round + scores lost in a round)}} \times 100\%$$

Stage/Evaluation	Score rate			Using rate
	Excellent	Good	Pass	
Attack after Service	70%	65%	60%	25%-30%
Receiving service	50%	40%	30%	15%-25%
Stalemate	50%	50%	45%	45%-55%

3 Results Analysis

3.1 Contrast & analysis on the stage of attack after service

From Table 1, we can see that Kong Linghui and Liu Guoliang, two key athletes of the Chinese teams, did not perform desirably at the stage of Attack after Service. Kong Linghui's performance can be seen as failure but Lui Guoliang is up and down. The main reason is that Chinese players' intention of

Attack after Service was still strong very much but because the opponents' ability of receiving was reinforced, and the quality of Chinese players' attacking was not very good, the opponents can have the ball back easily, and enter into the stage of stalemate. So seeing from the data of the using rate, it seems Swedish athletes are better than Chinese athletes. Then let's see the score rate, Kong Linghui and Liu Guoliang had just passed. In the Olympic Games, Kong Linghui had got a high rate of 78.5%. But Waldner had just passed and Persson failed in two events. It is to index that Chinese team had obvious advantages in the limited services. Winning scores from serving is the main factor. In these two events, Liu Guoliang's total score is 60 in which there are 36 points from the serving. So at this stage, serving is the main method we can won scores.

Table 1

Olympic Games	Name	Using rate	Evaluation	Score rate	Evaluation
	Kong Linhui	14.6%	Failure	78.5%	Excellent
	Liu Guoliang	17.1%	Failure	60%	Pass
	Waldor	28.35%	Good	65%	Good
	Persson	22.5%	Failure	51.6%	Failure
World Table Tennis Championship	Kong Linhui	18.1%	Failure	60%	Pass
	Liu Guolian	27.2%	Good	69.3%	Good
	Waldor	26.9%	Good	62.5%	Pass
	Persson	28.9%	Good	53.4%	Failure

Form Table 1, we can see that the using rate at the stage of service had caught up with even overrun Chinese team's. These show that European players have reinforced their intention of attacking vie to be first in the first three hits recently. Although they overrun Chinese team in the using stage, but their score rate is between 50%-60%. The data indicate that when Swedish players learned the technique of the first three hits from Asia players, they still succeed the European players' characteristics, which is fierce, violent and not enough stable. As the result, their success rate must decline. Seeing all indexes of the stage of service, we can learn that Swedish and Chinese team perform all square, and Chinese team has not any advantages at this stage.

3.2 Contrast & analysis on the stage of receiving service

From Table 2, we can see that at the stage of receiving service, Chinese team is better than Swedish team on the using rate and the score rate. Seeing from the live game, Swedish players were afraid of Chinese players' service, so they usually used short cut or light drive when receiving service, and the effect was not good. Many mistakes Swedish players made when receiving shows that

although Swedish players have reinforced their technique of the first three hits recently, they still have not taken the receiving service serious because they exercise self-restraint their technique was better than Chinese players' technique in the stage of stalemate. On the contrary, Chinese team keeps its tradition. The using rate and the score rate reach a better level, which give Chinese team obvious advantages. There are two reasons: first, Chinese players' intention of sound attacking in advance when receiving, and the effect was very well second, Chinese team's techniques of receiving service had been improved and varied, for example, shot cut, long chop, deep shot, light drive and so on. Meanwhile, they absorbed the European players' advance techniques. This embodied many changes including rhythm, spin, landing point and movement (fake movement). So in all, Chinese team obtained its advantages and had a trend to expand in these two events.

Table 2

Olympic Games	Name	Using rate	Evaluation	Score rate	Evaluation
	Kong Linhui	24.7%	Good	42.5%	Good
	Liu Guoliang	29.9%	Excellent	34.2%	Pass
	Waldor	16.9%	Failure	25%	Failure
	Persson	12.3%	Failure	28.6%	Failure
World Table Tennis Championship	Kong Linhui	28.7%	Excellent	45.4%	Good
	Liu Guolian	27.1%	Excellent	38.2%	Pass
	Waldor	19.7%	Failure	25.6%	Failure
	Persson	25.5%	Excellent	46%	Good

