

# Table tennis

**Table tennis**, also known as **ping-pong**, is a sport in which two or four players hit a lightweight, hollow ball back and forth using table tennis rackets. The game takes place on a hard table divided by a net. Except for the initial serve, players must allow a ball played toward them only one bounce on their side of the table and must return it so that it bounces on the opposite side. Points are scored when a player fails to return the ball within the rules. Play is fast and demands quick reactions. A skilled player can impart several varieties of spin to the ball, altering its trajectory.

## Equipment

### Ball

The international rules specify that the game is played with a light 2.7 gram, 40 mm diameter ball. The rules say that the ball shall bounce up 24–26 cm when dropped from a height of 30.5 cm on to a standard steel block.

### Table

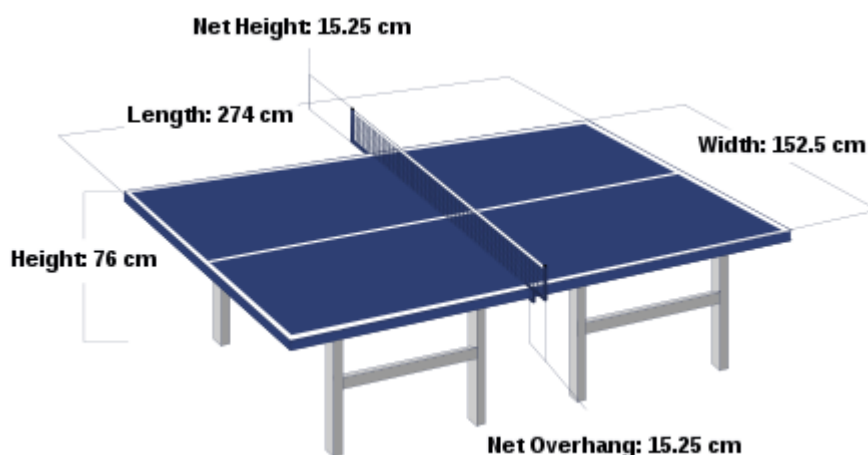


Diagram of a table tennis table showing the unofficial dimensions

The table is 2.74 m long, 1.52 m wide, and 76 cm high with a Masonite (a type of hardboard) or similarly manufactured timber, layered with a smooth, low-friction coating. The table or playing surface is divided into two halves by a 15.25 cm high net. An ITTF approved table surface must be in a green or blue color.

### Racket

Players are equipped with a laminated wooden racket covered with rubber on one or two sides depending on the grip of the player. The official ITTF term is "racket", though "bat" is common in Britain, and "paddle" in the U.S.

The average size of the blade is about 16.5 cm long and 15 cm wide. Although the official restrictions only focus on the flatness and rigidity of the blade itself, these dimensions are optimal for most play styles.

Table tennis regulations allow different surfaces on each side of the racket. Various types of surfaces provide various levels of spin or speed, and in some cases they nullify spin. For example, a player may have a rubber that provides much spin on one side of his racket, and one that provides no spin on the other. By flipping the racket in play, different types of returns are possible. To help a player distinguish between the rubber used by his opposing player, international rules specify that one side must be red while the other side must be black. The player has the right to inspect his opponent's racket before a match to see the type of rubber used and what color it is.

## **Gameplay**

### **Starting a game**

According to ITTF rule 2.13.1, the first service is decided by lot, normally a coin toss. It is also common for one player (or the umpire/scorer) to hide the ball in one or the other hand (usually hidden under the table), allowing the other player to guess which hand the ball is in. The correct or incorrect guess gives the "winner" the option to choose to serve, receive, or to choose which side of the table to use. (A common but non-sanctioned method is for the players to play the ball back and forth four times and then play out the point. This is commonly referred to as "play to serve" or "rally to serve".)

### **Service and return**

In game play, the player serving the ball commences a play. The server first stands with the ball held on the open palm of the hand not carrying the racket, called the freehand, and tosses the ball directly upward without spin, at least 16 centimeters high. The server strikes the ball with the racket on the ball's descent so that it touches first his court and then touches directly the receiver's court without touching the net assembly.

If the service is "good", then the receiver must make a "good" return by hitting the ball back before it bounces a second time on receiver's side of the table so that the ball passes the net and touches the opponent's court, either directly or after touching the net assembly. Thereafter, the server and receiver must alternately make a return until the rally is over.

### **Let**

A let is a rally of which the result is not scored, and is called in the following circumstances:

- The ball touches the net in service.
- When the player on the receiving side is not ready and the service is delivered.

