

Basic Mechanics Throwing

- Start from a standing position facing the direction of the throw with the feet shoulder width apart
- The phases are for a right handed thrower. Everything would be opposite for a left handed thrower.

Preparation Phase

- With the ball in the throwing hand, the hands come up to the chest.
- Step back with the right foot to create a comfortable side straddled position, opening the hips up. The body will now be at a 90 degree angle to the direction of the throw.
- Abduct the right arm at the shoulder joint to 90 degrees and keep the elbow extended. The arm will be parallel to the floor.
- Shift the body's center of gravity toward the back foot, but remain balanced between the two straddled feet. Rotate (laterally) the thigh of the left leg such that the toes of the left foot are pointing in the direction of the throw.
- Abduct the left arm at the shoulder joint to 90 degrees and keep the elbow extended. The arm will be parallel to the floor.
- As technique increases and the participant feels more comfortable:
 - The left arm will reach across the midline of the body and above head height
 - The straddled position will increase and the majority of the body's weight will be on the right foot.

Force Producing Phase (the movements occur in order)

*** The accumulated forces that the body generates to execute the throw begins with the friction forces of the feet with the ground. Each of the body's movements from the ground up will linearly summate to give energy to the ball at the point of release. The body's weight will smoothly shift forward to the left foot throughout the throw.

- The right foot: (1) pivots to allow the knee to face the direction of the throw and (2) pushes off
- The right hip internally rotates to allow the hips to face the direction of the throw.
- The torso rotates to face the direction of the throw.
- During the first three (3) steps the right arm remains extended as far back as possible.
- The left arm sweeps across the front of the body, "clear the cobwebs" putting all the chest muscles on stretch.
- The right elbow bends to 90 degrees and the elbow leads the movement of the arm forward. The hand stays behind the elbow lead.

- The elbow is pulled forward at, or slightly above, ear height in the direction of the throw.
- Once the elbow is past the ear, the forearm extends forward in the direction of the throw (keep the wrist hyper-extended).
- Try to summate the movements smoothly and in sequence, to generate as much force as possible.
- The muscles of each body part “lock” in place one after the other, such that a solid body line is created leading to the release of the ball (critical instant).
- As technique increases:
 - Put the full weight of the body solely on the right foot when the right hand is reaching away from the direction of the throw (the right knee will be slightly bent and the quad engaged),
 - Extend as far back as possible with the right hand,
 - Push off the right foot with as much force as possible moving the body in the direction of the throw,
 - Step forward with the left foot a distance that maintains stability and slightly to the left of the midline of the body, keeping the body balanced the entire time.

Critical Instant Phase

- Plant the heel of the left foot to create a stable point for all the summing forces of the ‘Force Producing Phase’ to catapult off of.
- The center of gravity has moved forward to the left foot.
- Make sure the knee of the left leg is ‘straight’ (muscles contracted and braced) at the critical instant – when the ball is being released from the hand.
- The ‘snap’ (flexion) of the wrist is the last movement of the summing forces.
- The release of the ball/implement is made at the ‘center of the arc’ of the entire throwing motion of the arm.

Recovery/Follow-through Phase

- After the ball/implement is released, the throwing hand continues moving to complete the arc of the throw. The ball will be moving the fastest at the center of the arc.
- If the arc is shortened, the hand will have slowed down well before the release of the ball.
- The throwing hand crosses over the center of the body and follows through low to the outside of the left thigh to complete the arc.
- The hip, knee, and ankle flex forward to de-summate and control the inertia moving in the direction of the throw
- The right foot will follow the forward inertia, and step forward past the left foot. This will brace the body to bring the body back to a balanced state.