Kinetisense Isolated Anterior Hip Assessment and Correction (Kneeling)

Ryan D. Comeau BSC, DC

This protocol is both an assessment and a treatment using the Kinetisense® Range of Motion Capture System.

Overview

Proper hip mobility is a crucial component of almost every sport, as well as many everyday activities. When there is limited hip mobility then compensation in the neuromuscular system is imminent, and abnormal forces are often transferred to joints such as the low back or the knees.

This protocol not only applies to rehabilitation, but also performance as an increase in stride length from pure hip extension removes strain and compensation from the surrounding joints. Increased hip extension while maintaining core stability allows for the athlete to realize increases in strength and speed, while maintaining stability in the core. Strength in the core is compromised when the athlete has to incorporate compensatory movements such as back extension in order to accommodate for tightness in the anterior hip.

Applications

Running Stride
Skating Stride
Back pain
Knee pain
Ankle Pain
Pelvic pain
Shoulder/Neck pain

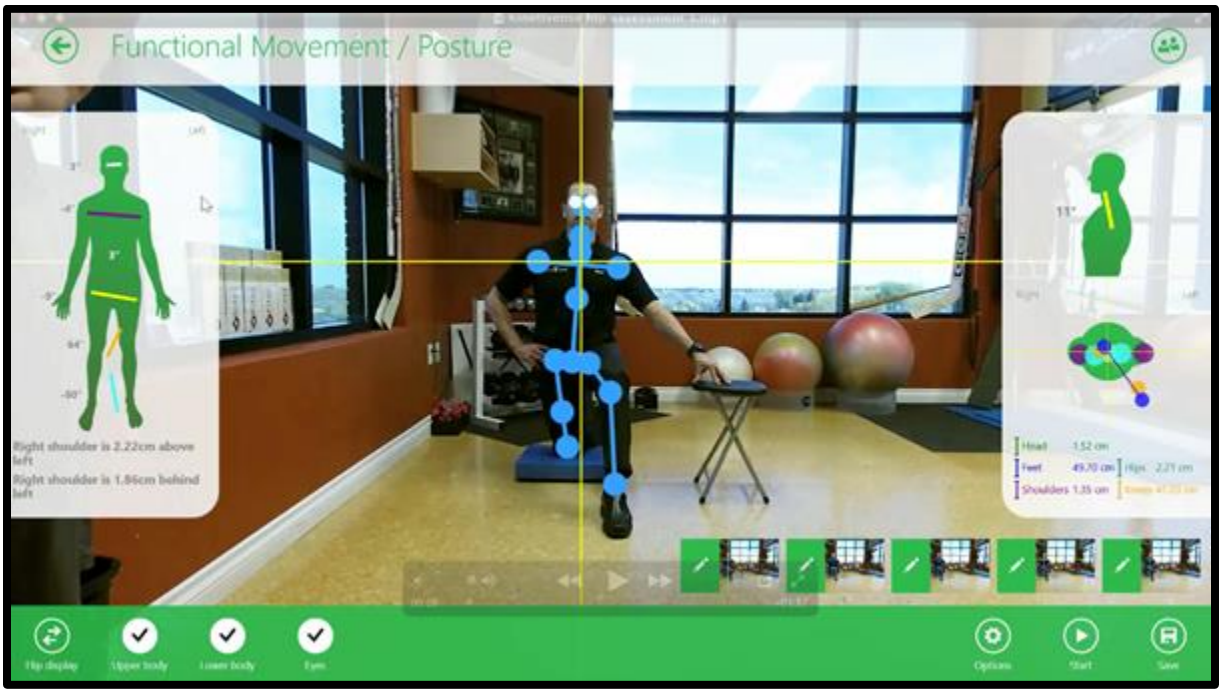
Kicking
Jumping

The Isolated Hip Assessment is a tool that evaluates hip mobility in extension.

Protocol

1. Prepare the patient in front of the Kinetisense® Functional Analysis system. Have the patient placed in a semi-wide kneeling position, with knee on a pad and chair at opposite side for support. There should be no internal or external rotation of the femur.

