

A comparative analysis of the key elements of the strokes in Chinese and English table tennis theories

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1. Introduction

This paper attempts to expound in theory the similarities and differences in the ideas of the key elements of the components of the various strokes between China and England. The purposes are to help people get a preliminary knowledge of this idea in English table tennis and to help them get a new view of Chinese table tennis theories of the key elements of stroke movement; this idea can then be used more scientifically in teaching and training. At present, there is still insufficient comparative theoretical research in different countries. However, theoretical research is indispensable to the comparative table tennis research. This paper chooses the key elements of stroke movement in English theories as the subject, and compares it with the same idea in China. There are two reasons for this: firstly, England is one of the European countries where table tennis theoretical research is comparatively well developed; secondly, in England as well as in China, the key elements of stroke movement are taken as the most basic elements in the mastery of all kinds of skills in the process of teaching and training. Therefore, the ideas in the two countries can be compared.

2. Research methods

We used both literature studies and comparative analysis.

The main English literature sources are: "Table Tennis--The Skills of the Game", by Gordon Steggall and Peter Hirst, of the ETTA, and "How to Coach Table Tennis", by Coach David Hewitt, also of the English Table Tennis Association. The main Chinese source is "Table Tennis", approved by the National Teaching Material Committee for Institutes of Physical Education, and used in all departments of physical education in Chinese universities; there are other relevant papers.

This paper uses the interacting law of the acquisition of sports skills and the sport of table tennis as the basis for comparison and analysis.

3. Result and analysis

3.1 The comparison of the key elements of the stroke movement in Chinese and English table tennis theories

In "Table Tennis", which common in departments of physical education, the key elements of the stroke movement are divided into the following concepts: choosing position; backswing; forward swing; contact; the follow-through after contact; coordination of all parts of the body; and relaxing and recovering to the original state after

striking. These concepts make up the structure of the stroke movement and the corresponding requirements, and is widely used in table tennis teaching and training in China.

However, Gordon Steggall and Peter Hirst divide the key elements into a number of variables. They feel that the degree of skill is realized by searching the rally for its basic components (strokes) and breaking those down into component parts (the variables); they look for the advantages of those variables and then compile them into a logical learning sequence. This sequence is length (the distance that the racket travels whenever contact is made with the ball); timing; table position; base; body action; free arm; racket arm; recovery; anticipation; and the corresponding content requirement. (Table 1)

A comparative table of the division of the stroke movement component key elements in China and England

Stroke movement Structure (China)		Stroke Movement Variables (England)	
Terms	Main content	Terms	Main content
Choosing position	1. According to the placement and the method of countering.	Length	1. Swing should be kept to minimum.
	2. Adjusting footwork and centre of gravity.		2. The overall aim is to concentrate on judging the ball and not to worry about swinging the racket.
			3. Trying to achieve a good rhythm and aiming to feel the ball on the racket. It will enhance the level of control.
Backswing	1. According to the spin and force of the returned ball.	Timing	1. To hit the ball at a relatively high point (except for chopping)
	2. Backswing in time in different directions.		2. To use a relatively closed angle of racket. The direction of swing should be close to horizontal.
			3. Achieving the maximum range of stroke and target so

			as to give the opponent the maximum range of options to work out in very limited space of time.
Forward swing	1. According to the spin, direction, and speed of the returned ball.	Position	1. This position should be as close as possible to the table.
	2. Adjusting the direction and speed of the swing.		2. The purpose to take the ball as early as possible gain as much time as possible for yourself, forcing your opponent back and only allowing him as little time as possible. Being near the table increases the angle of the target.
Contact	1. According to the requirements of the oncoming ball and returned ball.	Base	1 The position of feet in relation to where the ball is to struck and not in relation to table.
	2. Adjusting the striking time, angle of the racket and direction of swing.		2. The feet should be placed marginally wider than shoulder width with the weight placed towards the inside of the balls of the feet.
			3. The aim is to establish a balance between maximum stability of body balance and take-off speed in any direction.
Follow-through	1. According to the inertia of movement.	Body action	1. The area of base of the body and height of the gravity.
	2. Assuring the accuracy and completeness of the striking movement.		2. The horizontal distance from the center of gravity to the pivoting edge.

			3. The aim is to achieve a high degree of balance working to the above criterion, because the more balanced you are, the more likely you are to maintain good control.
All parts of the body cooperating in coordination	1. All parts of the body putting forth strength in coordination.	Free arm	1. To assist balance when moving and to help with upper body rotation.
	2. The free hand and centre of body force moving in cooperation with the whole striking movement.		2. To assist with orientation of the upper part of the body to the ball.
Relaxing and recovering after striking	1. So as to recover as early as possible.	Racket arm	1. Elbow, with a ninety degree angle, providing most of the control; and shoulder; producing more power.
	2. So as to assure countering the next ball.		2. Wrist, the fastest moving joint providing speed.
			3. The aim is to contribute enormously towards achieving a high level of control.
		Recovery	1. The strokes should immediately recover to a near central position along a new imaginary base line.
			2. The aim is to limit the target area of the opponent with accuracy and careful attention to the type of ball you present to him.

		Anticipation	1. It is the ability to isolate the visual cues and so create more time to make decisions and execute a more forceful game.
			2. The aim is to translate the information that you see, i.e. what your opponent has done with the ball in the way of speed, spin and direction.

