



SELECTION OF FOOTWORK COORDINATION DRILLS IN TABLE TENNIS FOR UNIVERSITY STUDENTS

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Abstract:

Footwork is an integral part of table tennis training and competition, as it is closely related to the success of ball striking tactics which is a significant determinant of the player's performance. The paper is written to provide some exercises for improving table tennis footwork technical coordination. To improve the quality of footwork among university students, 5 professional activities and 4 physical exercises were identified based on a field survey, synthesis of scientific papers, and expert interviews.

Keywords: exercises, coordination, footwork, table tennis, university students

1. Introduction

Table tennis is acknowledged as a challenging sport, yet it is one of the most popular in the world. According to a recent International Sports Federation (ISF) report, the number of persons who play table tennis has surpassed 300 million globally [1]. Because ping-pong is a healthy sport, it is becoming more popular among those who participate in physical exercise [2]. In table tennis, flexible footwork is particularly crucial because it allows players to swiftly change positions and adjust their bodies to prepare for a hit with the best strength [3]. There are five types of footwork, in which crossover footwork is reported as one of the most commonly used attacking maneuvers in competition, with a frequency of 15.2% [4]. Because table tennis requires the mastery of motor skills needed for a beginner to become an expert [5]. Hence, decent footwork is seen as an important phase since it reveals the competence of the athlete [6].

Modern table tennis players are required to have not only good physical strength but also a thorough understanding of tactics, a professional demeanor, and an ability to

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manage the spin, speed, power, and dropping point of the ball in a rational way to conduct swift attacks. To do so, ping-pong athletes need to have decent footwork. Indeed, proper footwork technique is one of the most crucial ones in determining how tactics are implemented. Athletes who want to excel at table tennis are demanded to possess quick and flexible footwork as well as attacking skills. Table tennis fundamentals include footwork and hand technique. They are intrinsically related to one another and influence the table tennis player's performance and attacking skills.

Fast and logical footwork is essential in modern table tennis. All table tennis acknowledge that footwork is the soul of table tennis [3]. To have decent footwork, the athlete is required to accurately evaluate the opponent's ball and circumstances to conduct appropriate striking techniques. This is the essence of striking the ball in table tennis.

There are three essential aspects in the striking process: prediction of ball direction, footwork, and motion of the ball, along with four major factors impacting striking efficiency: power, speed, spin, and dropping point. Spin and footwork are crucial and dependent aspects that are closely related to striking technique. It can be said that no technique is not related to them forming a stable posture when hitting a ball. Hence, the above analysis indicates that footwork is a vital technique required in every stroke. Being aware of its importance, I decided to make research on: *"Selection of footwork coordination drills in table tennis for university students"*.

Survey subjects: 2 experts, 8 experienced table tennis lecturers

Research methods: document synthesis, interviews, and statistical math.

2. Methodology

The methods used for this study includes:

- Document reference: synthesizing a number of footwork-enhancing exercises recommended by domestic and international studies; contributing to the determination of the study's objectives and the discussion of its results.
- Interview: consulting with 10 experts, experienced coaches in table tennis training to select certain exercises that can improve the efficiency of foot movement for the table tennis athletes.
- Statistical analysis: analyzing the data collected during the experiment.

3. Results

To choose footwork exercises for UEH students, the following two steps were conducted:

- Step 1: Synthesizing the professional exercises designed by domestic and foreign scholars in the field of table tennis
- Step 2: Conducting direct interviews to collect opinions from coaches, experts, and lecturers.

3.1. Synthesis of the professional exercises designed by domestic and foreign scholars in the field of table tennis

Exercises were first synthesized from domestic and international scholars including Amelin A.N (1985) [1], Khau Trung Due, Tu Dan Sinh, Sam Hao Vong (1997) [2], Truong Hue Kham - To Kham (2001) [5], Duong Kien Quan (2003) [6], Vu Thai Hong – Nguyen Danh Thai (1997) [3], Nguyen Danh Thai – Vu Thai Hong (2000) [8], Vu Thai Hong (2001) [4], Tu Dan Born – Ton Mai Anh (1986) [7], Nguyen Danh Thai (1990) [10], Nguyen Danh Thai – Vu Thanh Son (1999) [11] McAfee, Richard (2009) [12]. etc. Afterward, based on the curriculum's goals, and table tennis features, some unsuitable activities were excluded while several specialized footwork exercises were selected as follows:

- Footwork exercises: one step, chassé step, jumping step, pivot step, and crossover step.
- Physical fitness exercises:
 - Skipping twice, 50 times each (10-meter jogging at an interval)
 - Leapfrogging twice, 10 meters each (100-meter jogging at an interval)
 - Stair jumping twice, 30 times each (10-meter jogging at an interval)
 - Hopping in accordance with the teacher's command.

