

SPORTS INSTRUCTION FOR PERSONS WITH VISUAL DISABILITY

- With Sound Table Tennis as an Example -

Editor
FUMIO ETO



NATIONAL REHABILITATION CENTER
FOR PERSONS WITH DISABILITIES
JAPAN

(WHO COLLABORATING CENTRE)

2011

The National Rehabilitation Center for Persons with Disabilities was designated as the WHO Collaborating Centre for Disability Prevention and Rehabilitation in 1995 .

Terms of Reference are:

- 1 To research and develop technologies of primary health care to maintain health condition of persons with disabilities (PWDs), health, medical and rehabilitation services to prevent and alleviate disabilities.
- 2 To develop technologies for improvement of social skills and promotion of economical independence in collaboration with PWDs.
- 3 To study and develop social systems for PWDs such as primary health care, social care, etc., in the community.
- 4 To research and develop affordable assistive products and its service in collaboration with PWDs.
- 5 To prepare manuals for education and training of professionals in health, medical and welfare services for PWDs.
- 6 To conduct training programs, conferences and /or seminars on rehabilitation of PWDs for dissemination of technologies and information.

National Rehabilitation Center for Persons with Disabilities
WHO Collaborating Centre for Disability Prevention and Rehabilitation

Rehabilitation Manual 25

Sports Instruction for Persons With Visual Disability

- With Sound Table Tennis as an Example -

December 28, 2011

Editor: Fumio ETO

© National Rehabilitation Center for Persons with Disabilities

Fumio Eto, M.D., Ph.D., President

4 - 1 Namiki, Tokorozawa, Saitama Prefecture 359 - 8555, Japan

Tel. 81-4 -2995-3100

Fax. 81-4 -2995-3661

E-mail: whoclbc@rehab.go.jp

PREFACE

The number of people with visual disability is estimated to be about 310,000 in Japan. Although the number of congenital visual disability is decreasing with the declining birthrate, more people are losing vision due to glaucoma or diabetic retinopathy with the advent of the aging society. In recent years, lifestyle diseases such as obesity have become a big issue and body exercise is recommended to compensate for the lack of physical activity. However, if the visual disability is acquired after middle age or at a later age, the opportunities to exercise the body are reduced and thus the visual disability becomes a disadvantage for lifestyle diseases. Therefore, exercise guidance and physical education training should be provided as a part of health management of people with visual disability.

In aspect of the health management, the effectiveness of aerobic exercise that uses a treadmill or bicycle ergometer is established as good exercise. This exercise can be performed alone along with appropriate instructions. However, for sports in which multiple players compete, the instruction method for it is not widely known, even when a sport that can be played by persons with disabilities is developed. Although one element of sports is a training to recover function, sports also play a large role of enriching daily life and making life enjoyable.

This manual is prepared as a guide to give instructions of sound table tennis for staffs involved in physical education training of people with visual disability. In addition, this explains the impact of visual disability on daily activities and discusses the characteristics to be noted in performing exercise. Sound table tennis is a typical individual ball sport that was presented in Japan in 1993 and is also used as an introduction to sports for people with visual disability. I will be happy if this manual helps instructors themselves enjoy being involved in sports instruction and motivate them to work on more sports.

F. ETO

EDITOR

Fumio ETO

National Rehabilitation Center for Persons with Disabilities

CONTRIBUTOR

Naoki EGURO

National Rehabilitation Center for Persons with Disabilities

CONTENTS

Preface

Contributor

Introduction.....	1
-------------------	---

Chapter 1.

Introducing a Sport

1. Visual Disability and Daily Activities

(1) Having visual disability.....	2
-------------------------------------	---

(2) Characteristics of persons with visual disability.....	3
--	---

2. Confirmation of Direction (for Securing Safety)

(1) Using the body to confirm direction.....	6
--	---

(2) Using objects to give instructions for those who have trouble confirming the direction in space.....	8
---	---

3. Using Sounds to Confirm Direction

(1) Practice of confirming direction by using stationary sound.....	11
---	----

(2) Practice of confirming direction by using moving sound.....	11
---	----

(3) Practice of moving to the direction of a stationary sound.....	12
--	----

(4) Practice of moving to the direction of a moving sound.....	12
--	----

Chapter 2.

Practicing a Sport <Sound Table Tennis>

Characteristics of Sound Table Tennis.....	13
--	----

1. Equipment and Others

(1) Ball.....	13
-----------------	----

(2) Racket.....	13
-------------------	----

(3) Table.....	14
------------------	----

(4) Net assembly.....	17
-------------------------	----

(5) Playing space.....	17
--------------------------	----

2. Rules for Sound Table Tennis

(1) Match.....	18
------------------	----

(2) Scoring a point (Point).....	18
------------------------------------	----

(3) Point not counted (Let).....	18
------------------------------------	----

3. Holding a Racket	
(1) Penholder.....	19
(2) Shakehand.....	20
4. Catching a Ball	
(1) Listening to the sound of a ball.....	21
(2) Moving toward the sound of a ball.....	22
5. Striking a Ball	
(1) Striking a stationary ball in a straight line (in parallel to the long axis of the table).....	23
(2) Striking a ball moving toward the player.....	26
6. Service	
(1) Practice of striking a stationary ball.....	30
(2) Practice method to serve the ball into the receiver's right half-court in a controlled manner.....	30
7. Return	
(1) Striking a rolling ball in intended course.....	36
(2) Returning the ball accurately in response to the course of the ball struck by the opponent.....	36
8. Match	
(1) Match style.....	37
(2) Strategy/how to compete.....	38

References

Introduction

Currently in Japan, physical education classes and gymnastic training are provided as a part of the health management for persons with visual disability or with the aim of recovering physical capability restricted due to the visual disability to the maximum extent possible.

As physical education instructors engaged in the education and training, we fully understand the characteristics of each sport and joy of sports, place ultimate priority on the safety and create and implement instruction methods appropriate to the state of disability that an individual has.

However, because of the nature of being an instructor, we share the risk of being dogmatic. That is, instruction methods may become inflexible even though an instructor tries to use various methods, or we ourselves may forget the joy of playing sports or the joy of exercising. In addition, we may give up a certain method as it is dangerous and provide instructions in a conventional and passive way or we may take instruction methods we learned at workshops as the only methods and neglect further developing these methods.

With these risks always in mind, we as instructors need to improve text books used for classes and training and create guidelines for better instructions.

In this manual, we used sound table tennis, which is typical as an introduction to physical exercise and as an individual ball game sport after having visual disability, as a material and tried to make a text book that instructors themselves can enjoy and makes instructors feel they want to convey the content.

First, Introducing a Sport in Chapter 1 describes problems caused by visual disability and general notes when providing instructions.

Practicing a Sport in Chapter 2 introduces the overview of sound table tennis and describes the basic movements and usage of the body and practice methods to enjoy the sport. Further, detailed explanation about how to compete in a match is also added.

Chapter 1.

Introducing a Sport

1 . Visual Disability and Daily Activities

(1) Having visual disability

- We get most of information through vision. What happens when we lose vision that provides information?

For example:

- What happens when you suddenly move from a well-lighted place to a dark place?
 - Only brightness lingers in the vision and things look blurry.
(Tunnels in highways have lights specially designed at the entrance and exit.)
- What happens when you wear a patch over one eye?
 - You lose a sense of perspective and think playing a ball game is dangerous.
- What happens when the visible area is limited?
 - When you look at an object through a telescope, you would be surprised if a ball suddenly came into sight.

As in these examples, you can see that limited vision and loss of vision cause quite a few difficulties in daily life.

We would like to understand the difficulty in exercising and playing sports under such conditions and share the joy of exercising safely.

(2) Characteristics of persons with visual disability

① Person with congenital visual disability

It is said that visual information plays an important role during early childhood in developing physical ability. However, as persons with congenital visual disability have been without visual information since the early childhood years, each movement should be taught in a careful manner.

<e.g. Walking>

What do babies do to move?

First, babies roll over and lie on their stomach. Then they use the power of the hands (arms) and legs to lift their body. In this way, babies naturally learn and acquire how to move in the developing process.

(A) Crawling is a four point walk

In the case of moving forward with the upper body lifted, when you move the left hand forward, the right knee comes forward to keep the balance (Figure 1a). Likewise for the other hand, when you move the right hand forward, the left knee comes forward (figure 1b).



Figure 1a



Figure 1b

(B) Two point walk of walking on the knees

Also in the case of moving forward by lifting the hands off the floor and walking on the knees, when the left hand comes forward, the right foot comes forward (Figure 2a) and when the right hand comes forward, the left foot comes forward (Figure 2b).



Figure 2a



Figure 2b

(C) Upright walking

When persons with visual disability walk, a white cane is usually used to move. However, when exercising or playing sports, they walk without using a white cane by keeping balance after understanding the safety.



