2020 GUIDE TO BALL MACHINES

TEACHING TOOLS

The Benefits of Machine Learning

Teaching with a ball machine can be a key for a 'decision-making' sport such as tennis.

By Stan Oley

Tennis technique has historically been taught with an instructor standing at the net, feeding a simple ball to the player at the opposing baseline. The teaching pro offers verbal instruction and some simple demonstration. Generally, the feed is always the same, regardless of whether the player is working on their rally ball, passing shot or inside-out stroke.

When a player is learning a motor skill such as a tennis swing, they will first learn through visualization. Once a player has seen the stroke properly demonstrated, it is important for him or her to try the skill themselves and give their feedback on how it felt to their instructor.

Too often, an instructor will try to explain too much, too frequently, which can be confusing to players. (As an example, have someone try to verbalize how to do a jumping jack, rather than simply showing you how to do one.) When it comes to instruction, verbalization not only is processed much slower, but it can result in robotic and unnatural movement.

The kinesthetics of the skill—what the necessary movements feel like—are extremely important to skill acquisition. Once the player has the kinesthetics of the stroke, then they can accept verbal cues and corrections much more easily.

Equally important in learning a motor skill such as a tennis stroke is the cognitive aspect. In his book *Motor Control and Learning: A Behavioral Emphasis*, Richard A. Schmidt says sports such as tennis, baseball and football are considered "open-skill" or decision-making sports, as opposed to "closed-skill" or non-decision-making sports such as diving, darts and bowling—and that the two kinds of sports need to be taught differently.

If a tennis player is always being fed the same simple ball right into their strike zone, then there's very little decision-making, and the cognitive aspect of the stroke is not being stimulated. This can result in the player having poor ball-recognition skills, leaving them unable to properly judge an incoming ball in flight and make appropriate decisions regarding their stroke, such as strike-zone, racquet path and follow-through. Basically, the balls they receive in lessons won't represent what they'll receive in a match.

If the player cannot judge the ball in flight, then they will not get the ball in their strike zone, hence their technique will be inadequate.

Information Processing

To help understand how a tennis player or any other "open-skill" sport athlete processes information during play, Schmidt suggests a "human information processing" system where players: 1) Identify, 2) Decide, 3) Execute and 4) Gain Feedback.

1) When the player is receiving a ball during play, the first thing that happens is they attempt to Identify what characteristics are occurring with regards to height, speed, spin and direction.

2) Next, the player needs to Decide what to do with the incoming shot, the opponent's positioning and even the current state of the match.

3) Now the player Executes the shot.

4) The brain then provides Feedback on what occurred, and then the whole information processing system starts again with the next shot.

With the current way of teaching—by offering students the same type of feed from the net—this information system gets short-circuited at the "Decide" phase, because a player's experience and decision-making ability from their lessons will be limited to one shot or a small handful of shots.

Why do instructors feed from the net? Well, most tennis instructors tend

to teach how they were taught. Plus, it would be physically exhausting to feed correctly all day, as well as impossible to feed the appropriate ball and coach the player at the same time. In addition, people simply do not accept change well.

From a recreational player's perspective, they end up working on just one groundstroke technique because that's what is solely emphasized in the lessons—swing low to high! On top of this, rec players who are learning only from a pro feeding at the net don't develop the recognition skills that will allow them to decide early what shot they need to hit—they're often making their shot decisions when the ball is ready to bounce in front of them. (One reason pro players have such great technique and execution is because they recognize the incoming ball early in its flight, giving themselves more time to set up and hit the right shot.)

Another concern is "live ball" play in a lesson. Some coaches think rallying with their students will give them experience hitting a "live ball" from a pro. However, the cognitive aspect of the skill is damaged again because in most cases, the player is trying to hit *back* to the instructor during the lesson and then try to flip the switch and hit away from the opponent in a match. These are two completely different learning environments.

Also, some players feel their rally groundstroke skills are enhanced when the instructor is at the net volleying and the player is pounding groundstrokes at them. In a match, though, a player will need to pass the opponent—not hit to them when they are at the net. Plus, if the player was truly working on their rally ball while crushing groundstrokes at the instructor playing the net, the player was probably keeping the ball low and short at the instructor's feet. Good luck trying to hit those high and deep rally balls in matches.

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The Ball Machine Fix

What would help solve these problems? The use of a ball machine for lessons and clinics.

A ball machine allows the instructor to feed many different kinds of balls to the player, so the instructor can properly demonstrate a particular stroke. The fact that ball characteristics such as the speed, spin, height, depth and direction can now be "game-like" from the ball machine will accelerate the player's cognitive skill learning. This can result in players recognizing incoming balls sooner, getting to them faster and hitting more shots in the strike zone, dramatically improving technique on a particular shot.

Teaching with the ball machine also allows coaches to create an infinite number of drills because of the ability to create ball characteristics that they are not capable of feeding consistently. Another plus with a ball machine is that it frees the instructor to video his or her student during a lesson.

There is a lot of research regarding how the brain processes information and how it can help in an "open skill" sport such as tennis. Using a ball machine not only will save wear and tear on you and your teaching staff, but it also is a key to helping your students unlock their potential—and be prepared for what they'll actually face in a match.

USPTA Master Professional Stan Oley, the product marketing specialist for Playmate Ball Machines, was named Racquet Sports Industry *magazine's 2017 Sales Rep of the Year. Playmate offers a free player profile and assessment forms at playmatetennis.com. Oley is sponsored by Adidas and Head Racquet products.*

See the 2020 Guide to Ball Machines chart on pages 32-35 for a listing of ball machines currently on the market.