3.2. Interviews with experts and teachers

The paper used questionnaires to conduct direct interviews with two experts and eight experienced lecturers who had expertise in professional workouts that promoted physical fitness and technical footwork for students. The responses were based on two levels of agreement and disagreement, as shown in Table 1.

Table 1: Results of interviews with some table tennis footwork exercises for students

Order	Exercises	Results	
		Agreement	%
	One step footwork:	10	100.0
1	- One foot acts as a pillar, while the other moves forward, backward, right, and left. Upon completing the foot movement, the body's center of gravity shifts to the stance foot then swings the hand to hit the ball. Repeat it 8 times more, then switch to the other foot and continue. - After receiving a short return ball towards the right net, step forward a step with the right foot and use the dominant hand to block the ball. - When receiving a short return ball near the net in the center of the table, the left foot moves forward and the forehand captures the ball. - When receiving a short return ball near the net on the left, the left foot steps up to the left and blocks the ball with the backhand.		
	Chassé step footwork:	9	90.0
2	- Take one large step forward, backward, left, or right. The pivot foot shifts the body's center of gravity, the other one swiftly follows the pillar foot half a step, then swings the hand to hit the ball. + Move one step to the right, then quickly return to the prepared state. + Move one step to the left, then quickly return to the prepared state. + Take one step to the right, then one to the left.		
	Jumping step footwork	9	90.0

3	Use the opposing foot to stomp the ground, enabling both feet to almost simultaneously leave the ground and jump over to the coming ball. One foot that hits the ground with force will land first. The second foot touches the ground afterwards to stabilize before swinging the hand to hit the ball. + Move to the right one step and then quickly return to the prepared state. + Move to the left one step and then quickly return to the prepared state. + Take one step to the right, then one step to the left.		
	Pivot step footwork:	9	90.0
4	- The procedure is similar to the jumping step footwork described above, except there is no time for two feet to be up in the air. While moving, move the foot that is against the direction of the ball to the other foot, then the other footsteps to the side of the ball coming. + Move to the right one step and then quickly return to the prepared state. + Move to the left one step and then quickly return to the prepared state. + Take one step to the right, then one step to the left.		
	Crossover step footwork:	9	90.0
5	- Use the foot closest to the ball as the supporting foot and swiftly take a stride forward, back, right, or left with the other foot. The pivot foot will then take one step after the other foot before swinging the hand to hit the ball. + Move to the right one step and then quickly return to the prepared state. + Move to the left one step and then quickly return to the prepared state. + Take one step to the right, then one step to the left.		
	Physical fitness exercises	61	96.83
6	- Skipping twice, 50 times each (10-meter jogging at an interval) - Leapfrogging twice, 10 meters each (100-meter jogging at an interval) - Stair jumping twice, 30 times each (10-meter jogging at an interval) - Hopping in accordance with the teacher's command.		

Based on Table 1, the exercises that received 80% or more agreeing votes were chosen as follows:

A. Footwork exercises

- **One-step footwork:**

One foot acts as a pillar, while the other moves forward, backwards, right, and left. Upon completing the foot movement, the body's center of gravity shifts to the stance foot then swings the hand to hit the ball (Figure 1).

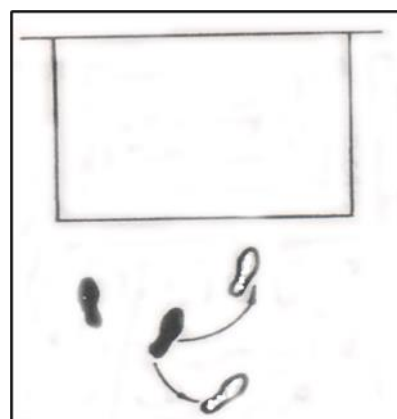


Figure 1: One step footwork

- **Chassé step footwork:**

Take one large step forward, backwards, left, or right. The pivot foot shifts the body's center of gravity, the other one swiftly follows the pillar foot half a step, then swings the hand to hit the ball (Figure 2).

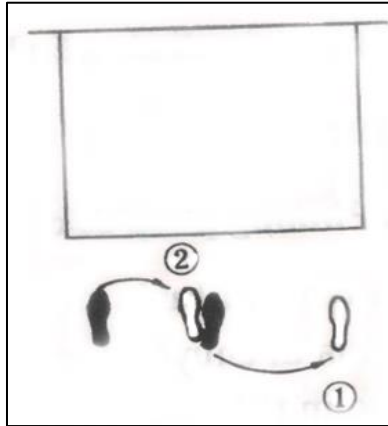


Figure 2: Chassé step footwork

- **Jumping step footwork:**

Use the opposing foot to stomp the ground, enabling both feet to almost simultaneously leave the ground and jump over to the coming ball. One foot that hits the ground with force will land first. The second foot touches the ground afterwards to stabilize before swinging the hand to hit the ball (Figure 3).