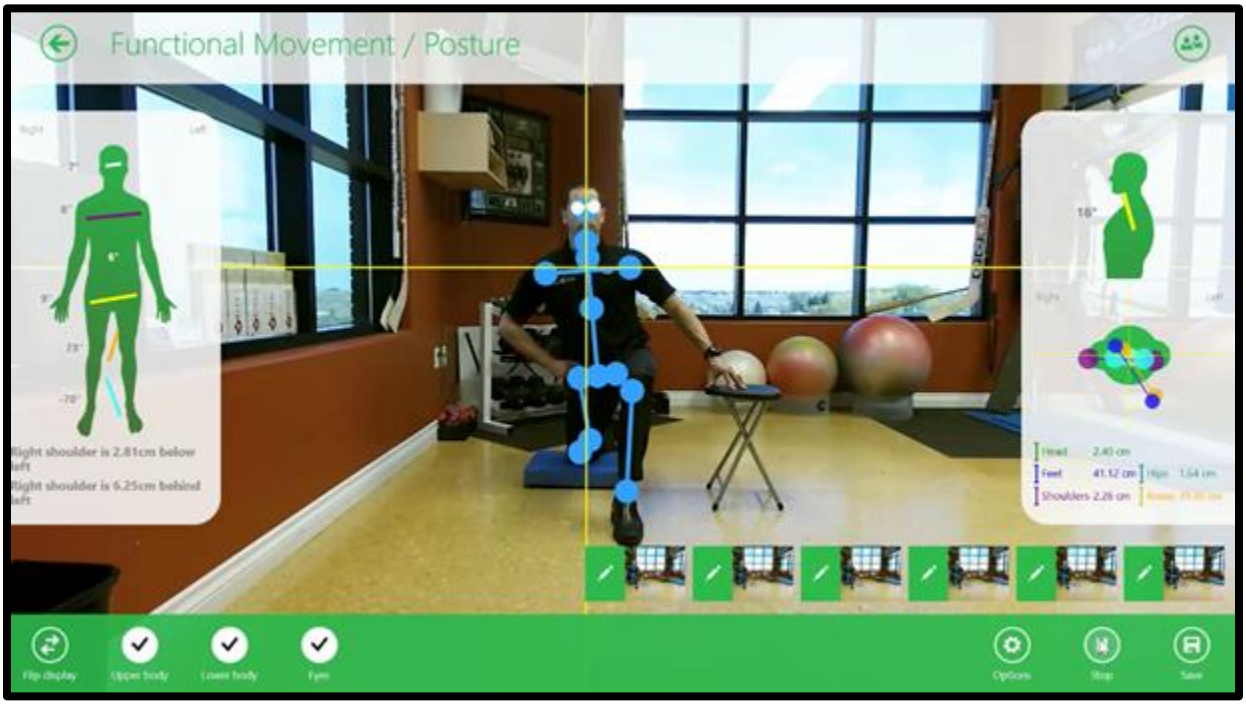
2. Instruct the patient to perform a posterior pelvic tilt while in the lunge position, while maintaining hip and shoulder symmetry in the frontal plane. The patient will be able to visualize this in real-time on the Kinetisense system. Have the patient perform 10 pelvic tilts and feel the tension at the front of the hip.



3. Have the patient supporting the contralateral hand to the side of knee down with a chair. Instruct the patient perform posterior pelvic tilt and then slowly lunge forward until maximal hip tension is achieved on the kneeling side.

4. From this position, instruct the patient to push the hip laterally while maintaining shoulder and hip symmetry as visualized on the Kinetisense system. Have the patient hold this tension for a

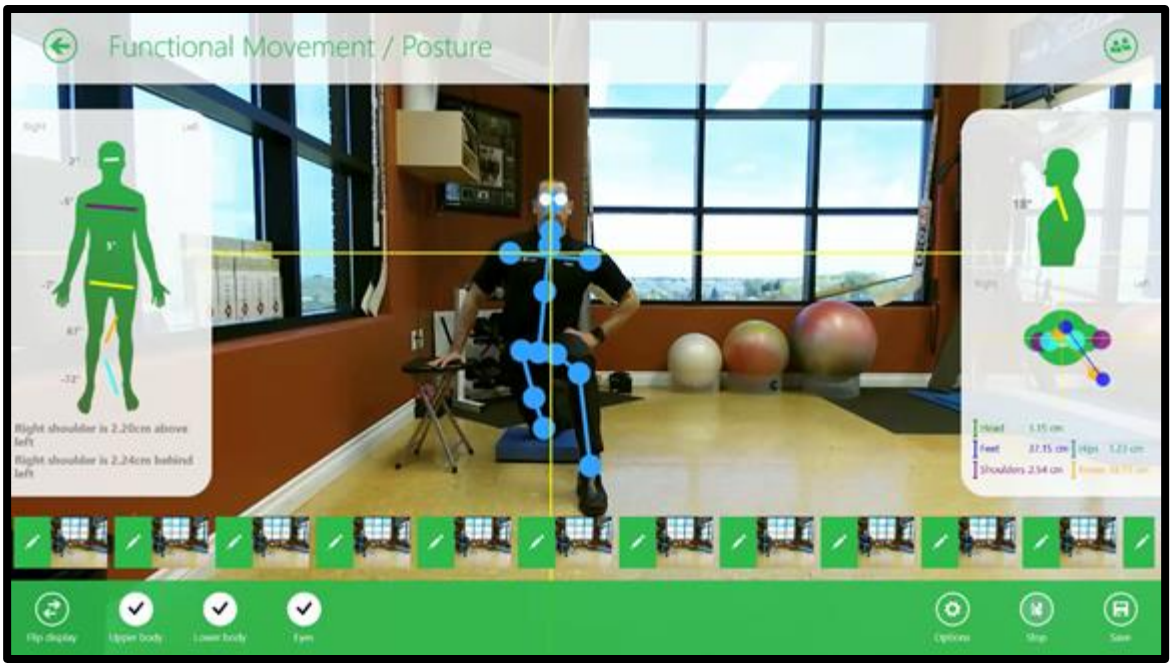
3 second count. Ideal lateral hip push is 2-3 inches while maintaining symmetry. This is considered as an L- movement.