3.2 Analysis of the selection of the key elements in China and England

3.2.1 According to various theories of sports skills are acquired through learning and systematic training and are realized through the concept of the image and the exercise of the movement. The division of the key elements of the stroke movement made up the concepts of movement with different connotations. These concepts are generalizations of the essentials and laws of various specific technical movements. Therefore they are of comparatively high practical value to the systematic learning of technical movements and a quicker acquisition of skill. In table tennis teaching and training, the explanation, demonstration and analysis of technical movements are carried out based on the key elements that make up movement concepts with different connotations. In this aspect, the Chinese division of the "structure" of the stroking movement and the English division of the stroke movement play the same role in teaching and training.

3.2.2 While comparing and analyzing the differences between the two countries' key elements, the author finds some differences in the understanding of the key elements in the two countries' theoretical circles. In China, the stroke movement during the key elements are divided into a continued movement "structure" during the time of the stroke. In this time order, a number of partial movements are combined into a complete movement, and they describe the process of a stroke from the beginning to the end with some movement concepts with different connotations. To analyze from the theories of the acquisition of sports skills, we'll see that this stroke movement is, from the beginning to the the end, based on the principle of the building up and forming of the conditioned reflex of the movement. That is to say, the carrying out of every key element has a "reply" characteristic, shown in two aspects. One is the "reply" relation between the elements; for example, the finishing of the previous element is the beginning of the next one. The other is the two-way "reply" relation between the body and the racket, and the coming ball and the countered ball, in each element. Such a relation can be described in the following format: ball \rightleftarrows racket and movement of the body. That is to say, the order of elements in a complete stroke — choosing position backswing, forward swing, contact, follow-through, relaxing and recovering — is a series of separate movements. Each movement is both an activity of conditioned reflex and a conditioned stimulus that

gives rise to the next movement. These separate conditioned reflex activities are chained with each other and form a comparatively closed skill system. This system, together with the quality of the oncoming ball, constitutes a conditioned operation. Every oncoming ball provides a conditioned stimulus for each complete stroke. They are chained with each other and form an open skill system. The author believes that such a stroke movement structure with a two-way "reply" characteristic provides learners with a technical movement structure that fits the learning psychology of table tennis and the characteristics of the skills of this sport. Such a division helps to build up the conditioned reflexes of complicated movements. Analyzed from the antagonistic characteristics of table tennis, such a division emphasizes that in the restriction and counterrestriction of the defeat law of table tennis, each separate stroke and each complete stroke movement system should be carried out according to the situation of the oncoming ball and the requirement of countering. It shows the special requirements in taking the initiative to overcome the restrictions posed by the opponent.

3.2.3 In England, the key elements are divided into discontinuous variables. Each variable is decided by three factors — the racket and body action, the countered ball and the table, and the goal they are required to achieve. The requirement of each movement concept is met through the control and use of the variable that is through the adjustment of position with respect to the table, length of swing and the height of the contact point. The theories of the acquisition of sports skills suggest that the variables have no "reply" relation between themselves. From the content requirements of each variable, we can see that the English division emphasizes the one-way relation between the racket and body action and the countered ball, that is ball — racket and body action. This division supports the building up of conditioned reflex of simple movements. In the two variables recovery and anticipation, we can see clearly that from the antagonistic characteristic of table tennis, this division shows the specialization requirement of taking the initiative on the foundation of learning to restrict the opponent.

3.2.4 Analyzed from the formative phase of sports skills, the English division provides the beginners with the learning information about a specific and unitary movement. Its teaching purpose is to reduce the interfering factors and to instruct and form partially accurate movement skills with some comparatively simple concepts, beginning with the most basic of the key elements of the stroke movement. Therefore it fits the beginners better. The Chinese division provides the students with the learning information about a complete and orderly movement. Its teaching purpose is to draw the students' attention to the control of different kinds of oncoming balls, countered balls, the racket and the body movement and the mastery of every movement and the relation between movements. It is more suited to the teaching of players who have finished the beginning stage.

4. Conclusion

4.1 From a comparative analysis, we can see that the Chinese and English ways of dividing the stroke movements show different ways of thinking. The Chinese divide the natural stroke movement into a number of comparatively independent movement ideas, and the complete stroke movement structure is constituted according to their order in time. It emphasizes the completeness of the movement. The English, on the other hand, also divide the natural stroke movement into a number of independent movement notions,

but different stroke movement variables are constituted according to the different requirements of each movement notion. It emphasizes the partialness of the movement. The two different ways of dividing the stroke movement show that the purpose of the Chinese way lays particular emphasis on synthesis, while that of the English way on decomposition.

The two ways have their own strong and weak points. The strong point of the Chinese way is that it has fairly well dealt with the relation between the complete stroke movement and the various partial movements, which are united in a complete movement structure, thus making it easy for the learner to understand the whole movement. Its weak point is that in the partial movements the requirement for the learner to learn is not very obvious. However, this is precisely the strong point of the English way of analyzing the stroke movement, but it lacks the idea of completeness.

4.2 The English way can provide useful enlightenment for our table tennis teaching and coaching. It can offer us more detailed and specific methods when we explain, demonstrate and analyze a certain part of the stroke. This has the value of consolidating the correct stroke movement and correcting the wrong one even for those learners who have gone past the primary learning stage.

4.3 The English way shows a relatively strong goal in the stroke movement. It emphasizes the fostering of the learner's initiative, and the attention to and requirement of the free hand. These two points are worthy of our learning and using for reference in teaching, coaching, and compiling teaching materials.