

### **December 2024 Motion Capture Assessment findings:**

Alonso displayed inconsistent sequencing throughout his assessment, indicated by his inability to capture the kinematic sequence. Alonso displayed limited range of motion in both hips passively during his passive range of motion assessment in both internal and flexion. However, it should be noted that Alonso displayed superior rotational velocity at the trunk and lead leg peak ground reaction force. These two kinematics and kinetics are the foundation to many elite power hitters swings. However, the inability to flex and internally rotate the rear hip can limit a hitters ability to control his weight shift and direct ground reaction force in the optimal plane of motion to optimize the direction in which force is applied and transferred.

Hip internal rotation and flexion of the rear hip can aid in Alonso's ability to create a more efficient rotational arc with his lower half. This refers to how a player loads and unloads the rear hip, which can increase the total amount of kinetic energy produced and transferred in the swing. Hip flexion lowers a hitters center of mass allowing gravity to maximize the total amount of mass into the ground, which increases a hitters peak ground reaction force and impulse. This is crucial for a larger player, as body weight plays to their advantage in creating higher degrees of ground reaction force and kinetic energy independent of strength, rate of force development and age.

### **2025 MLB Season Motion capture findings:**

Alonso successfully obtained optimal timing and sequencing throughout his six motion capture assessments during the MLB season, representing a substantial improvement from his previous assessment in 2024. Alonso Successfully increased his rear leg ground reaction force impulse optimally in all three planes of motion increasing the total amount of kinetic energy in his swing. This may be described by his substantial increase in both hip flexion and internal rotation of his rear hip. Alonso implemented a series of hip activation and inhibition exercises, but also utilized strength exercises that biased the innominate bone toward both internal rotational rotation and hip flexion. This can be seen in exercises like the split squat or contralateral loaded lunge variations that position the lead hip in 90 degrees of hip flexion.

Additionally, Alonso increased his shoulder range of motion of his rear shoulder to optimize his launch and attack angle. Increasing rear shoulder external rotation can limit the time a hitter takes to get on plane. Acceleration plays a crucial role in a hitter's adjustability because they can achieve ball contact in a shorter window of time. Alonso' rear shoulder kinematic adjustments could help describe his ability to improve his contact with late moving pitches like the sinker. Alonso successfully increased his shoulder range of motion through exercises that biased shoulder external rotation with less than 90 degrees of shoulder abduction, to enhance neuromuscular control in relevant joint positions. Alonso made significant adjustments with his swing from 2024, which may help describe his increase in barrel % throughout the 2025 season. It is important to note that Alonso was able to maintain these kinematic improvements through the duration of the season.