Figure 3a



Figure 3b

<e.g. Throwing a ball>

In the movement of throwing a ball, throwing movements differ depending on the size of a ball. In addition, throwing movements change according to the characteristics of each sport.

The player can firmly hold a baseball ball in your hand and throw it. As a baseball ball allows fine manipulation with fingers, a pitcher can throw a fast ball as well as a curve ball. For the defense, as a player can catch a hit ball with a hand (glove), the distance between bases can be long and a player can catch and throw a ball. Because a batter can hit a ball with a bat, he can swing a bat by twisting the body and hit a ball far.

◎What changes when a slightly bigger ball is used for playing baseball?

→ The distance between bases in softball is shorter than that of baseball. A ball is thrown from down to up. For batting, as a ball is bigger and heavier, you can hit a ball farther by shifting your body weight.

◎What happens when a ball is bigger?

→ Although the name is different depending on areas such as kickball or foot baseball, a pitcher rolls a ball and a batter kicks a ball with their foot instead of hitting a ball with a bat. Or a batter places the ball on the home plate and kicks the ball with their foot.

In this way, we learn the sizes and weights of balls through playing and acquire how to throw and use balls without knowing it.

During early childhood, we individually experience and have images of on the introduction of

physical exercise such as walking and throwing and do such physical exercises. However, many people who have visual disability soon after birth do not have the experiences mentioned above. It is quite difficult to imagine physical exercise never experienced. In order to give instructions to these people, you need to give explanations step by step so that they can have a good understanding of each step.

② Person with acquired visual disability

When a visual disability is acquired in the course of a lifetime, a life that a person has led using visual ability drastically changes. It becomes impossible to rely on visual information in spite of knowing visual information. This may create a feeling of fear in their mind.

<e.g. When moving>

When moving on foot, the imagination of bumping against objects creates a feeling of fear such as being “frightened” or it will be “painful.”

→What can you do to eliminate these feelings of fear?

→A sense of security is provided by understanding the situation.

→As a method, use words to give information, actually touch objects, or walk together



Figure 4a

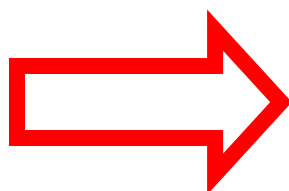


Figure 4b

Usually, nothing is placed in this area. Thus, the person in the picture feels safe and at ease when walking along the wall (Figure 4).

However, when a chair is placed as in Figure 4b, it is important to inform them that the situation has changed.

If the person touches a chair without knowing the presence of the chair, the image of an unsafe

place or the image of bumping against the chair remains in their mind. Unless that kind of image is eliminated, it is recognized as an unsafe and dangerous place. In the end, the person would stop going to that place.

③ Person with multiple disabilities

A person with multiple disabilities refers to a person who has other disabilities such as hearing disability, speech disorder, physical disability and intellectual disability in addition to visual disability.

<For Example>

- When a person has a combination of visual disability and diabetes, the exercise intensity should be considered carefully.
- When a person has a combination of visual disability and hearing disability, communication methods should be well thought out.

2. Confirmation of Direction (for Securing Safety)

(1) Using the body to confirm direction

- ◎ Keep the hip and the shoulders parallel to the floor and extend both arms forward at right angles to the body trunk to acquire the sense of front and back (Figures 5a and 5b).



Figure 5a

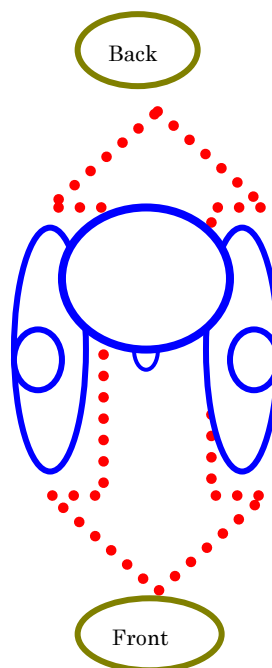


Figure 5b: Overhead view of “front and back”

◎Spread the legs shoulder-width apart and extend the arms to the side to understand right and left and acquire a sense of direction (Figures 6a and 6b).



Figure 6a

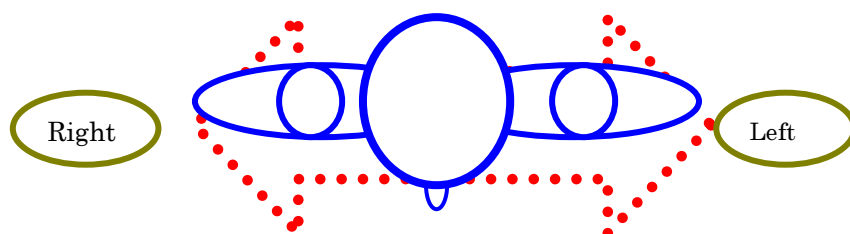


Figure 6b Overhead view of “Left and Right”

◎A common understanding about direction needs to be established between an instructor (helper) and a person with visual disability.

※If the “front” indicated by an instructor (helper) and the “front” recognized by a person with disability do not match, a serious injury may result. Thus careful attention is necessary.



Figure 7a



Figure 7b

Figure 7a and Figure 7b are pictures taken when we gave the instructions “Point to the direction in which you hear a voice from and move to that direction” by using the same words. In the case of 7a, in which a right hand finger points to the direction of the voice, the right shoulder comes forward past the left shoulder and the left foot also points to the direction indicated by the right hand. Thus, it is possible that this person moves forward. In figure 7b, in which both hands are used to indicate the direction of the voice, the feet and the shoulders are perpendicular to the direction of the voice

and the straightforward direction of the movement can be confirmed by an instructor. Thus, this allows an instructor to confirm the direction in which the person moves. Misunderstanding between an instructor and a person may lead to a serious injury. Therefore, when confirming a direction, extend both arms forward to determine the direction. Instructions should be provided based on a mutual common understanding.

(2) Using objects to give instructions for those who have trouble confirming the direction in space

① Use a wall to confirm the direction

Place the head, shoulders, the bottom and the heels against the wall, keep them parallel to the floor and extend both arms forward at right angles to the wall to understand and learn in a frontwards direction using the body (Figures 8a and 8b).



Figure 8a



Figure 8b

Place the head, hands, shoulders, the bottom and the heels against the wall and extend the arms to the side to understand and learn the directions of right and left using the body (Figures 8c and 8d)



Figure 8c



Figure 8d

※For confirming the direction, use of the body is most important to prevent a misunderstanding between the helper and the person.

② Using boards to confirm a direction

Once the person is able to confirm a direction with a wall, the next step is using only the feet to understand a direction with the use of square timber.

Place the heels against the square timber and extend both arms forward to confirm a direction (Figures 9a and 9b).



Figure 9a



Figure 9b

Place the toes against the square timber and extend both arms forward to confirm a direction (Figures 9c and 9d).



Figure 9c



Figure 9d

For starting practice of track and field, align the hands against the square timber to confirm a direction (Figures 9e and 9f).

Align the positions of the thumb and index finger so that a direction can be confirmed. If the

direction does not match the direction of movement, check if the direction of the hands aligned with the board is parallel to the direction of the shoulders.

If the direction does not match the direction of movement even after checking this, check if the direction of the hands aligned with the board, the direction of the shoulders and the direction of the hips are parallel.



Figure 9e



Figure 9f

③ Using kite strings to confirm a direction and position

Place both feet on the line tape that contains a string and align the feet at the soles of both feet and the base of the big toes (Figure 10a). Gymnasium shoes are used as footwear.

In addition, put a thick string under the tape (Figure 10b).



Figure 10a

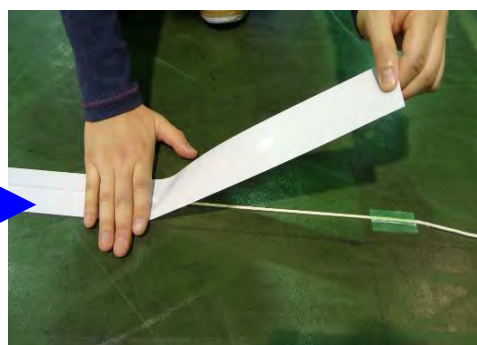


Figure 10b

3. Using Sounds to Confirm Direction

(1) Practice of confirming direction by using stationary sound

Listen to a sound and make sure that facing straight towards the sound source (Figures 11a and 11b).



Figure 11a



Figure 11b

(2) Practice of confirming direction by using moving sound

Listen to a moving sound and change the direction of the body according to the source of the sound so that face straight towards the direction in which the sound comes from (Figures 12a and 12b).



Figure 12a



Figure 12b

(3) Practice of moving to the direction of a stationary sound

Listen to a sound and move straight towards the sound source from the front direction (Figures 13a and 13b).



