An overhead throw is a common movement within athletics. This analysis reviews the kinesiology of a quarterback’s throwing motion specifically. An overhead throwing motion is broken down into four phases: loading, arm-cocking, acceleration, and follow-through. These phases were labeled and identified in scholarly literature, identifying the starting and stopping points. According to Escamilla and Andrews (2009), the maximum shoulder external rotation begins the arm acceleration phase and the release of the ball ends this phase. Specific movements have been identified and labeled within each phase and are discussed as individual contributors to the overall goal of each phase. The throwing motion of the quarterback is a very complex motion and involves all three movement planes.

**Introduction**

**Loading Phase**

**Primary Plane Involved:** Sagittal, Frontal

**Primary Muscle Contributors:** Quadriceps, glutes

**Sequence of Phase:** The loading phase is the initial movement when the quarterback receives the ball. After receiving the ball, they will take two to three steps backward and begin to turn sideways to their target. The rear knee and hip will begin to bend and the trunk will experience separation from the lower and upper half. This is crucial for the athlete because this allows the thrower to build up torque and power in order for them to release the ball.

**Video analysis:** The quarterback shows rear hip and knee flexion as they begin to move backwards from their target. Subject shows 108.2 degrees of flexion in the knee and hip flexion in the loading phase, shoulder and hip separation. After they pick a target, they begin to externally rotate. The external rotation allows for the ball to be propelled forward. An optimal rate. Not only does this result in optimum power and torque. The throwing motion of a quarterback is a complex motion that involves all three planes of movement. The body has to be in multiple key positions such as rear knee and hip flexion in the loading phase, shoulder and hip separation, and 120 degrees of shoulder flexion in the follow-through phase so that the body can work at an optimal rate. Not only does this result in optimum performance but also results in decrease risk of injury.

**Improvements:** Begin arm cocking phase with the shoulder in a more abducted position for increased movement efficiency. Also, keep the ball elevated near shoulder height so that a smaller arm circle is created. The smaller the arm circle, the less room for error which is creates less chance of incorrect mechanics which can save the quarterback from potential injury.

**References**

- Kelly, B. T., Backus, S. I., Warren, R. F., & Williams, R. J. (2002). Electromyographic Analysis and Phase motion and involves all three movement planes. The throwing motion of the quarterback is a very complex motion and involves all three movement planes.