

Analysis of service techniques of top-level Chinese attacking table tennis players

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Abstract

The service is an important technique in all types of play. We used an advanced microcomputer(SMC-70GP) to determine how some top Chinese table tennis players utilize their various service techniques——Xi Enting, Guo Yuehua, Jiang Jialiang, Cao Yanhua, Cheng Longcan in this paper. For instance, their backhand fast topspin long service, backhand rightside topspin and backspin services, backhand high-toss service, forehand services with high-spin and nonspin, forehand leftside topspin and backspin services, pivoted forehand high-toss services and so on. It is suggested that every player must grasp all kinds of services while emphasizing one or two specialized ones that integrate with the rest of his game to form an individualized style.

An attack after the service is traditionally called the third-ball attack, the first two "balls" being the service and the receive. If one is good at the service and can combine it with a sound attack, he will be able to take the initiative and even score directly. We used an advanced microcomputer(SMC-70GP) to analyze the service techniques of some Chinese top-level players Xi Enting, Guo Yuehua, Jiang Jialiang, Cao Yanhua and Cheng Longcan. For instance, Xi Enting's forehand spin and nonspin services, Cao Yanhua's forehand and backhand high-toss services —these are all unique skills.

Key words: service, microcomputer, swing, attack after the service

1. Backhand fast topspin long service

This is a type of service usually adopted by attacking players. The microcomputer analysis of Jiang Jialiang's backhand fast-topspin-long services showed that, in his ready position before serving, his two feet were slightly wider than his shoulders, with the right foot slightly forward. In order to accelerate his swing, he turned his body slightly left. When he served, the elbow of his righthand became an axis of rotation and he swung his forearm forward to the right with his racket tilted slightly forward to strike the upper part of the ball. The first bounce was near a baseline. Upon finishing serving, he adjusted his body stance at once, and was immediately ready to attack.

In practice, Jiang Jialiang mainly used backhand the fast topspin cross-court, his backhand services down the line being short; this inhibited his opponent from giving full play to his strong points of pivot attacks and lifts. So Jiang could take advantage of attacking after the service and take the initiative, bringing his own strong points of forehand front court attack into full play. From the microcomputer analysis, we also

know that Jiang Jialiang's movement in a backhand short service close to the net was very similar to that in a backhand fast topspin long service and it was so sudden that it finished very fast. He properly seized the opportunity to serve short. He could serve short when his opponent was still expecting to receive a long service. Similarly, he could serve long when his opponent was still expecting a short service. He used both of the two with ease, and achieved good results.

2. Backhand rightside topspin and backspin services

Chen Longcan was good at backhand topspin and backspin services with rightside spin and scored after attacking. When he made a backhand topspin service with rightside spin, his rackethand swung up and back on the left, with the racket tilted slightly backward, the wrist flexed inward and the handle of racket facing downward in order for the wrist to exert force. Before the racket hit the ball, he swung it downward to pretend to serve a backspin. But when the racket hit the ball, he brushed the ball powerfully upward on the right. When serving a backhand backspin with rightside spin, Chen swung his rackethand from up and back on the left to down and forward on the right. When the racket impacted the ball, he brushed the ball from the left lower part to the right underside part, and then, after contact, he immediately made a false movement of lifting in order to puzzle his opponent.

3. Backhand high-toss service

The backhand high-toss service was developed from the backhand low-toss service. It is a more threatening service and isn't easy for the opponent to adapted to. There are two kinds: with rightside topspin and with rightside backspin. They are often used in combination. From the microcomputer analysis Cao Yanhua's key techniques are as follows:

3.1 First, the free hand powerfully tossed up a high ball, and when it began to descend. Cao Yanhua turned her body left, swinging her rackethand upwards on the left to increase the length of the swing.

3.2 To serve a rightside topspin, when the ball descended nearly to head height, her rackethand swung downwards to the right through the front of her body, and the racket impacted the left part of the ball in the front of her abdomen and brushed to the right. At contact, she cocked the wrist from the left to the right in order to increase the spin.

3.3 when she served a rightside backspin, her rackethand again swung from up and back on the left to down and forwards on the right. She brushed the ball from the left lower part to the right bottom part. It was different from a rightside topspin service, but since the serving movements were very similar, she often scored directly. The backhand high-toss service was Cao Yanhua's favorite technique, seldom seen in women players. The great changes of spin and placement of her backhand high-toss service were very threatening. It was usually difficult for her opponent to accommodate to it. During the 38th World Table Tennis championships, experts were very impressed with Cao Yanhua's service, calling it a unique skill.

4. Forehand services with high-spin and nonspin

From the microcomputer analysis, the keys of Xi Enting, Guo Yuehua and Chen Longcan's forehand backspin services with high-spin and nonspin were:

4.1 After the ball was tossed the racket hand swung up and back with the racket in a lateral position and tilted slightly backwards.

4.2 When serving a heavy backspin, the racket arm accelerated from up and back to down and forward, and the forearm made a quick outward rotation to tilt the racket further back. Accelerating, the left lower of the racket brushed the bottom part of the ball in order to increase the strength of the backspin.