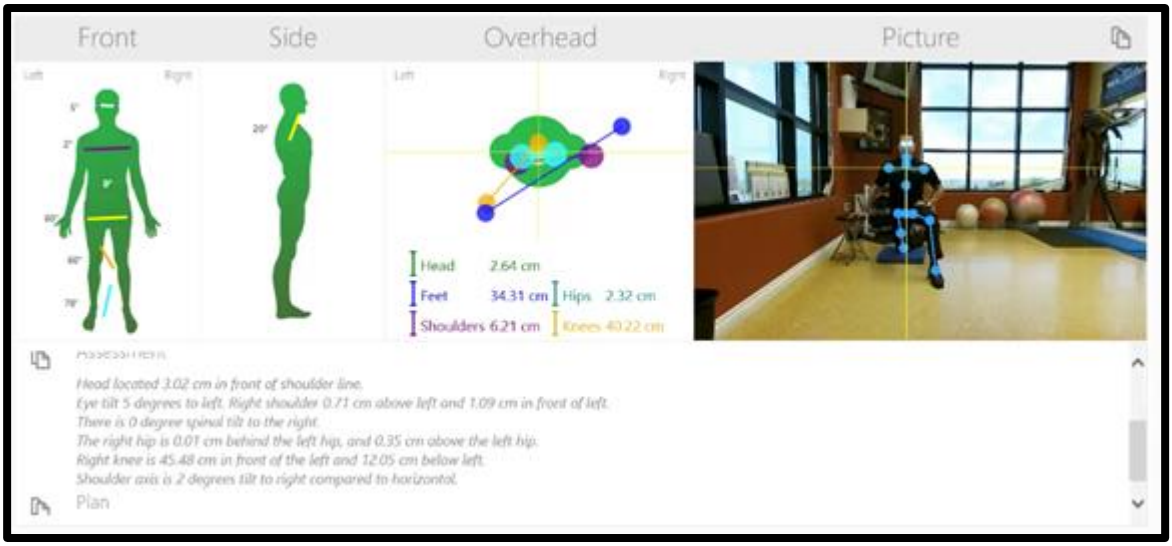
5. Capture the motion of starting position, lunge position and lateral shift position with the Kinetisense system. The system will demonstrate eye tilt, head carriage, shoulder tilt/rotation, hip tilt/rotation.

6. Move the hand support to the opposite side of the body. Have the patient reproduce the pelvic tilt, but push the hip across to the other side. Once again use the Kinetisense system to analyze the movement and provide real-time feedback to the patient. Ideal lateral hip push is 3-5 inches while maintaining symmetry.

7. Reproduce the movements above with the opposite knee down and compare data to that of the other lunge.



8. Click on the copy button from the Kinetisense® Analysis section and paste data into charting system. Kinetisense® automatically writes out all joint positions in sentence format to be pasted into chart notes (below).



Compensations

If the patient presents with a tight hip then that side will usually show the following on the Kinetisense® system (as seen below)…

i) Compensatory shoulder tilt (frontal plane)
ii) Compensatory hip tilt (frontal plane)
iii) Lumbar side bending (frontal plane)
iv) Reduced hip lunge (overhead view)
v) Reduced lateral hip shift (overhead view)
vi) Upper body forward tilt (overhead view)

Note- compare both medial and lateral shift to each side.

Treatment

Once the practitioner feels that the patient has developed proper technique then prescription of this protocol can be used as a form of treatment.

Reassess

Reassess the patient over the course of treatments with the Kinetisense® system to objectively demonstrate symmetry in the body.

Kinetisense Isolated Anterior Hip Assessment and Correction (Standing)

Ryan D. Comeau BSC, DC

This protocol is both an assessment and a treatment using the Kinetisense® Range of Motion Capture System.

Overview

Proper hip mobility is a crucial component of almost every sport, as well as many everyday activities. When there is limited hip mobility then compensation in the neuromuscular system is imminent, and abnormal forces are often transferred to joints such as the low back or the knees.