- + Move to the right one step and then quickly return to the prepared state.
- + Move to the left one step and then quickly return to the prepared state.
- + Take one step to the right, then one step to the left.

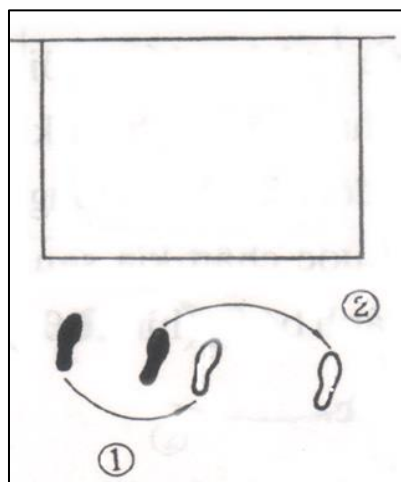


Figure 3: Jumping step footwork

- **Pivot step footwork:**

The procedure is similar to the jumping step footwork described above, except there is no time for two feet to be up in the air. While moving, move the foot that is against the direction of the ball to the other foot, then the other footsteps to the side of the ball coming.

- + Move to the right one step and then quickly return to the prepared state.
- + Move to the left one step and then quickly return to the prepared state.
- + Take one step to the right, then one step to the left.

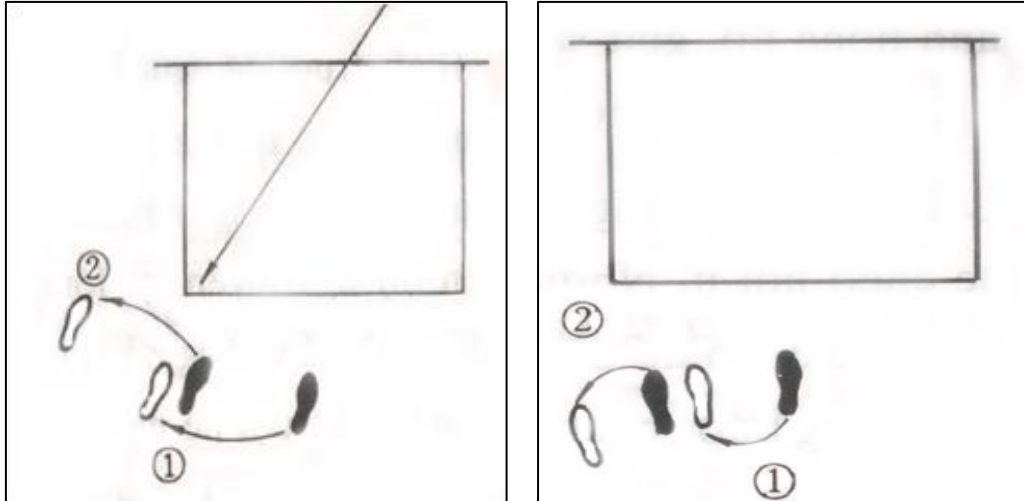


Figure 4: Pivot step footwork

- **Crossover step footwork:**

Use the foot closest to the ball as the supporting foot and swiftly take a stride forward, back, right, or left with the other foot. The pivot foot will then take one step after the other foot before swinging the hand to hit the ball (Figure 5).

- + Move to the right one step and then quickly return to the prepared state.
- + Move to the left one step and then quickly return to the prepared state.
- + Take one step to the right, then one step to the left.

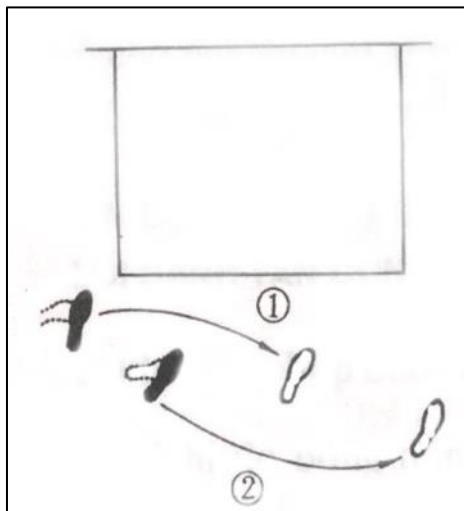


Figure 5: Crossover step footwork

- **Physical fitness exercises:**

- Skipping twice, 50 times each (10-meter jogging at an interval)

- Leapfrogging twice, 10 meters each (100-meter jogging at an interval)
- Stair jumping twice, 30 times each (10-meter jogging at an interval)
- Hopping in accordance with the teacher's command.

3. Conclusion

The study's findings provide the following conclusions: document synthesis and interviews have identified 5 professional activities and 4 physical exercises to boost students' capacity to coordinate footwork techniques in table tennis.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author(s)

Nguyen Pham Thanh Thuy An has been a physical education teacher at Ho Chi Minh City University of Physical Education and Sport, Vietnam.

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