## Scoring

A point is scored by the player for any of several results of the rally:

- Opponent fails to make a correct service or return.
- The ball passes over the player's court or beyond his end line without touching his court, after being struck by the opponent.
- The opponent strikes the ball twice successively. Note that the hand that is holding the racket counts as part of the racket and that making a good return off one's hand or fingers is allowed. It is not a fault if the ball accidentally hits one's hand or fingers and then subsequently hits the racket.
- The opponent moves the playing surface or touches the net assembly.
- The opponent's free hand touches the playing surface.

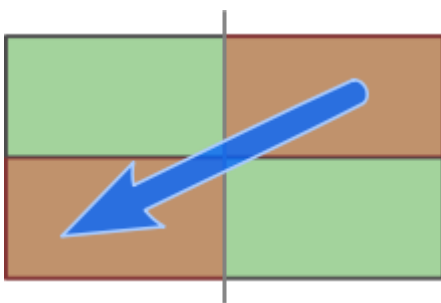
A game shall be won by the player first scoring 11 points unless both players score 10 points, when the game shall be won by the first player subsequently gaining a lead of 2 points. A match shall consist of the best of any odd number of games. In competition play, matches are typically best of five or seven games.

## Alternation of services and ends

Service alternates between opponents every two points (regardless of winner of the rally) until the end of the game, unless both players score 10 points or the expedite system is operated, when the sequences of serving and receiving stay the same but each player serves for only 1 point in turn. Player serving first in a game shall receive first in the next game of the match.

After each game, players switch sides of the table. In the last possible game of a match, for example the seventh game in a best of seven matches, players change ends when the first player scores 5 points, regardless of whose turn it is to serve.

## Doubles game



Service zone in doubles game

In addition to games between individual players, pairs may also play table tennis. In doubles, all the rules of single play are applied except for the following.

1. A line painted along the long axis of the table to create doubles courts bisects the table. This line's only purpose is to facilitate the doubles service rule, which is that service, must originate from the right hand "box" in such a way that the first

bounce of the serve bounces once in said right hand box and then must bounce at least once in the opponent side's right hand box (far left box for server), or the receiving pair score a point.

2. Players must alternate hitting the ball. For example, if A is paired with B, X is paired with Y, A is the server and X is the receiver. The order of play shall be  $A \rightarrow X \rightarrow B \rightarrow Y$ . The rally proceeds this way until one side fails to make a legal return and the other side scores.
3. At each change of service, the previous receiver shall become the server and the partner of the previous server shall become the receiver. For example, if the previous order of play is  $A \rightarrow X \rightarrow B \rightarrow Y$ , the order becomes  $X \rightarrow B \rightarrow Y \rightarrow A$  after the change of service.
4. When a pair reaches 5 points in the final game, the pairs must switch ends of the table and the team that receives the service must switch receiver. For example, when the last order of play before a pair score 5 points in the final game is  $A \rightarrow X \rightarrow B \rightarrow Y$ , the order after change shall be  $A \rightarrow Y \rightarrow B \rightarrow X$  if A still has the second serve. Otherwise, X is the next server and the order becomes  $X \rightarrow A \rightarrow Y \rightarrow B$ .

## Expedite system

If a game is unfinished after 10 minutes' play and fewer than 18 points have been scored, the expedite system is initiated. The umpire interrupts the game, and the game resumes with players serving for 1 point in turn. If the expedite system is introduced while the ball is not in play, the previous receiver shall serve first. Under the expedite system, the server must win the point before the opponent makes 13 consecutive returns or the point goes to the opponent. The system can also be initiated at any time at the request of both players or pairs. Once introduced, the expedite system remains in force until the end of the match. A rule to shorten the time of a match, it is mainly seen in defensive players' games.

## Grips

Though table tennis players grip their rackets in various ways, their grips can be classified into two major families of styles, *penhold* and *shakehand*. The Laws of Table Tennis do not prescribe the manner in which one must grip the racket, and numerous grips are employed.

### Penhold

The penhold grip is so-named because one grips the racket similarly to the way one holds a writing instrument. The style of play among penhold players can vary greatly from player to player. The most popular style, usually referred to as the Chinese penhold style, involves curling the middle, ring, and fourth finger on the back of the blade with the three fingers always remain touching one another.



## Shakehand



The shakehand (or shakehands) grip is so-named because the racket is grasped as if one is performing a handshake.

## Types of strokes

Table tennis strokes generally break down into offensive and defensive categories.

### Offensive strokes

#### Speed drive

A direct hit on the ball propelling it forward back to the opponent. This stroke differs from speed drives in other racket sports like tennis because the racket is primarily *perpendicular* to the direction of the stroke and most of the energy applied to the ball results in *speed* rather than *spin*, creating a shot that does not arc much, but is fast enough that it can be difficult to return. A speed drive is used mostly for keeping the ball in play, applying pressure on the opponent, and potentially opening up an opportunity for a more powerful attack.

