Strength coaches, sport coaches, and personal trainers are constantly challenged to make their athletes bigger, faster, and stronger than the competition. College strength coach and sport coach jobs depend upon the performance outcomes of their teams; and personal trainers only sell more sessions when they produce measurable results. However, while improving the physical attributes of athletes, coaches and trainers commonly overlook the importance of improving cognitive abilities. Improving agility and quickness should not simply involve the physical capabilities, but also the mental
abilities of the athletes. Before providing a sample agility and quickness program for volleyball players, this article will first look at movements specific to volleyball, the value of agility testing, and program considerations for training these athletes.

AGILITY MOVEMENTS SPECIFIC TO VOLLEYBALL

Speed is the ability to achieve a high velocity (1). Agility has been defined as the ability to suddenly decelerate, change direction, and accelerate again (1). Quickness can be considered the athlete’s reactive ability (3).

Quick or reactive movements differ by sport. Volleyball is an explosive sport that requires agility and quickness of both the mind and body. Consequently, volleyball players are expected to process information quickly and make decisions that are based on a series of unplanned stimuli. Agility and quickness are required of each position on the volleyball court and impact performance in each play. Agility and quickness requirements are task-specific and vary depending on the position of each player. A middle blocker is expected to quickly adjust to a setter’s body position and determine where the attack will originate. Defensive specialists and liberos are expected to not only read the play on the other side of the court, but also to read the hands and positioning of their own blockers to make final adjustments. It is not enough to simply be “fast” or agile on the court. To be successful, the athletes need to assess the situation properly and make the correct decision regarding which direction to move.

Based on the requirements of a volleyball match, strength coaches and/or sport coaches have many angles from which to improve their athletes’ agility and quickness. As mentioned earlier, volleyball players need to be able to perceive a stimulus, respond to the stimulus, and then make a decision. A novice player will not have the experience to identify most task-relevant cues and time would be better spent training the technique involved in agility and change of direction movements. However, athletes at a more elite playing level will benefit from both the quick reaction training as well as refining their agility. Volleyball players at any position constantly move to adjust to the play that occurs on the other side of the net as well as the play on their side of the net; successful teams never stand still. This means that the more efficiently the players can change direction on the court, the better chance they have of being in the correct position to play the ball. Common movements occurring in volleyball include but are not limited to:

- Lateral shuffle
- Cross-over step
- Backpedal
- Forward sprint
- Double-leg lateral, forward, backward hop
- Single-leg take-off

AGILITY TESTING

Prior to beginning agility programs, coaches should test their athletes to assess whether or not the programs are effective. If an agility test is going to be added to a battery of tests, there are many sequence considerations that must be addressed, including: energy demands of the test, number of trials for each test, number of athletes participating, number of testing administrators, equipment needed, and recommended rest periods (3). As previously discussed, agility and quickness requirements vary depending upon the position, therefore, tests should mimic those movements required of each position. The most common movements for a middle blocker or an attacker are short lateral hops, double-leg take-offs, cross-over steps, and change of direction. Defensive specialists and liberos must be able to quickly shuffle laterally, backpedal, sprint, change direction, and dive in any direction. Setters often need to be the “fastest” player on the team because they often cover the most distance during a match. Setters usually have a short period of time to reach their position at the net following the service, and must often chase down errant passes. Because of the frequent movements completed by each position, a coach should choose an appropriate agility test. For example:

- Setters: Three-cone shuttle tests will assess skills used in most power sports, including body position, movement technique, acceleration, and change of direction speed (3)
- Back row (defensive specialists and liberos): T-tests will assess an athlete’s ability to adjust strides for acceleration and deceleration, change-of-direction speed, and body control while moving forward, backward, and laterally (3)
- Front row (blockers and attackers): Hexagon tests will assess body control during high force production (3)

PROGRAMMING CONSIDERATIONS

Once the coach has performed a base test, it is time to implement the individualized agility program. When developing the structure of an agility training session, it is important to consider the variation of drills as well as the drill distribution within a session (4). It has been shown that randomizing the variation of drills within a session is more effective than block training movement patterns (5). Blocking the drills by movement patterns may produce short-term improvements in performance, but the job
of a coach or trainer is to prepare their athletes for a lifetime of success. Any agility drill can be varied by simply changing the distance covered, the speed utilized, or the starting or finishing position of the drill.

PRINCIPLE OF SPECIFICITY
Specificity refers to the method of training an athlete uses to produce a specific adaptation or training outcome (2). Coaches can replicate sport-specific movements, flooring, competitive environments, and noise levels. Indoor club volleyball tournaments are typically very loud and in very large environments with nets hanging around the courts. An athlete is going to have many environmental stimuli to interpret throughout the competition. Indoor volleyball is played on either hardwood or sport court floors, so coaches and trainers should train their athletes on similar flooring whenever possible. If the only space available is rubber flooring, use what is available, but remember that the transfer of skills may be diminished.