This protocol is an advancement to the “kneeling” version of the Anterior Hip Assessment. The standing version implements anterior hip tension that is produced by the tensor fascia latta (IT band) and the hamstring muscle group. The IT band is “slack” during the kneeling version of this assessments, therefore comparison of lateral pelvis translation between the two tests provides insight to the added tension to the lateral shift caused by the IT band/TFL and the hamstrings.

Applications

Running Stride
Skating Stride
Back pain
Knee pain
Ankle Pain
Pelvic pain
Shoulder/Neck pain
Kicking
Jumping

The Isolated Hip Assessment is a tool that evaluates hip mobility in extension in the standing position.

Protocol

1. Position the patient/client in an an open doorway with the Kinetisense system approximately 6-8 feet away.

2. Have the patient/client place the forearm against the frame of the doorway for support, ensure that the upper arm is at a 90 degree angle from the body.

3. Have the patient/client extend the hip of the leg of the same side at the support arm. The foot of the extended hip should 2-3 feet behind the opposite (forward) foot.

4. Instruct the patient/client to have a slight knee bend for the front leg.

5. Instruct the patient/client to square the hips to be in line with the camera. The hip axis positioning is displayed on the overhead view of the functional analysis system. The shoulder axis and hip axis should be aligned at the starting position of the assessment/correction.

6. Instruct the patient/client to perform a posterior tilt until there is a tension build up in the anterior hip, the knee of the back leg must remain extended during this part of the assessment. The heel of the posterior foot is allowed to lift, but the toes must remain on the ground. The foot of anterior positioned leg must remain flat on the ground for the duration of the assessment/correction.

7. While maintaining a “square” transverse shoulder and hip axis have the patient/client slowly press the hip towards the side of the supported arm. There should be a 3-5 inch lateral shift in the pelvis.

8. Be sure that there is minimal lateral shifting of the hip frontal plane, this angular tilt is displayed on the left side of the functional movement screen under the heading “hips”.

9. Switch leg position and perform the assessment/correction towards the same side.

10. Perform the two assessments with the opposite arm supported in the door frame while pushing the hip to that supported side.

Note: External and internal rotation of the posterior femur can be assessed in all of the assessments/corrections listed above. To produce external and internal rotation of the posterior leg have the patient turn the foot in (internal rotation or out (external rotation).

Compensations

If the patient presents with a tight hip then that side will usually show the following on the Kinetisense® system (as seen below)…

i) Compensatory shoulder tilt (frontal plane)
ii) Compensatory hip tilt (frontal plane)
iii) Lumbar side bending (frontal plane)
iv) Reduced hip lunge (overhead view)
v) Reduced lateral hip shift (overhead view)
vi) Upper body forward tilt (overhead view)

Note- compare both medial and lateral shift to each side.

Treatment

Once the practitioner feels that the patient has developed proper technique then prescription of this protocol can be used as a form of treatment.

Reassess

Reassess the patient over the course of treatments with the Kinetisense® system to objectively demonstrate symmetry in the body.

Kinetisense Lateral Band Walk

Ryan D. Comeau BSC, DC

This protocol is both an assessment and a treatment using the Kinetisense® Range of Motion Capture System.

Overview

The ability to properly load the posterior chain of the body is a key element in developing strength and power in explosive movements. Often athletes will tend to over activate the anterior chain muscles such as the quads during explosive movements such as the vertical leap, or a lateral pivot. Although power in the lower extremity does not exclusively come from the posterior chain there is often an underactivation of the posterior chain muscles, with a subsequent overactivation of the anterior chain. This compensatory pattern not only has a great impact on power speed and overall performance, but can also be a key factor in anterior hip pain, knee pain and ankle pain.

The Kinetisense Lateral Band Walk assessed the athlete's ability to maintain the "athletic position" while moving laterally with band resistance.

Athletic position

The ideal "athletic position" involves the following:

1. **Weight on the balls of the feet with the base of the foot in contact with the floor**. Anterior weight distribution onto the toes immediately places the body into a forward COM (center of mass) position, causing ealry activation of the anterior chain in movement.

2. **Feet shoulder width apart, this allows for stability and the ability to load and shift laterally**. Too wide of a stance reduces the "spring-like".loading of the lower body.
3. Knees slightly bent, and not passing anterior past the big toe.

4. **Tibial angle close to vertical.** A medial angle of the tibia is a common compensation in the athletic position and can place abnormal forces on the medial structures of the knee with lateral movement. A valgus collapse of the knee can be caused by hyperpronation of the ankle or by internal rotation of the femur.
5. Squaring of the trasnverse hip axis.
6.

Applications

-Monster Walk
-Palloff In-line lunge
-Modified pistol
-Lateral 1 leg hops
-hamstring teeter
-Athletic vertical jump
-Psoas wall slide