Figure 13a



Figure 13b

(4) Practice of moving to the direction of a moving sound

Confirm a moving sound source (Figure 14a). Move toward a moving sound source (Figure 14b)



Figure 14a



Figure 14b

Listen to the sound of a moving ball (Figure 14c), run around in front of the moving ball and catch it (Figure 14d).



Figure 14c



Figure 14d

Chapter 2.

Practicing a Sport 〈Sound Table Tennis〉

Among several sports, this chapter takes up and describes sound table tennis.

Characteristics of Sound Table Tennis

- ①In 1933, Mr. Masayoshi Sawada, the principal of the school for the visually impaired in Ashikaga city, Tochigi prefecture, first created sound table tennis as a kind of sensory training and presented it at the Teikoku Society for Education of the Visually Impaired.
- ②In recent years, this has been used as a sport that introduces sports for persons with visual disability.
- ③Tables used are the same as in normal table tennis. However, as a game is played by rolling a ball, a solid board is recommended. When a table other than specially designed tables is used, it is necessary to take an approach that eliminates difference in level.
- ④As the range of movement is the table width of 1545 cm and the player can move the body safely, and a wide range of people from the young to the elderly can enjoy the sport.
- ⑤The sport is played with eyes blinded, allowing a player to utilize various senses other than vision and visualize the situation in their mind.

【Sound Table Tennis】

1. Equipment and Others

(1) Ball

The ball used shall be compliant with Japan table tennis rules. It shall be 4 cm in diameter and has four lead balls inside, weighing 3.6 g to 3.8 g in total (Figure 15).

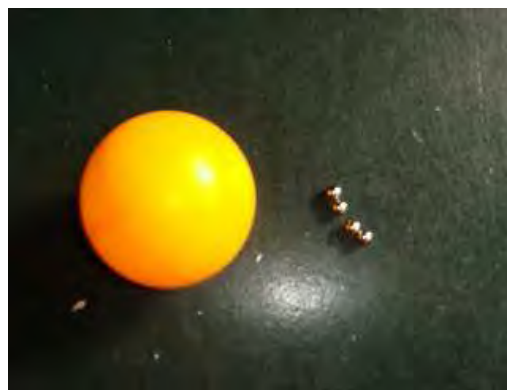


Figure 15

(2) Racket

The racket shall be hard, flat, and made of wooden material. It is made of one board that is not covered with rubber so that players can hear the sound of it striking a ball.

Figure16 Shakehand racket(Left) and penholder racket



(3) Table

- ① Because a game is played with rolling a ball, the entire surface of the table shall be flat and the table shall be made of a seamless solid board (Figure 17). If the court has a joint line, a ball does not roll in a straight line.
- ② Although the court dimensions are the same as those for normal table tennis (rectangle of 274 cm long and 152.5 cm wide, 76 cm above the floor), the side frames and end frames that have the height of 1.5 cm and the thickness of 1 cm shall be attached on the outside of the each defensive court (60 cm×1545 cm) to prevent a ball from falling off from the table (※1: P15).
- ③ A protruding object shall be attached to the outside center of the end frame. This protruding object shall be safe and clearly show the center position. A straight line connecting the ends of the side frames on both sides is marked as the service line on the table. In the same way, a straight line connecting the protruding objects at the center of the end frames is marked as the center line on the table.
- ④ The center line is regarded as a part of the defensive court. And the service line is regarded as a part of the shared area of each right half-court and left half-court. The area in which the end frame and the side frame overlap is regarded as the area for the end frame.
- ⑤ The court is divided into areas as in Figure 17.

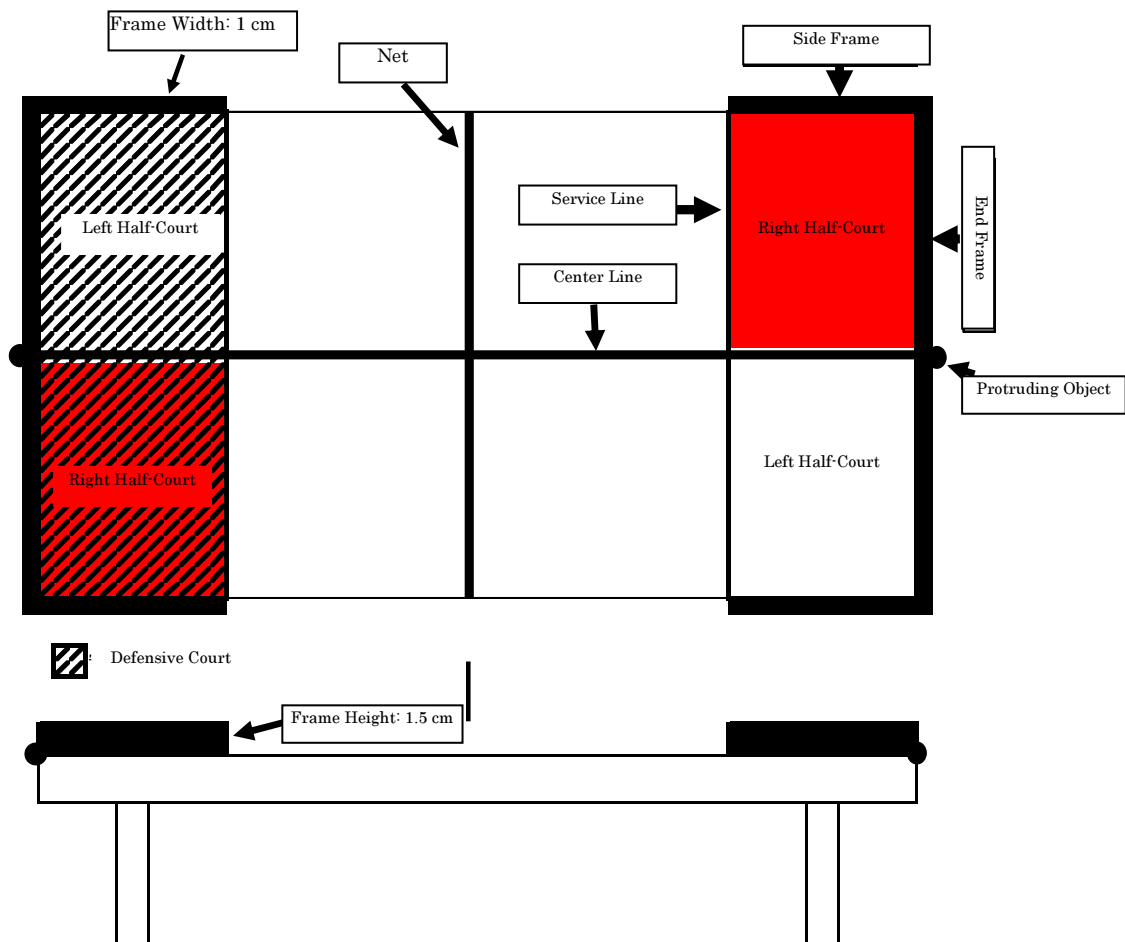


Figure 17 Names of areas in table

※ 1 : Roles of Each Frame (Figure 18 a ,b)

The table is installed with the end frames and the side frames. The side frames are used as supplemental frames to prevent a ball from falling to the floor. When a ball remains on the table after hitting the end frame, a point is awarded to the offensive side. When a ball falls off from the table, a point is awarded to the defensive side.

As in the normal table tennis, a player is not allowed to touch the table during the game. Thus, a racket and frames are used to confirm the direction and position.



Figure 18a Frames are installed on the table



Figure 18b Close-up of frames

Place the entire side edge of the racket against the end frame (Figure 19a) to confirm **the direction of the opponent's court** (Figure 19b)



Figure 19a



Figure 19b

Place the racket against the side frame to confirm the position of the right (left) side (Figure 20a).



Figure 20a



Figure20b

(4) Net assembly

- ①The net shall be set up horizontally without sagging with a space of 4.2 cm above the board's surface (figure 21).
- ②When attaching the supports (posts) for holding the net to the table, to prevent the posts from impeding the movement of a rolling ball unlike normal table tennis, the bottom of the each support shall be placed so that the bottom of the post does not come into the area for playing and making service and the space above this area.
- ③The net consists of the fabric mesh part, the supports (posts), and a cord for suspending the net. The clamps attached at both ends of the net to attach to the supports are included as a part of the supports.



Figure 21 Net assembly (Net/Posts/Clamps) and table

(5) Playing space

The playing space shall not be less than 8 m long and 6 m wide. When a competition is held with several tables placed in one competition venue, the playing area shall be enclosed by surrounds such as partitions so that surrounding sounds do not affect the game.

2. Rules for Sound Table Tennis

Sound table tennis, similar to normal table tennis, is a sport in which players strike a ball back and forth. When a player fails to return a ball to the opponent's court, a point goes to the opponent. When the opponent fails to return a ball to your side, a point is awarded to you. Although rules are similar to those for table tennis, there are some aspects different from table tennis as the game is played based only on auditory information such as the sound of hitting a ball with a racket or the sound of a ball rolling.