Coaches need to identify the most commonly utilized movements and develop their program accordingly. After determining the common movements in volleyball, a coach can choose closed skill drills to improve technique and movement patterns. It is important to progress the athletes through agility drills just as with any other complex movement pattern. Prior to expecting the athletes to move through a ladder while responding to visual stimuli successfully, coaches need to be certain their athletes can successfully navigate the ladder without added stimuli. Coaches may also challenge their more advanced athletes by stressing the appropriate energy systems by mimicking the competition with similar work-to-rest ratios. Reactive drills can be used to mimic the mental agility of a game-like situation. Coaches can choose drills such as shadowing, ball drops, verbal, or visual stimuli to improve the reactive abilities and challenge cognitive quickness. The following tips can be helpful when training for volleyball-specific agility and quickness at any experience level:

- Begin with closed drills to perfect technique, then add reactive drills as soon as the athlete can handle them
- Train the movement patterns and energy systems of each player based on their position
- Keep the distances covered short; long-distance movements are rare
- Deceleration training is an important factor when considering injury prevention and efficient movement on the court (i.e., middle blockers must decelerate quickly to reduce likelihood of stepping on the assisting blocker)

• Perform drills using single- and double-leg variations in multiple directions to challenge balance and change-of-direction abilities as well as increase variety
• Monitor physical and mental fatigue of athletes, high levels of fatigue may increase the likelihood of injuries (6)

SAMPLE PROGRAM
Table 1 provides a sample agility and quickness program for experienced volleyball players during the early pre-season. In early pre-season, agility drills should be at their highest volume and taper off as the season approaches.
## Table 1. Sample Pre-Season Agility and Quickness Program for Volleyball Players

<table>
<thead>
<tr>
<th>MONDAY</th>
<th>WEDNESDAY</th>
<th>FRIDAY</th>
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<tbody>
<tr>
<td>Activation and Dynamic Warm-Up</td>
<td></td>
<td>Ladder drills (hopscotch, slaloms, cherry pickers, 180s)</td>
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<tr>
<td></td>
<td></td>
<td>(2 sets each)</td>
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<tr>
<td>5 meter 2-cone lateral shuffle (4x10 s each)</td>
<td>Lateral bounds (4x6 each leg)</td>
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<tr>
<td>5 s line drills (forward and backward hops, lateral hops, scissors, and single-leg forward hops) (2 sets each)</td>
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<td>5 meter M drill (cones) x6 (3 each direction)</td>
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<tr>
<td>Ball drop drill (4x6 drops)</td>
<td>5 s line drills (forward and backward hops, lateral hops, scissors, and single-leg forward hops) (2 sets each)</td>
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<tr>
<td>Lateral blocking movement across the net (3 each direction)</td>
<td>Shuffle reaction ball drill (4x6 catches) (Figures 1 and 2)</td>
<td>Jump, squat, or dive drill, 10 s per set (4 x 10 s per set)</td>
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<tr>
<td>Ladder drills (one in the hole, two in the hole, ickey shuffle, two in two out) (2 sets each)</td>
<td>Star drill x4 (2 each direction)</td>
<td>Shuffle and forward reaction ball drill (4x6 tosses) (Figures 3 – 5)</td>
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<tr>
<td>6 low hurdles (double-leg forward hops, double-leg lateral hops, single-leg hops, single-leg lateral hops) (2 sets each)</td>
<td>Dot drill forward and back 5-3-5 pattern (4 sets)</td>
<td>Red light, green light (1 game)</td>
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FEATURE ARTICLE

IMPROVING AGILITY AND QUICKNESS FOR THE CLUB VOLLEYBALL PLAYER

Figure 1. Shuffle Reaction Ball Drill Start

Figure 2. Shuffle Reaction Ball Drill Finish

Figure 3. Shuffle Forward Reaction Ball Drill Start

Figure 4. Shuffle Forward Reaction Ball Drill Reaction

Figure 5. Shuffle and Forward Reaction Ball Drill Finish

REFERENCES


ABOUT THE AUTHOR

Dani Byrne completed her internship at the National Strength and Conditioning Association (NSCA) Headquarters in Colorado Springs, CO. Byrne earned both her Bachelor’s degree and Master’s degree at the University of Northern Colorado in Greeley, CO. Byrne has coached 6 seasons of junior varsity and club level volleyball in Colorado while also working as a strength coach and wellness coordinator. She has devoted much of her career to improving injury prevention techniques for youth athletes.