#### Loop

The loop is essentially the reverse of the speed drive. The racket is much more *parallel* to the direction of the stroke ("closed") and the racket thus *grazes* the ball, resulting in a large amount of topspin. A good loop drive will arc quite a bit, and once striking the opponent's side of the table will jump forward, much like a kick serve in tennis.

#### Smash

The offensive trump card in table tennis is the smash. A player will typically execute a smash when his or her opponent has returned a ball that bounces too high or too close to the net. *Smashing* is essentially self-explanatory—large backswing and rapid acceleration imparting as much speed on the ball as possible. The goal of a smash is to get the ball to move so quickly that the opponent simply cannot return it.

### Defensive strokes

#### Push

The push (or "slice" in Asia) is usually used for keeping the point alive and creating offensive opportunities. A push resembles a tennis slice: the racket cuts underneath the ball, imparting backspin and causing the ball to float slowly to the other side of the table.

## Chop

A chop is the defensive, backspin counterpart to the offensive loop drive. A chop is essentially a bigger, heavier push, taken well back from the table. The racket face points primarily horizontally, perhaps a little bit upward, and the direction of the stroke is straight down. The object of a defensive chop is to match the topspin of the opponent's shot with backspin.

## Block

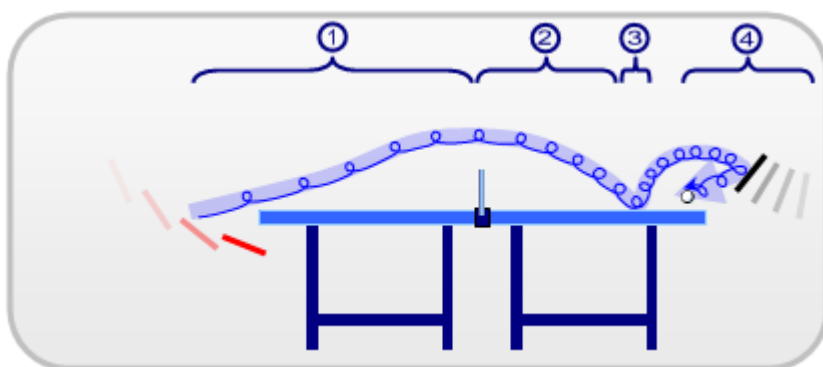
The block is a simple shot, but nonetheless can be devastating against an attacking opponent. A block is executed by simply placing the racket in front of the ball right after the ball bounces; thus, the ball rebounds back toward the opponent with nearly as much energy as it came in with. This is not as easy as it sounds.

## Lob

The defensive lob is possibly the most impressive shot in the sport of table tennis, since it propels the ball about fifteen feet in the air only to land on the opponent's side of the table with great amounts of spin. To execute a *lob*, a defensive player first backs off the table 4–6 meters; then, the stroke itself consists of simply lifting the ball to an enormous height before it falls back to the opponent's side of the table.

## Effects of spin

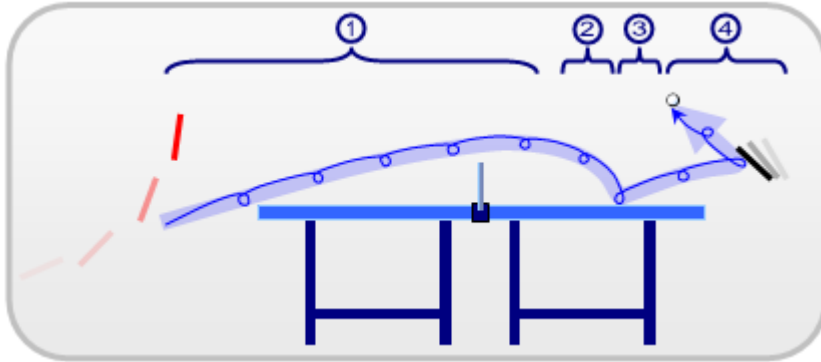
Adding spin onto the ball causes major changes in table tennis gameplay. Although nearly every stroke or serve creates some kind of spin, understanding the individual types of spin allows players to defend against and use different spins effectively.



4 phases in a backspin curve

## Backspin

Backspin is where the bottom half of the ball is rotating away from the player, and is imparted by striking the base of the ball with a downward movement. At the professional level, backspin is usually used defensively in order to keep the ball low. Backspin is commonly employed in service because it is harder to produce an offensive return, especially on a short serve.



4 phases in a topspin curve

## Topspin

The harder-to-learn topspin stroke has a smaller influence on the first part of the ball-curve. Like the backspin stroke, however, the axis of spin remains roughly perpendicular to the trajectory of the ball thus allowing for the Magnus effect to dictate the subsequent curvature. After the apex of the curve, the ball clearly dips downwards as it approaches the opposing side, before bouncing. On the bounce, the topspin will accelerate the ball, much in the same way that a wheel which is already spinning would accelerate upon making contact with the ground.