This section briefly describes rules. For details on rules, refer to the "Rule Book for Japan Sports Competition of Persons with Disabilities" published by the Japan Sports Association for the Disabled.

(1) Match

One match consists of three games. A game shall be won by the player first scoring 21 points. The player winning two games is the winner of the match. However, when both of the players' scores reach 20 points and the scores remain the same after that, the game shall be won by the player who gains a lead of 2 consecutive points from the opponent.

(2) Scoring a point (Point)

A point is awarded in the following cases.

- An opponent fails to make a service or return.
- An opponent strikes a ball twice in succession.
- An opponent moves the table to a great extent.
- An opponent, or anything an opponent wears, touches the net assembly (net/posts/clamps).
- A part of an opponent's body other than the racket hand touches the table excluding the top of the frames.
- An opponent commits a "holding." A holding is a case in which no clear hitting sound is made by the racket at the time of service or a return.
- The service by an opponent does not come into the right half-court.

(3) Point not counted (Let)

In the following cases, a point is not counted. The rally in which a point is not counted is called a "Let."

- The service is delivered before the call of "Play" is made by the umpire.
- The service is delivered before the receiver says "Yes" in response to the server who says "Are you ready?".
- Playing conditions are disturbed by factors such as noises to the extent where results of play are affected.

3. Holding a Racket

(1) Penholder

Hold the racket like holding a pen (Figure 22a).

When striking a ball with the penholder grip, the player can use the forehand (Figure 22b) and the backhand (Figure 22c). However, both of the forehand and the backhand are not easy style to strike a rolling ball.



Figure 22a



Figure 22b



Figure 22c

(2) Shakehand

Hold the racket vertically (Figure 23a). Shake hands with the racket (Figure 23b). The player can use the forehand (Figure 23c) and the backhand (Figure 23d) to strike a ball. To endure catch the sound of a ball in front of the body and strike it back, it is better to use the backhand when striking the ball.



Figure 23a



Figure 23b



Figure 23c



Figure 23d

4. Catching a Ball

Before striking a ball, ball-catching practice is implemented as training to recognize the direction of a sound. The basic purpose is to learn to catch a ball in front of the body, which has the highest probability.

(1) Listening to the sound of a ball

To reliably catch a ball, the following points need to be noted.

- ① For posture, bend forward so that it is easier to listen to the sound. Use both ears to listen to the sound of a rolling ball.
- ② Move so that you can catch the ball in front of the body (Figure 24).



Figure 24

[To catch a ball successfully]

When the upper body is too high, it is difficult to hear the sound of a ball (Figure 25a). Thus, the probability of catching a ball gets lower. Bending forward (Figure 25b) to listen to the sound of a rolling ball is effective to improve the probability.



Figure 25a



Figure 25b

(2) Moving toward the sound of a ball

By recognizing the sound of a ball rolling, move so that the player is always positioned in front of the ball to catch it whether the ball moves left or right (Figure 26).

[To catch a ball successfully]

If the player does not move in the direction of the sound of a ball and uses only the hand to catch it, the probability of catching a ball gets lower (Figure 27). It is important to catch a ball in front of the body (Figure 26)



Figure 26

Practice of catching a ball

- ① Have the player use both hands to catch the ball that comes in front of the body.
- ② Throw a ball into left and right and have the player use both hands to catch the ball.

Notes for giving instructions

- ① For the catching posture, make sure that a ball is caught in front of the body.
- ② Remind the player to use both ears to recognize a sound and move parallel to the table.



Figure 27

5. Striking a Ball

The next step is to practice striking a ball. The basic purpose is to learn to strike a ball with the right timing.

(1) Striking a stationary ball in a straight line (in parallel to the long axis of the table)

To strike a ball straight, the following points need to be noted.

- ① Place the ball in a position that you can recognize even when you remove your hand.
- ② Place the entire side edge of the racket against the end frame of the table and confirm the straight direction (Figure 28).
- ③ After the confirmation, make sure to strike a ball with the striking surface of the racket parallel to the end frame.



Figure 28

[When the player cannot strike a ball straight]

- ① As in the following cases, if a part of the racket does not touch the end frame or the table, the player cannot strike a ball straight in many cases.

When the racket moves away from the end frame as in Figure 29a.

When only the tip of the racket touches the table and the area for striking a ball is smaller as in Figure 29b.

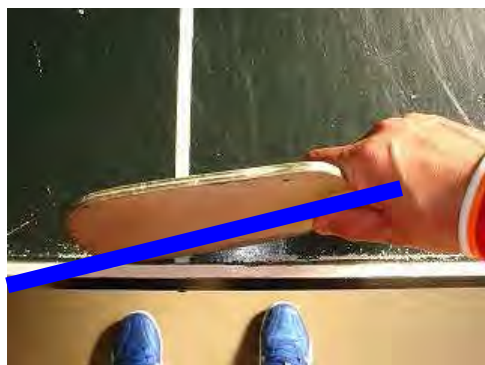


Figure 29a Racket moves away from table

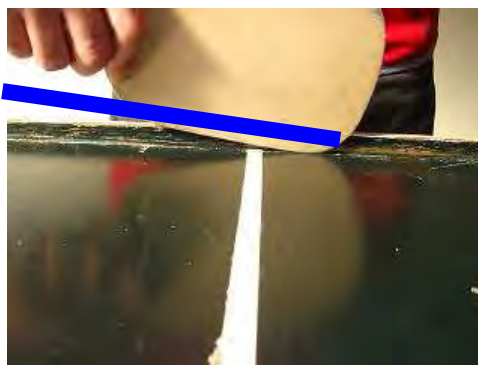


Figure 29b Only racket tip touches table

Thus, make sure to place the racket against the end frame or the table without any space as in Figure 30.



Figure 30a Racket's side edge touches table evenly

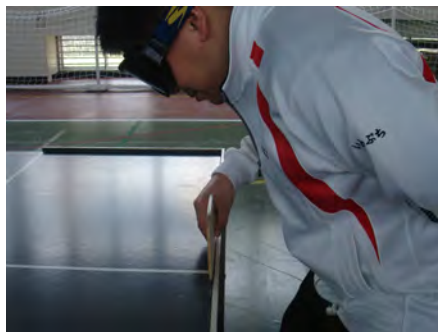


Figure 30b Racket also touches end frame evenly

②Even when the racket surface is kept at right angle to the long axis of the table by placing the racket against the end frame, you cannot strike back at a ball in a straight line unless you are facing straight to the long axis of the table. In such a case, the player should extend both arms as in Figure 31, touch the side frames, and position his/her body in parallel to the horizontal axis of the table to confirm the forward direction and the standing position.



Figure31

- ③ If the player swings the racket by snapping the wrist with the wrist as the center of movement, he/she cannot control the direction in which a ball moves. As this results in a wiper-like movement of the racket (Figure 32a, b, c, d), the player cannot confirm the direction in which he/she strikes back at a ball. The technique is to keep the wrist firm and use the entire upper limb to push the racket straight forward when striking a ball.



Figure 32a

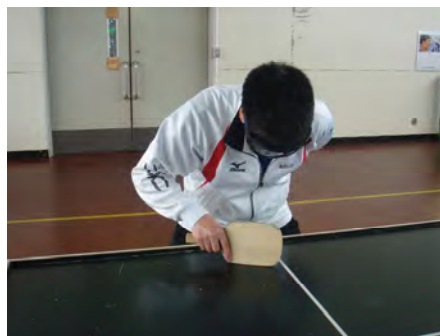


Figure 32b



Figure 32c



Figure 32d

(2) Striking a ball moving toward the player

To strike a ball, the following points need to be noted.

- ① Listen to the sound of the ball when in front of the ball.
- ② Confirm the straight direction by placing the front side of the racket against the end frame.
- ③ Strike the ball with the right timing.

[What could be the reasons when the player cannot strike the ball back to the opponent?]

- ① If striking timing is too early and the player leans forward, the probability of touching the net increases (Figure 33 a, b)



Figure 33a



Figure 33b

- ② Late timing increases the probability of double hit in which the racket hits the ball twice in succession (Figure 34) or holding in which a player holds down the ball when hitting the ball (Figure 35).