4.3 To serve a "non-spin", when they swung their arms from up and back to down and forward, they slowed the lateral rotations of their forearms and decreased the backward tilt of the racket. Contact was with the lower part of the ball. Because the friction was reduced, the backspin was greatly reduced, leading to the name "nonspin".

In competition, Xi Enting, Guo Yuehua and Chen Longcan often used spin and nonspin services combined with forehand side topspin and backspin in order to increase the chance for attack after the service.

5. Forehand leftside topspin and backspin services

From the trajectories of the racket Xi Enting's forehand leftside topspin and backspin services, the key elements were as follows:

5.1 When serving a forehand leftside topspin, he swung his racket downwards, tilted slightly to the right. At contact, he powerfully brushed the middle part of the ball, and then continued to swing downwards on the left in order to pretend to serve a leftside backspin.

5.2 When serving a forehand leftside backspin, Xi Enting cleverly used two kinds of hand technique:

5.2.1 When swinging downwards, he tilted the racket slightly backwards, and brushed the lower quadrant downwards, keeping the racket in contact with the ball as long as possible. After the ball left the racket, he quickly swung the racket upwards on the left, pretending to serve a topspin.

5.2.2 When swinging up and backwards, he tilted the racket backwards. When about to contact the ball, he quickly swung down and forwards to the left. The fingers on the reverse side of the racket (mainly the middle finger) applied force in order to make the racket brush the lower part of the ball at the highest speed. After contact, he continued to swing downwards to the left. The hand techniques of Xi Enting's leftside backspin service were very similar to those of his leftside topspin service. Forehand leftside topspin and backspin services were Xi Enting's important means of scoring. The serving movements were very similar. Only at the moment of contact could the contact point on the ball be distinguished, and it was difficult for us to see it. The differences of wrist force and finger force were also different to see.

6. Pivot forehand high-toss services

Pivot forehand high-toss services often have leftside backspin and topspin, rightside spin, different lengths and so on. From the microcomputer analysis, we know the keys of these techniques:

6.1 Pivot forehand high-toss leftside topspin and backspin services:

Guo Yuehua was good at pivot forehand high-toss services with leftside topspin and backspin. After tossing the ball, he contacted it with the racket, when it had descended to waist height. Depending on whether it was topspin or backspin, we could distinguish different directions of power and points of impact. Both Xi Enting and Guo had many ways of puzzling their opponents. The characteristics of some of these are:

6.1.1 The ball was tossed almost vertically with the free hand close to the left of the body. When the ball was descending, Guo swung upwards on the right with the racket above the wrist.

6.1.2 To serve a leftside topspin, when the ball had descended nearly to head height, he swung the racket from upwards on the right downwards to the left and brushed the lower part of the ball from right to left. He made a false action to puzzle his opponent by swinging downwards on the left after the ball left the racket.

6.1.3 When serving a leftside backspin, he swung from up and back on the right down and forwards to the left, brushing the lower part of the ball from right to left.

6.2 Pivot forehand high-toss rightspin service

This service was developed from the pivot forehand leftside topspin and backspin services. Guo started with the same false actions of the leftside topspin and backspin services, in other words, he first swung the racket from upwards on the right to downwards on the left. When the ball reached the correct contact position, he made a horizontal swing from left to right in front of the body and brushed the ball from the left lower part to the right in order to impart rightspin. After bouncing on the opponent's court, the ball broke to the right corner.

Cao Yanhua served not only a backhand high-toss rightspin very well, but also a high quality pivot forehand high-toss rightspin. In addition to the above-mentioned technical characteristics, her unique features were:

6.2.1 After the ball was served the swing was exceptional in that the racket head was cocked back as far as possible on the right by full use of the wrist. This action, which gave more acceleration thereby increased the spin, was quite different from other players.

6.2.2 When the racket hit the ball, Cao Yanhua swung with more range and speed, brushing the ball at waist height with the lower part of the racket in order to increase the spin.

6.2.3 At contact, the wrist and fingers continued to exert power and the wrist joint transformed from abduction to adduction, i.e. it ceased to be cocked back, allowing full play to the wrist and fingers.

6.2.4 After serving, Cao Yanhua also added a false backspin action by swinging downwards. This usually puzzled the opponent.

Cao Yanhua's forehand high-toss rightspin service included the changes in the placement. She mainly used a long service, with a straight short service as an alternative. This gave her more opportunities to lift and attack.

In recent years, the need to improve service techniques and create something new have been higher and higher as opponents have become more proficient in receiving. High speed, powerful spin and accurate placement are required and should be combined well. The player should be able to give a quick and sudden service, to have concealed movements and to puzzle the opponent with false actions. To realize these requirements, as Xi Enting, Cao Yanhua and others, can produce all kinds of service, every player must emphasize one or two sets of skilled services adapted to his or her own play, and must closely combine them with rushing to lift and attack to form an individualized style. An

excellent player must do them. In addition: during practice on the service techniques, the training must be conducted according to a strict regimen, and the players must be made to develop good habits from children. Coaches must pay strict attention to these points.