

Alex Howard, Age: 20

Ht: 5'7" Wt: 140lbs

Beimel Elite Athletics Biomechanics Assessment

Date of Pitch AI session: 7/27/2023

Date of Assessment: 8/8/2023

Written by Ethan Wang

1. Hand Separation/Pre-Stride Phase



Trunk Stack:

Decent hip internal rotation seen by the angle of the lines connecting at his knee. However there is almost zero amount of trunk stack here in his leg lift. The rectangle around his chest and torso is almost completely vertical. This will cause hip flexion issues in the subsequent phases I will talk about in the next sections.

- Can be fixed through strengthening the lumbar spine as well as increasing thoracic spine mobility

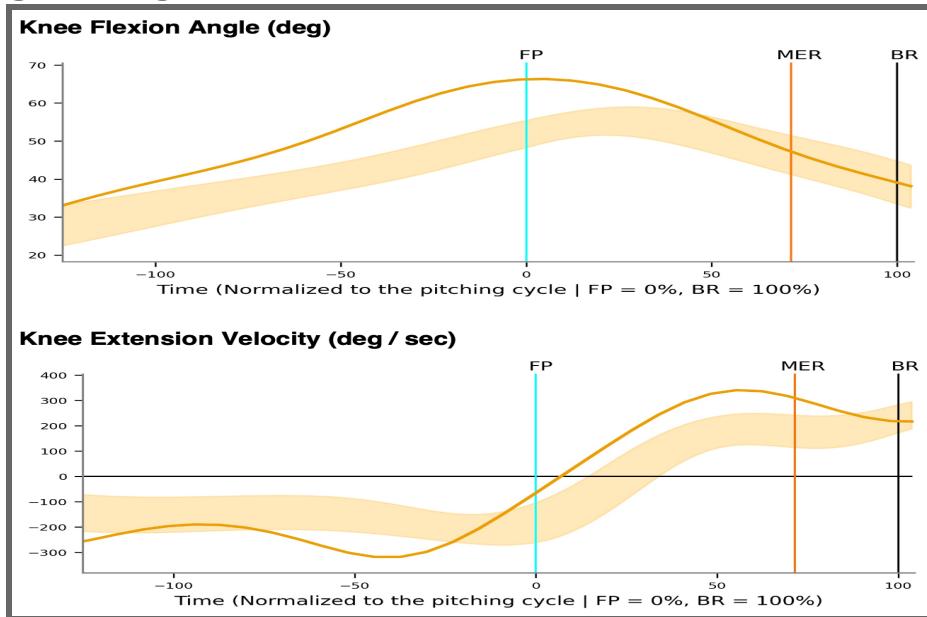


Arm Separation:

Alex's throwing arm during separation doesn't travel very far back. There is nothing wrong with this but his hand position due to this nature of separation should not be pronated like it is. A short separation means that the hand should be supinated or at least neutral. Neutral means the ball would be fully visible with his thumb and index finger on either side.

- Can be fixed by taking video of hand orientation after separation and reviewing it
- Try to get the hand into that neutral/supinated hand position every time

2. Beginning of Stride and Foot Plant Phase



Arm/Shoulder Movement:

Arm and Shoulder are in a great place all throughout the stride and at foot plant. Horizontal shoulder abduction is great, meaning scapulas retract effectively and with the proper timing.