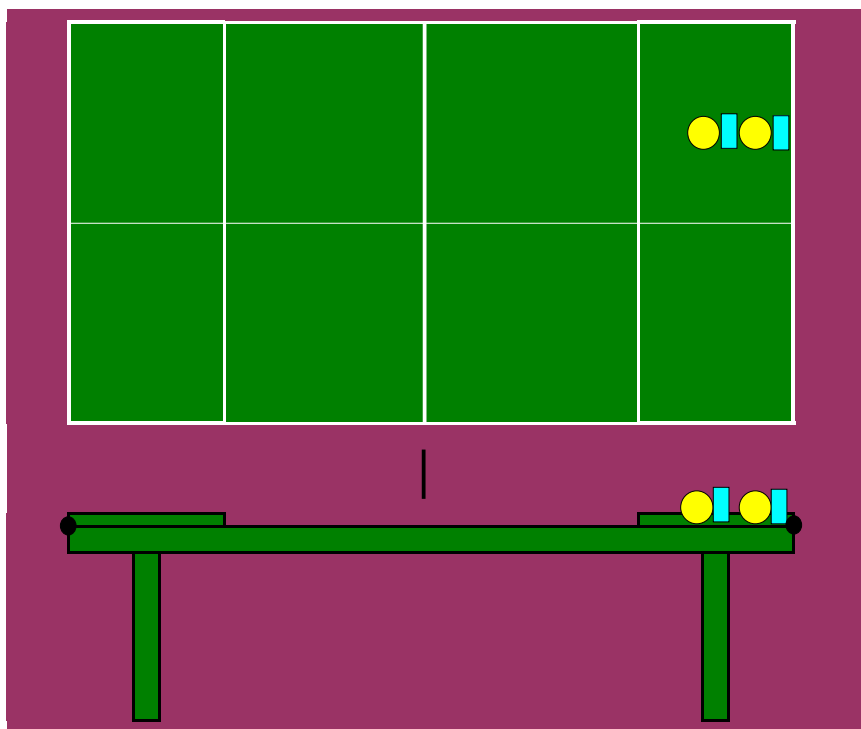


Figure 34 Double hit in which the racket hits ball twice

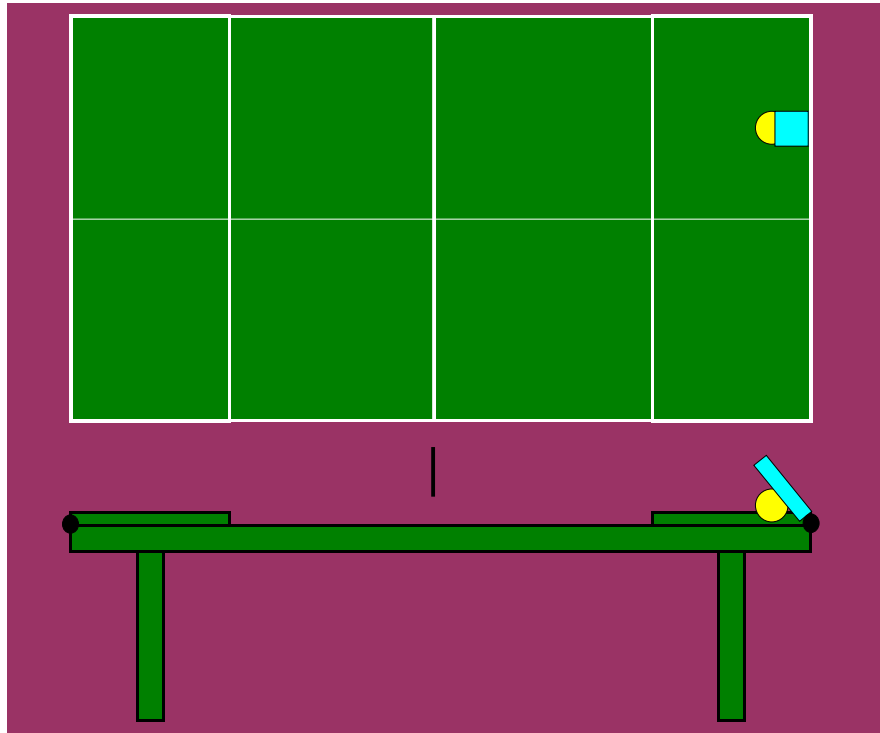


Figure 35 Holding in which the ball is held down when being hit

- ③If the player swings the racket like a wiper with the wrist as the center of movement, the area struck by the ball changes and he/she cannot strike back the ball to the opponent's court in a controlled manner (Figure 36).

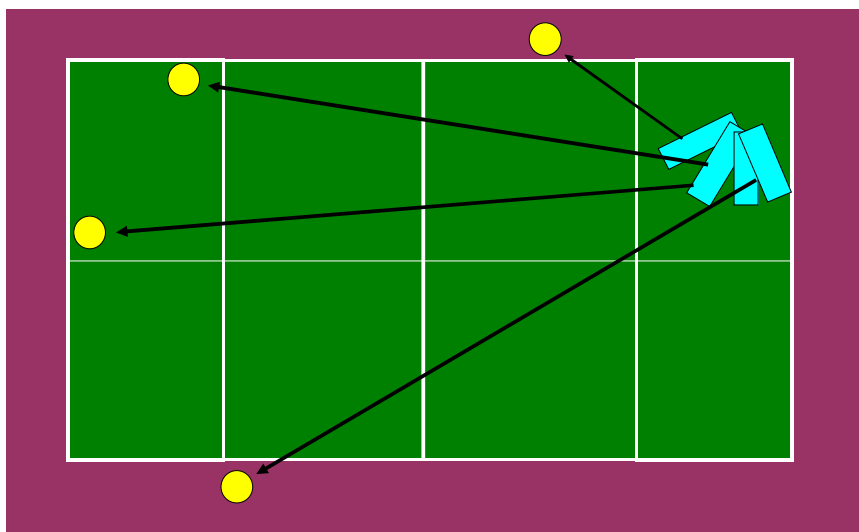


Figure 36 Swinging the racket prevents controlling the direction of the ball

Practice of striking a ball

- ① Roll the ball in the center and have the player strike the ball with the right timing.
- ② Throw the ball into the left and right of the court and have the player get and strike the ball in front of their body with the right timing.

For moving, have the player move with the racket placed against the end frame (confirmation of the direction).

Have the player touch the side frame with the racket before moving to confirm the position.

- ③ Have the player swing the racket so that the ball goes in the intended direction.

Notes for giving instructions

- ① When the timing does not match, the instructor teaches the correct timing by indicating the timing with words.
 - If the ball is hit twice (double hit), the cause is that listening to the sound for too long delays the timing to hit the ball and as a result the ball hits the waiting racket.
 - If the ball does not make a sound, the cause is that the player is covering the ball too much with the racket.
 - If the ball touches the net, the cause is that the timing to hit the ball is too early and the ball is caught with the racket facing up.
- ② Make sure to have the player confirm the direction by placing the racket against the end frame when moving.
 - Move without making a sound.
 - Before striking the ball, make sure to confirm the direction with the racket and the end frame and always keep the image of the court map in mind during game play.
 - To move from the center to the side frame, touch the side frame with the racket first, then move inward.
- ③ If the player swings the racket like a wiper with the wrist as the center of movement (see Figure 32 a, b, c, d on page 25), he/she cannot easily control the ball. Therefore, keep the racket surface parallel to the end frame and also perpendicular to the long axis of the table when striking the ball.
 - When you learn to strike a ball well, move the racket away from the table and strike a ball in a manner that the racket makes the sound of striking the ball so that the sound of the ball being hit can be heard (Figure 38ab).



Figure 38a

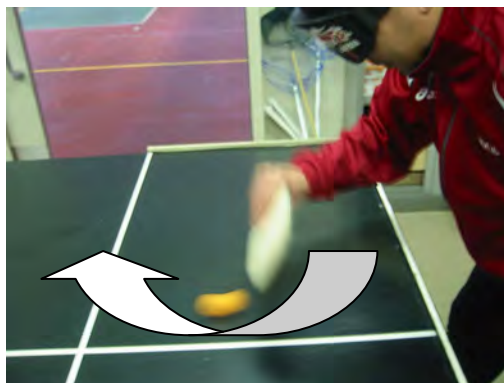


Figure 38b

[The important thing is to have the player strike the ball while keeping in mind the timing as first priority.]

- When the main purpose of a practice is to strike the ball with the right timing, the instructor needs to roll the ball toward the racket of the player with the same speed.
- If the instructor is not confident about rolling the ball to hit the racket of the player in a well controlled manner, making the route to roll the ball by using timber allows the instructor to roll the ball at the racket of the player in a controlled way. The player is instructed to concentrate only on the timing (Figure 39 a, b).
- The method of creating the route using timber as in Figure 39 is also effective for the player who swings the racket like a wiper with the wrist as the center of movement. Making the trajectory of the racket swing straight improves the form of the player.



Figure 39a



Figure 39b

6. Service

In service, when the umpire declares “Play,” the server shall place the ball on the server’s right half-court within 10 seconds and say “Are you ready?” The receiver shall replay with “Yes” within 5 seconds and the server shall serve the ball into the receiver’s right half-court within 5 seconds (Figure 40).