3.3 Contrast & analysis on the stage of being in a stalemate

From Table 3, we can see that Chinese athletes' capabilities are not equal. At the stage of being in a stalemate, Liu Guoliang suffered loses but he also obtained the improvement on capability. Limited by his techniques, he seems fail on the using rate and score rate. Kong Linhui also made a progress on his techniques. After the 43rd World Table Tennis Championship, Chinese players was not only keep their advantage on the first three hits, but also begin to emphasize the stalemate ability within the fourth and the fifth hit. We can see that Kong Linhui was good at the average use rate (54.05%) and average score rate (51.47%) of stalemate technique in these two competition. He has already had the stalemate ability after the first three hits, maybe he has transcended European players in some points. For example, in the competition with Waldor Konglinhui' score rate has reached 59.3% in the item of attack (push) and counterattack (counterpush) surpassing Waldor 8.6 percent. The main reason is after the 42th World Table Tennis Championship, Chinese know that in the surrounding that every table

tennis player has improved their technique in the first three hits in all of the world, they need emphasize the ability of playing in the stage of stalemate more and more. So in the training, Chinese team strengthened the control and counter-control of the forth hit and the fifth hit. The speed of attack and defend changing and intention of competitions had been accelerated. It seems to work in these two events. From data we can see that, Swedish athletes are on a high level. Their average level is better than Chinese. And it is the main measure Swedish and European athletes used to compete with Asian opponents.

Table 3

Olympic Games	Name	Using rate	Evaluation	Score rate	Evaluation
	Kong Linhui	56.2%	Excellent	46.5%	Pass
	Liu Guoliang	41.9%	Failure	37.8%	Failure
	Waldor	48.5%	Pass	57.5	Excellent
	Persson	57.2%	Excellent	54.3%	Good
World Table Tennis Championship	Kong Linhui	51.9%	Good	56.4%	Excellent
	Liu Guolian	47.5%	Pass	31.1%	Failure
	Waldor	53.3%	Good	51.7%	Good
	Persson	46.2%	Pass	53.4%	Good

4 Conclusions and suggestions

4.1 Conclusions

4.1.1 According to the analysis and statistics of those data mentioned above, average failure rate of four athletes is 22.9%, in which Chinese is 19.25%, 7% lower than Swedish (26.6%). It is confirmed that in the recent years, techniques in the first three hits had been improved. European players' intention of attack after service have caught up Chinese players, even in some point they have transcended Chinese players. At the score rate, Chinese team has reached 66.95%, better than Swedish team' 58.12%, having obtained an advantage on it. These show that European players' intention of sound attack were strong, but often unconsidered, they only pursue attack before Chinese, no thinking the effect, so the mistake rate was high, Chinese players' service still menace European players in psychology. The scoring has reached 50-60% in the stage of attack after service.

4.1.2 At the stage of service, the using rate of Chinese team had reached 27.6%, evaluated as excellence. However, Swedish team only got 18.625%, evaluated as failure. It is confirmed again that the service of Kong Linghui and Liu Guoliang overawed their opponents. The opponents can't attack easily, and they can only limit Chinese players by short shot and end-line chop. On the

contrary, Chinese athletes were not afraid of their opponents, so they dare to sound attack directly. And on the score rate, Chinese team got 40.1%, evaluated as good and Swedish team got 31.1%, evaluated as pass. At this stage, Chinese team had certain advantages, players have many ways to receive service, and the success rate is very high. But because of fear, Swedish players don't receiving decisively, failing rate of sound attacking is high or the quality is not good, Chinese players can sound attack easily.

4.1.3 At the stage of being at the stalemate, the using rate of Kong Linghui, Waldor and Persson is between 50-55%, evaluated as good, but Liu Guoliang only got 44.7%, evaluated as failure. It showed that because of his tactics, Liu Guoliang kept well the tradition of the first three hits.

4.2 Suggestions

4.2.1 From the developing trend of table tennis and the thought of reforming of International Table Tennis Association, Chinese team must strengthen techniques and improve their attacks basing on their advantages of the first three hits, so that they can perfect their techniques if they want to be always the Champion of the world.

4.2.2 Playing methods must be various. It is proved that contesting with various playing methods and learning from each other can advance the development of techniques of table tennis. The same reason can be found in the development of China.

4.2.3 Paying attention on the training of reaction and psychological quality of the athletes. Fierce competitions and unexpected situations required athletes having a calm and struggling heart so that they can face to the competitions.

4.2.4 Summarizing failure and successful experiences. Analyzing and studying the developing direction of the tactics of table tennis.

5 References

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