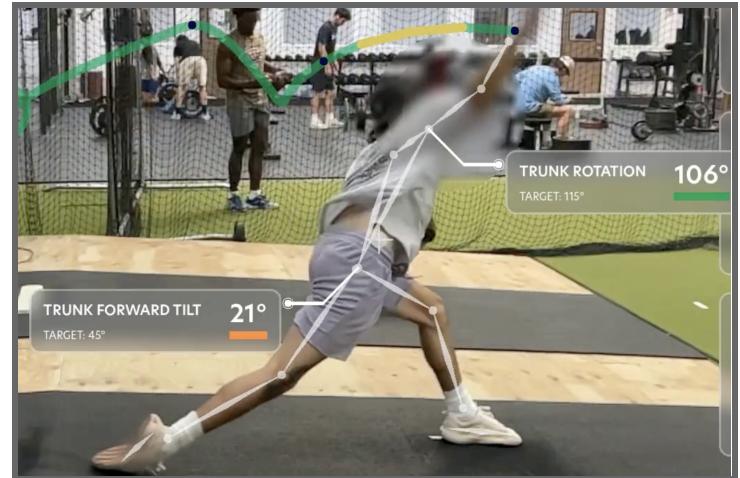
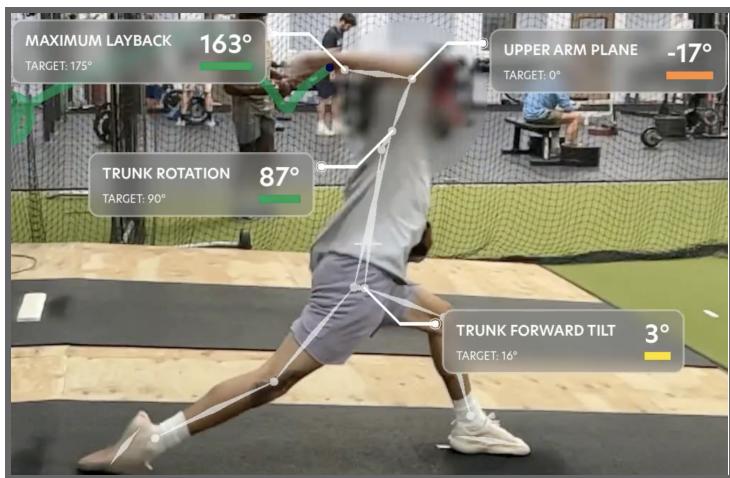
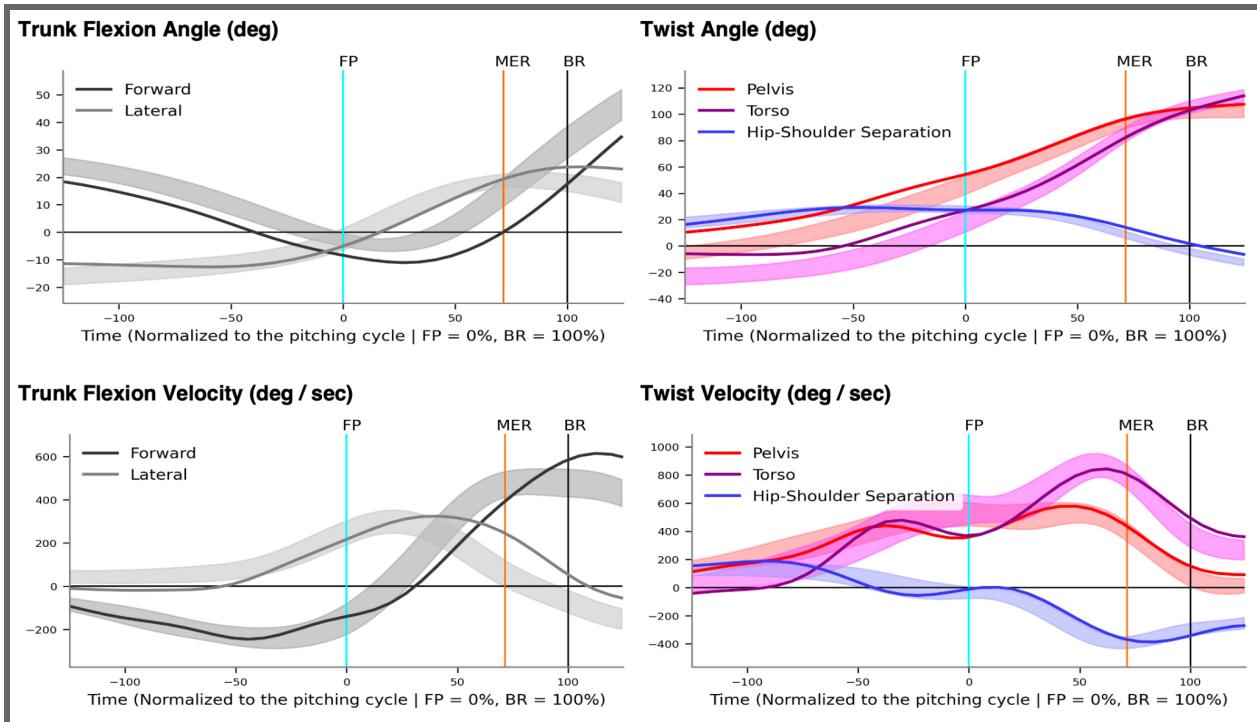
Trunk and Lower Half Movement:

First thing to look at here is the Knee Flexion Angle (top of graph). It is way too high of a degree the entire time through the stride. This means his lead leg is bent much more than it should be and stays bent for too long into the delivery. This is an extremely important issue to address because the quicker someone can stabilize the lead leg and get it locked out, the more force they can

apply down through that leg and towards the target. The timing of locking out his lead leg is not bad (shape of the curve on the graph), but the angle itself is just too far flexed. This issue has implications not only in the foot plant phase where he is not maximizing force imparted through his front foot, but it also carries over into the next phases.

- During his delivery, Alex may not be extending to his maximum stride length which is the reason for this overly bent leg at foot plant
- Working on the muscle memory of fully extending that lead leg throughout the stride will address this issue

3. Max External Rotation to Ball Release Phase



Trunk and Lower Half Movement:

During this phase, the issue I mentioned in the assessment of the last phase manifests. As you can see from both the PitchAI graph and the delivery breakdown, Alex's forward trunk tilt (on the graph it is called Trunk Flexion Angle - Forward) is way less than what it needs to be. High velocity players have a higher than average forward trunk tilt at this phase of their delivery. As we can see on the graph, Alex strays further and further from average as his delivery proceeds. This issue is a direct product of his front knee not being an effective enough brace for the pelvis to tilt on. Bent leg means that instead of his hips hinging forward, they will just sink because there is no stable leg to hinge off of.

- By fixing the stride issue mentioned earlier, the trunk tilt issue will also be fixed
- Stronger front leg brace, more forward trunk tilt, higher velocity