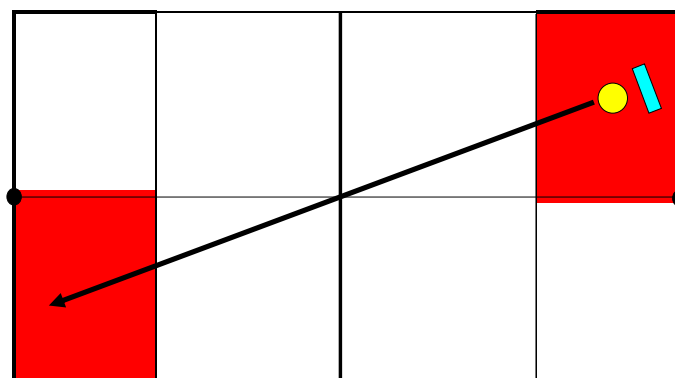


Figure 40 Ball is served from the right server to the left receiver

(1) Practice of striking a stationary ball

Satisfy the conditions for service and use the following procedure for the practice.

- ①Strike the ball at a right angle to the end frame.
- ②Create an angle to the end frame when striking the ball.
- ③Strike the ball to the area around the center line of the opponent’s court.
- ④Strike the ball so that the ball touches the opponent’s side frame.

Notes for giving instructions

- ①Explain the conditions of the service and have the player stop the ball, remove their hand from the ball and tell the opponent before hitting the ball.
- ②Have the player keep the racket angle constant so that the player can always strike the ball in a controlled manner in the intended direction.

(2) Practice method to serve the ball into the receiver’s right half-court in a controlled manner

- ①Serving the ball from the area around the server’s court center to the area around the opponent’s court center

Confirm the position with the end frame and the protruding object, place the tip of the racket on the center line, put the player’s fingers between the end frame and the racket to determine the angle between the racket and the table (Figure 41a), and keep the angle between the racket surface and the table when striking the ball.

Change the angle by changing the number of fingers the player puts between the end frame and the racket to change the direction of the serve (Figure 42a).

When the player determines the angle, remove the hand from the table and strike the ball.



Figure 41a

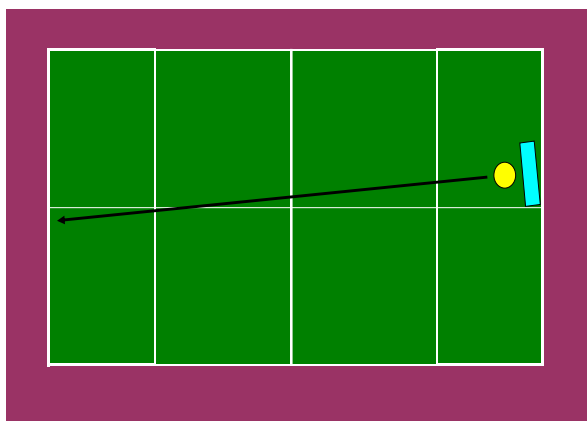


Figure 41b

②Serving the ball from the area around the server's court center to the side frame of the opponent's court

In the same way as above, set the racket around the server's court center, create an angle between the racket and the end frame (figure 42a), and aim at the side frame of the receiver court.

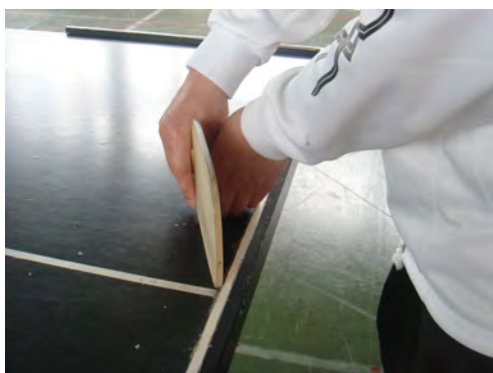


Figure 42a

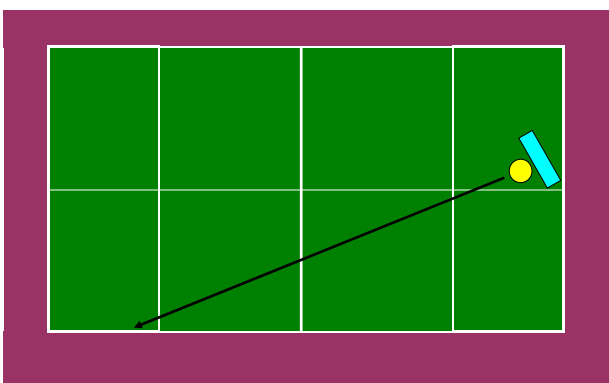


Figure 42b

③Serving the ball from the end frame of the server's court to the side frame of the opponent's court

Touch the right and left ends of the end frame with both hands (Figure 31) to position his/her self parallel to the end frame and move to the right side frame with the entire side edge of the racket placed on the end frame. Then, place the grip side against the side frame without moving the tip of the racket away from the end frame. Change the direction of the racket with the number of fingers the player puts in so that he/she can change the direction of the serve. Create an angle between the racket and the end frame (Figure 43a) to aim at the side frame of the receiver court (Figure 43b).



Figure 43a

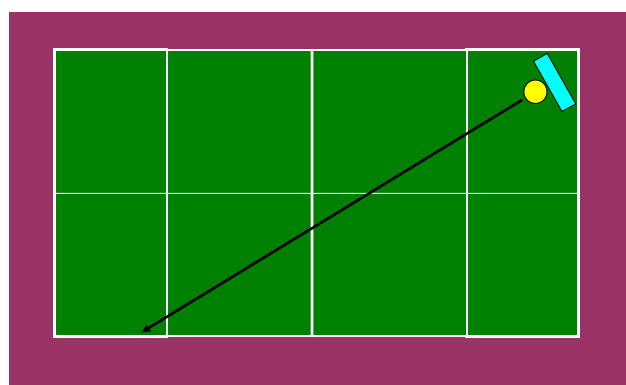


Figure 43b

④Serving the ball from the end frame of the server's court to the area around the opponent's court center line

In the same way as above, set the racket at the side frame of the server's court. Aim around the area of the receiver's center line by reducing the angle between the racket and the end frame (Figure 44a).



Figure 44a

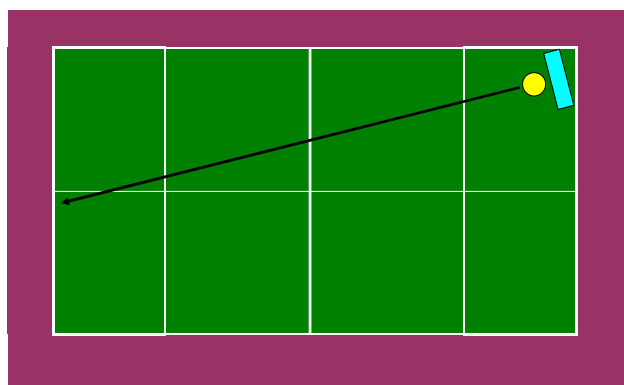


Figure 44b

- ⑤Serving the ball from the end of the server's court side frame to the opponent's court (fairly difficult serve with largest angle)

Touch the top ends of the both side frames of the server's court to have an image of the horizontal axis (service line) of the table and place the racket on the service line. With the grip side of the racket placed on the side frame and the service line, put your fingers between the tip of the racket and the service line (figure 45a) to determine the angel of the racket (figure 45b) and then strike the ball into the receiver's court.

The player can change the direction of the serve by changing the angle between the racket and the service line. For example, to strike the ball to the area around the center line of the opponent's court (Figure 45c), reduce the angle.

To serve the ball so that the ball hits the side frame of the opponent's court (Figure 45d), the server increases the number of fingers put between the racket and the center line to increase the angle.



