55 Research on the relationship between theories related to table tennis skill learning and its operation contents

J. J. Tang and F. D. Liu
Table Tennis Division, Beijing Sport University, Beijing, China, 100084. tjjwxl@95777. com.

1 Introduction

From the dynamic angle of view, table tennis technique study process is from the skill practice to theories cognition, and again gradually converting theories cognition to the concrete operated steps. Seen from the static state, the practice and theory became a corresponding relationship in some degree. It would usually have a positive influence on skill learning, for the corresponding degree between operation contents and basic theories of study.

2 About the explaining theories on skill learning of table tennis

2.1 Conditioned reflex theory and the operation contents of skill learning

To explain the table tennis skill learning, the conditioned reflex theory is a basic frame for people to recognize and analyze it. The foundations of the conditioned reflex theory are advance motor nerve movement theory in physiology and behaviorism theory in psychology. The conditioned reflex theory emphasized that the process of skill learning is based on feedback, and the elementary learning, confirmation, and improvement have a direct relationship with feedback.

Wu Huanqun (1992) believed that the theory of Publoff could effectively explain the theories of the skill learning development, especially the stage of the primary controlling the skill, which emphasized the importance of the teaching and the demonstration, and was suitable for the training of the action which was unchangeable routine. The principle of Skinner explained the theories of creational combinational action in encounter sport, especially explained the practice of the higher stage, which was after grasping certain skill. Combined the ping – pong sport technique action teaching practices, the function of the two theories in table tennis training and teaching was induced as the followings (Table 1).

Table 1. The relationship between the two conditioned reflex theories and the skill learning contents of table tennis

the skill learning contents of table tennis	Classic conditioned reflex theory	Practice conditioned reflex theory	function
1 giving balls regularly	√		The construction of a singe action
2 many balls training	√		The construction of a singe action
3 all kinds of skill practice in some constrained condition(such as speed and routine)	√		The construction of a singe action
4 all kinds of skill practice irregularly		√	The construction of a singe action
5 match		√	The construction of a singe action

Referred to Wu huanqun (1994)

2.2 The relationship between the perception theory and the practice contents

During the process of table tennis skill learning, technique action should have a particular target. In the elementary learning phase, the main target is the operative feeling. In the proficient learning phase, the target is the operated effect. In the automotive phase, the target of operating feeling and operating effect are unified.

Referred to the basic recognition of the perception theory and the experience of the long training, the practice contents of the skill learning of table tennis could be divided into the followings (Table 2).

Table 2. The relationship between the perception theory and the difference skill learning phase

the difference skill learning phase	The focus of the perception	function
The primary learning phase	action	Learning action, forming the rational conception of action
The middle learning phase	Action + aim	Learning action, gradually forming the tactics of using action
The advanced learning phase	aim	Learning action, using tactics

2.3 The relationship between the inside study theories of skill learning and practice contents

The inside study theories give a good explanation toward basic characteristic of studying ping – pong technique. The inside study is another kind of study model about the skill learning different from beside study. Outside study is similar to the process of solving the question, which process of thinking is conscious all the way, the subjective effort is aware clearly. But inside study is not like this, it takes place unconsciously, which is a kind of automatic, almost unconscious process. In other words, the inside study is the study under the situation, the relationship among stimulates or between stimulate and action is not known. After 1967 the Robber discovers this kind of automatic, consciousness study process, people are very interested with the widespread and strong study methods. In table tennis technique act of teaching, the teacher generally pay attention to the outside study of students, emphasize conscious action such as notice intentionally, memory and participation of logic power. But they give little attention to the participation of unconsciousness. The research of the inside study enunciate that people can absolutely exert the function of Neumann feeling, grasp the key points and rules inside the movement.

In table tennis teaching and training, teachers often paid more attention to the outside learning of students, and paid less attention to the inside learning progress. The study of inside learning believed that people could grasp the action and regulation of the inside meaning of the action.

Table 3. The relationship between the inside theory and practice contents

The skill learning contents	The character of the inside learning	function
The repeat practice of the single action	The stimulation of the single action	Forming the practice concept of the single action
The repeat practice of the combined actions	The stimulation of the combined action	Forming the practice concept of the combined action

2.4 FITTS laws and Hank laws

During the process of table tennis skill learning, the relationship between speed and accuracy, the relationship between the stimulating and reaction are the important factors. As for speed and accuracy relationship problem, the FITTS laws, the principle of the relationship between speed and accuracy, give theory explains about how to handle the accuracy and speed of hitting the table tennis ball that, which is one of the motor learning theories (graph 1). Hank laws is about the relationship between stimulating and reaction, and it can explain the influence of varieties of the table tennis ball's characteristic

on reaction time of the table tennis ball (graph 2).

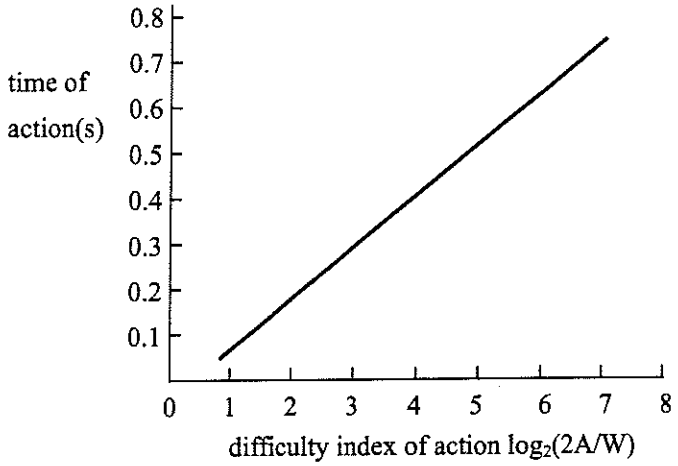

Figure 1. The relationship between the time of action and the difficulty of the action (Zhang Yingbo, according to FITTS, 1954)

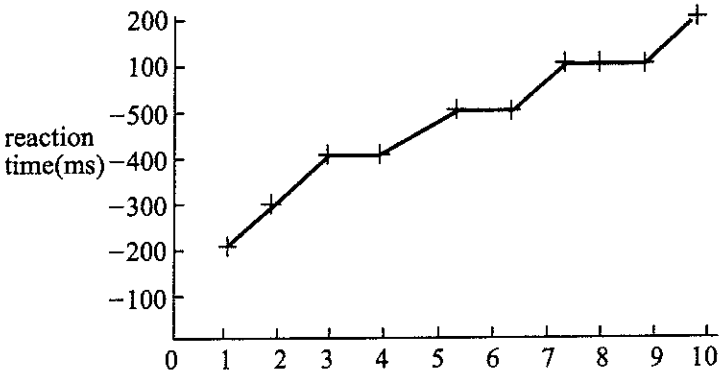

Table 2. The relationship between the reaction time and the varieties of the table tennis ball's characteristic (Zhang Yingbo, according to Woodworth, 1938)

3 Conclusion

In the process of table tennis skill learning, the theories related to sports skill learning and experience in table tennis skill learning are compared, and the content arrangements of table tennis skill learning are understood from a theoretical perspective and made more scientific.