Now incorporating The Basketball Coach and The Women's Coaching Clinic

COACHING CLINIC

32 years 1961 1993

Vol. 32 No. 7 — For coaches, by coaches for three decades — March 1994

Volleyball: Ready Position Defensive Footwork And Split Step

by
Marion Alexander, PhD.
Faculty of Physical Education
University of Manitoba

The order of occurrence of the ready position, defensive footwork and split step in a volleyball game is as follows: when playing defense the ready position is assumed first, followed by the footwork to get into position to play the ball and the split step is assumed to bump or dig the ball. Whenever the ball is being played by the offensive team, the defensive team should assume the ready position, which is the position to move in any direction quickly. When the ball is hit by the offense, the defender must then move into position to play the ball, using the most efficient type of footwork. When the ball is being played from a spike or serve, the player will assume the split step position just before contact with the ball is made.

The Ready Position

The ready position in volleyball is assumed as the ball is about to be played by the opponent, prior to a spike, serve or partially blocked spike. The ready position in volleyball is similar to the ready position in other sports in which split second timing and ability to react quickly are critical. The position is similar to that seen in a tennis player receiving the serve, a shortstop waiting for a ground ball, or a soccer goalkeeper waiting for a shot on goal. The ready position in volleyball is used whenever the team is playing defense, such as when preparing to receive a serve or a spike, or to retrieve a tip or a returned block.

Figure 11
Player shows poor balance due to feet too close together, legs too extended, flexed trunk, ball contact too far from feet.

Figure 12
Player shows poor technique in the split step, with legs too extended, trunk too straight, and ball contact too high.

Figure 13
Player shows good position for split step, with feet well spread, low CG, trunk straight, and ball contacted low.

Figure 14
Players must practice the split step, and hold the position for several seconds to strengthen muscles used.

Strength Training Q&A #9

by
Matt Brzycki
Princeton University

What's the difference between doing a lat pulldown with an overhand grip and an underhand grip?

With few exceptions, any type of pulling movement -- whether it be rowing, chinning or any pulldown variation -- exercises your upper back (or "lats"), biceps and forearms. This is true regardless of how you grip the handle, bar or dumbbell. However, there are some differencex in the leverage you receive from these muscles based upon your hand positioning. Performing a lat pulldown with an overhand grip (palms down) is not as efficient as performing it with a parallel (palms facing each other) or an underhand grip (palms up). With an underhand grip, your forearm bones -- the radius ulna -- run parallel to one another; with an overhand grip, your radius pivots near your elbow and crosses over your ulna forming an "X". When this happens, your bicep tendon wraps around your radius, creating a biomechanical disadvantage. Quite simply, you lose leverage. This is also true when using different grips during chinning and rowing movements --same muscles only different leverages.

So, your grip can be palms up, palms down or parallel depending upon the machine's handles or bar. Just remember that some hand positions are more biomechanically efficient than others and, therefore, your leverage will change with different grips.

One last note: More and more rehabilitative professionals (i.e. physical therapists, athletic trainers) are advising not to do lat pulldowns or pullups behind-the-head with an overhand grip. Their reasoning is that when the bar is pulled behind-the-head, it places the shoulder joint in a vulnerable position and may aggravate or contribute to "Shoulder Impingement Syndrome." This is a collective term used to describe a general tightness or pinching in the shoulder region.

What should my resting heart rate be?

Located just behind your sternum (or breastbone), your heart is the ultimate endurance muscle. It is a coneshaped orga about 5 inches long and 3-1/2 inches wide -- roughly the size of your fist. An adult male heart weighs about 10 ounces while its female counterpart weighs about 8 ounces.

Each half of your heart consists of two chambers -- an atrium and a ventricle. The left half of your heart pumps blood to your body tissues, such as your skeletal muscles; the right half of your heart sends blood to your lungs. During each beat, your heart pumps about 130 cubic centimeters of blood or roughly 5 liters per minute. As your blood surges out of the ventricle, it pounds the arterial wall. This impact is transmitted along the length of the artery and can be felt as a throb or a "pulse" at those points where an artery lies just under your skin. The beat of your pulse is synchronous with the beat of your heart.

Your heart rate can be easily measured at several different sites on your body. There are several heart rate monitors that are available commerically that will give you a reasonable accurate reading of your heart rate. However, the easiest and cheapest way is to measure your own heart rate. This can be done by locating your pulse at either your carotid artery (in your neck) or your radial artery (in your wrist). Simple place the tips of your index and middle fingers over one of these sites. When you locate your heart beat, count your pulse for 10 seconds. Then, multiply that number by 6 and you will have your heart rate for one minute.

To a degree, the rate of the heartbeat is dependent upon the size of the organism. In general, the smaller the size the faster the heartbeat. A normal resting heart rate for humans is about 60 - 80 beats per minute (bpm). Women's hearts beat 6 - 8 times per minute faster than those of men. Children's hearts beat even more rapidly -- as high as 130 bpm at birth. Animals larger than man have slower heartbeats -- an elephant has one of 20 bpm. On the other hand, a shrew's heart beats 1000 times per minute.

Like all muscle tissue, your heart will hypertrophy with training. Specifically, its ventricular cavity becomes larger and its ventricular wall becomes thicker. This permits your heart to accept more blood and expel it more powerfully. Indeed, as your heart becomes a better conditioned muscle, its ability to circulate bloold also improves. In particular, the amount of blood pumped by the heart per beat increases. Additionally, your resting heart rate will be lowered as a direct result of training. A slower heart rate coupled with a larger volume of blood expelled per beat indicates an efficient circulatory system. This is true because your heart won't beat as often for a given cardiac output.

Because of this training effect, athletes usually have a lower heart rate than sedetary people. In fact, some athletes have resting heart rates in the mid 40s.

A lower resting heart rate may be especially important if the heart is limited to a certain number of beats over the course of lifetime. For example, suppose that the human heart is confined to about 2.5 million beats before it simple wears out from continual labor. In this scenario, if you had an average resting heart rate of 60 bpm you could expect to live a little more than 79 years; on the other hand, if you had an average resting heart rate of 70 bpm you could expect to live a little less than 68 years. If this concept were true, a difference of 10 bpm would translate into more than 11 additional years of life. While this notion has yet to been proven scientifically, it does give us something to think about in terms of the significance of having a lower resting heart rate.

About the Author

Matt Brzycki has been the Strength Coach and Health Fitness Coordinator at Princeton University since August 1990. Coach Brzycki has authored more than 90 articles on strength and fitness and a book, A Practical Approach to Strength Training, which is in its second edition. He has also coauthored the book Conditioning for Basketball with Shaun Brown, Strength Coach for the University of Kentucky basketball team.

Princeton Educational Publishers
Post Office Box 280
Plainsboro, NJ 08536

Bulk Rate
US Postage
PAID
Permit No. 11
Princeton, NJ 08540