Figure 45a



Figure 45b

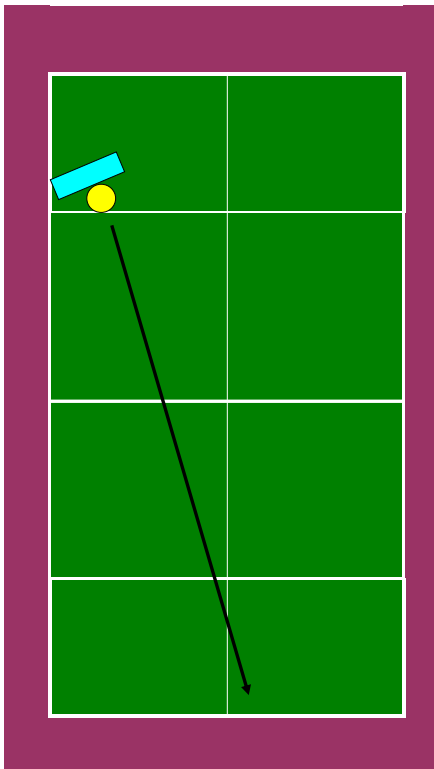


Figure 45c

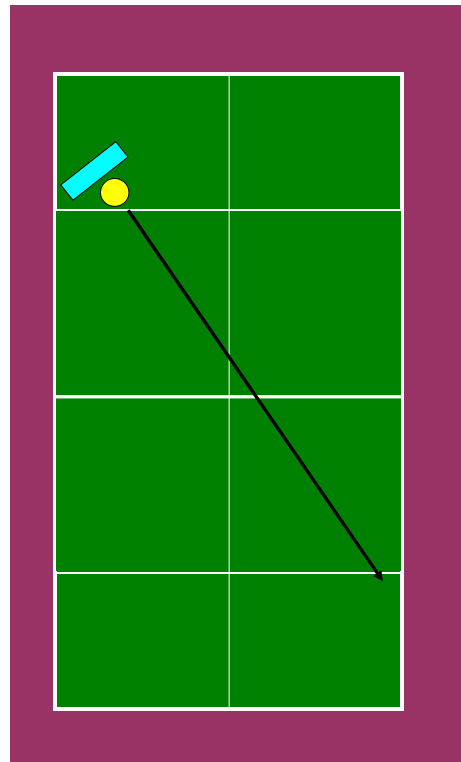


Figure 45d

- ⑥ Serving the ball from the area around the crossing point of the server's court center line and the service line to the opponent's court.

Confirm the position with the end frame and the protruding object and touch the center line leading to the opponent's court. Imagine the service line connecting the ends of the side frames and serve the ball from the area around the center of the crossing point of the both lines.

As the player cannot easily set a mark to angle the racket, this is the most difficult serve. Touch the center line and the service line with fingers to change the direction of the racket and make service. This serving style allows the server to make service of the shortest distance (Figure 46b) and also to make service in which the ball hits the receiver's side frame (Figure 46c).



Figure 46a

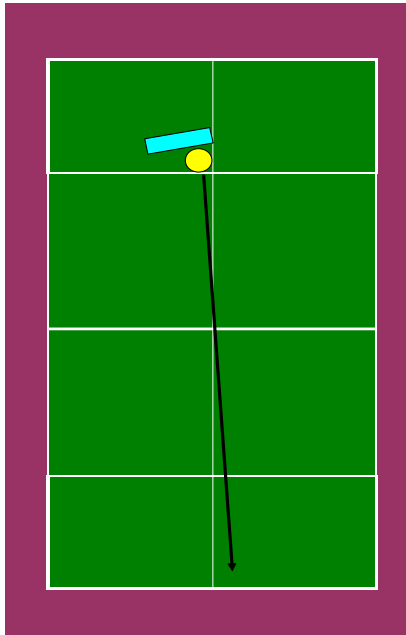


Figure 46b

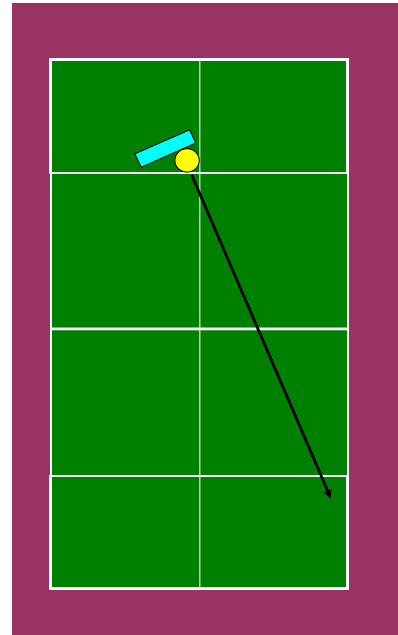


Figure 46c

7. Return

When the ball that has been served goes under the net and reaches the receiver's right half-court, the receiver strikes back the rolling ball. The ball to be returned shall be struck so that it goes under the net and then reaches the opponent's defensive court.

(1) Striking a rolling ball in an intended course

- ① Choose a striking style accordingly from the straight ball in which the rolling ball is struck perpendicular to the end frame and the cross ball in which the ball is struck with some angle to the end frame.
- ② Strike the ball rolling forward after having hit the side frame.

Notes for giving instructions

- ① To strike firmly a ball in a straight line, have the player place the entire edge of the racket against the end frame to confirm the direction and strike the ball perpendicular to the end frame.
- ② Have the player move the grip side or the tip of the racket away from the end frame and create an angle to the end frame when striking the ball back to the opponent.
- ③ When the ball rolls forward after having hit the side frame, instruct the player to touch the side frame with the racket first and strike the ball back.

(2) Returning the ball accurately in response to the course of the ball struck by the opponent

Improve skills so that the player can accurately return the ball.

- ① Listen to the direction of the ball the player struck, predict the position in which the opponent strikes the ball and move in advance by focusing on the straight ball that has the highest probability of the opponent's attack resulting in a point for the opponent.
- ② Strike the ball face to face (strike the ball perpendicular to the end frame) so that both players do not move.
- ③ Strike the cross ball in which an angle is created to the end frame to each other, predict the position in which the opponent strikes the ball and move in advance by focusing on the straight ball that has the highest probability of the opponent's attack resulting in a point for the opponent.

If the cross ball is returned, make a snap decision on whether that the ball remains on the table or falls off from the table and determine whether to return the ball or let the ball go.

Notes for giving instructions

- ① To win a point, have the player understand the method that has the high probability of the ball having been struck remaining on the table after hitting the end frame of the opponent.
- ② After striking the ball, place the entire edge of the racket against the end frame to confirm the direction, listen to the sound of the ball the player struck and prepare for the next movement.

8. Match

(1) Match style

Also in regard to the match, set an objective that is appropriate to the individual's ability.

Examples of setting an objective are described below.

- ① Win a service point.
- ② Win a return ace.
- ③ Continue many rallies.
- ④ Structure a match according to the strategy the player made.

Notes for giving instructions

- ① For people who cannot set an objective, give advice such as how to make service so that they can have an objective before participating in the match.
- ② When it is time for the match, many people cannot match the timing because the timing to strike the ball is too early or too late. Thus, have them recognize the sound and focus on timing.
- ③ Although the match is played according to the rules of the game, make rules that may be appropriate to each individual, their level and objective as well and change them accordingly to implement them.
For example, if the objective is to “continue the long rally,” have players strike the ball that is easy to strike to each other and receive the ball without rules applied. Another example, for a person with low vision, have players play a match without using an eye mask.

(2) Strategy/how to compete

This section introduces attack patterns from the server.

- ① How to compete when striking the ball from the area around the server's court center to the area around the opponent's court center

In this serve, the ball with low angle is struck from the area around the center line of the server's right half-court (Figure 47). For this serve, there are possibly three predictable courses in which the ball returns. In one course, the ball returns from the receiver almost in a straight line that is perpendicular to the end frame. For this course, move a half step to the left and wait for the ball to be returned by the opponent. When the ball indicated by the solid line is returned, smash the ball (※1).

When the ball returns to the side frame as indicated by the dotted lines, continue the rally by reliably returning the ball to the opponent's court and think about the structure of the match again. It is also one of strategies to let the ball go if the fast ball is returned and aim for the possibility of an out (※2). The player knows the ball is fast or slow by listening the sound of

rolling.. In addition, if the ball makes a high-pitched sound when being hit, the ball tends to be fast in many cases.

※1: Smash is to hit a strong shot into the opponent's court.

※2: "Out" means that a ball falls off from the table after hitting the end frame. When the ball remains on the table after hitting the end frame, a point is awarded to the offensive side. When the ball falls off from the table, a point is awarded to the defensive side.

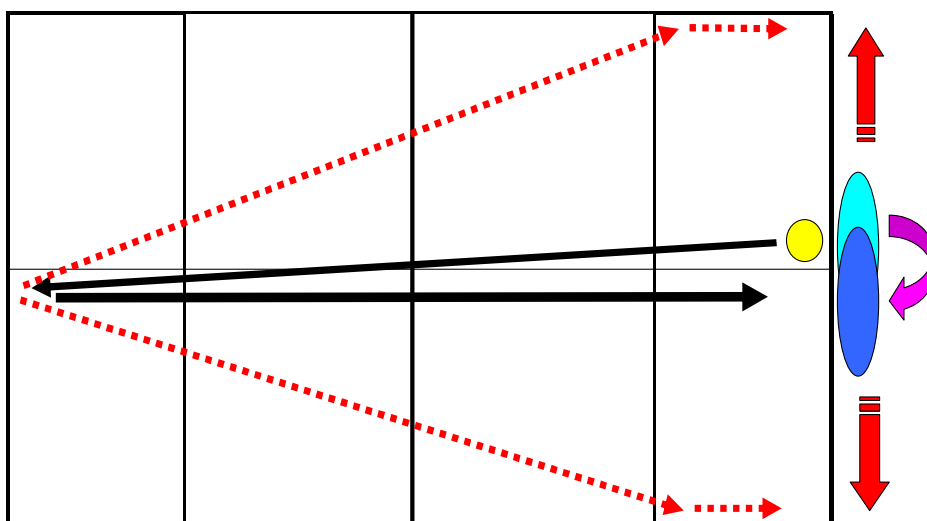


Figure 47 Predictable return courses when a serve with low angle is hit to the opponent (Left)

②How to fight when striking the ball from the area around the server's court center to the opponent's side line

When serving the ball from the area around the center line of the server's court to the side frame of the receiver, there are possibly two types of predictable courses for the ball returned by the receiver. One is the straight ball indicated by the solid line. If the ball is returned by the opponent as predicted in this case, smash the ball. The other is the cross ball indicated by the dotted line. If the ball is returned to the side frame as in this case, move quickly to the right side. If the ball is returned slowly, strike it back to continue the rally and think about the structure of the match again. It is also one of strategies to let the ball go if the fast ball is returned and aim for the possibility of an out.

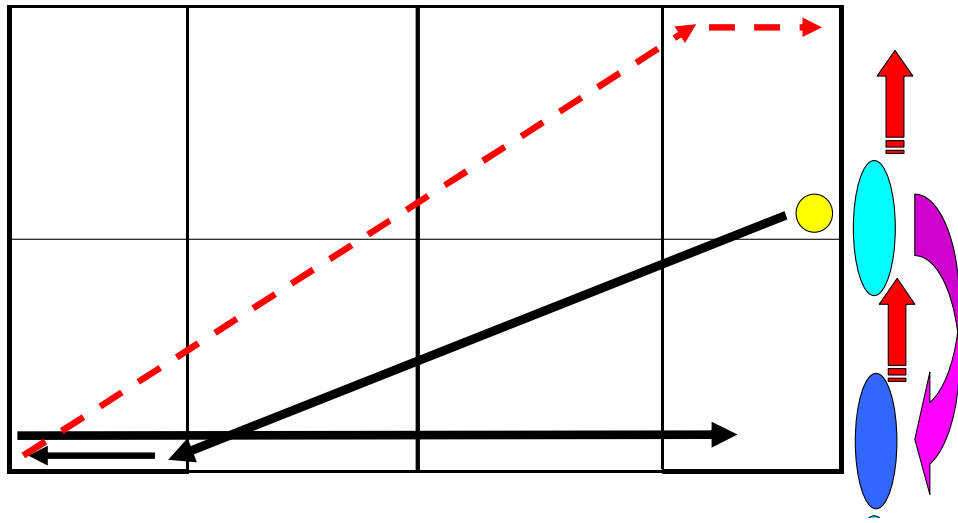


Figure 48 Predicted returns when served from the area around the center line to the side frame

③How to compete when striking the ball from the end of the server's court end frame to the opponent's court side frame (Figure 48)

The serve, which is struck from the right side frame of the server's court (server) to the right side frame of the opponent (receiver), makes the best use of the table from one end to the other and creates the largest angle. For this serve, there are two types of predictable returns. If the ball hits the side frame of the opponent and rolls as indicated with the solid line, the timing as well as the speed of the ball changes and receiving the ball becomes very difficult. However, in the case when the ball with an angle is returned by the receiver as indicated with the dotted line, as the server also needs to move from the end of the right side frame to the end of the left side frame, this is a serve for advanced players that requires a technique for both the server and the receiver.

In order to strike the predicted straight ball as indicted with the solid line, move to the side of the left side frame. If the ball returns in a straight line as expected, smash the ball.

If the ball with an angle as indicated with the dotted line is returned, move to the right side frame, return the ball to continue the rally and structure the match again.

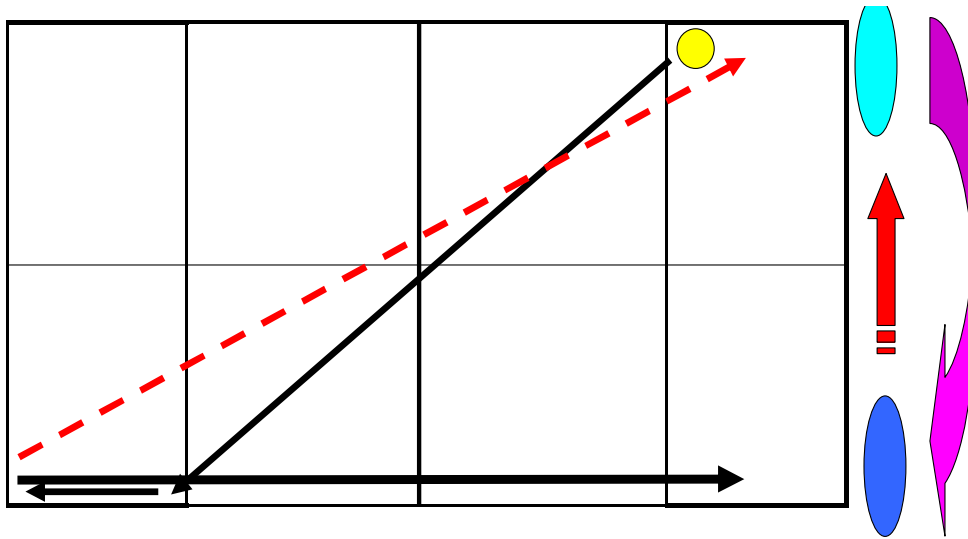


Figure 49 Predicted returns when served from the side frame to the side frame

- ④How to compete when striking the ball from the end of the server's court end fame to the area around the opponent's court center. (Figure 49)

When the served ball rolls toward the area around the receiver's center line, the receiver needs to determine if the ball comes into the receiver's right half-court. If the ball does not come into the right half-court, the serve is regarded as a service fault and the receiver scores a point. If the opponent (receiver) cannot make up their mind here, the timing does not match and a mistake may be made.

However, this serve makes it difficult to predict the next movement for the server.

To prepare for the predicted return to the area around the center as indicated with the solid line, move to the area around the center and wait for the ball to be return by the opponent. If the ball returns in a straight line as expected, smash the ball.

What the player needs to keep in mind is the movements to the right side frame and the left side frame indicated with the dotted line and he/she needs to be able to respond with these movements (Figure 50). The player moves to the center so that it is easier to recognize whether the ball is returned to the right direction or the left direction. In addition, if the ball is fast, he/ she needs to make a decision whether to return the ball or let the returned ball go to see if it is an out.

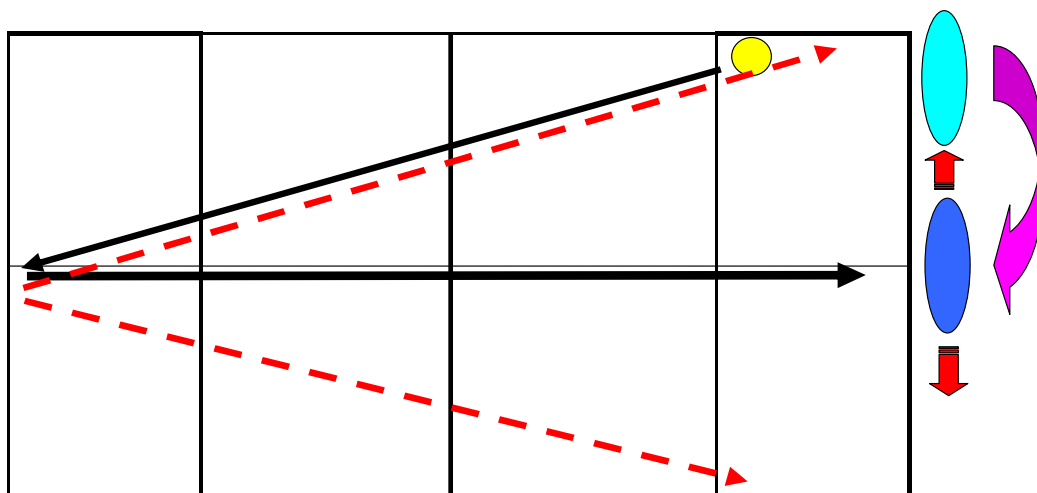


Figure 50 Predicted returns when served from the side frame to the area around the center line

References

- 1 Rule Book for Sports Competition of Persons with Disabilities(10th Edition), Japan Sports Association for the Disabled, 2009 (in Japanese)
- 2 Hiroshi Kato, Instructions for Blind Table Tennis, 1988 (in Japanese)
- 3 Hiroshi Kato, Sports for Persons With Visual Disability (3rd Edition), (Rehabilitation Series) National Rehabilitation Center for Persons with Disabilities, 1996 (in Japanese)
- 4 Hiroshi Kato, Sports/Recreation Instructions for Persons With Visual Disability (Revised Edition), (Rehabilitation Series) National Rehabilitation Center for Persons with Disabilities, 1992 (in Japanese)