**HIP RANGE OF MOTION**

**Objectives:**

To compare the effects of participant positioning on hip active range of motion for internal and external rotation.

To understand planes and axes of motion.

To apply the knowledge of planes and axes for proper camera placement for motion analysis.

**Instructions:**

**Before the Zoom meeting:**

In preparation for this activity, please review Planes and Axis of Motion (watch video [here](https://drive.google.com/file/d/12Q0k7LODIa87q_sP0iTJ5XfSk6jJNYhD/view?usp=sharing)).

Briefly review the anatomy of the hip joint, including the main ligaments surrounding it.

Download Kinovea (Windows based only - <https://www.kinovea.org/>) or find an angle measuring tool from the materials below.

Materials:

- Goniometer, protractor, inclinometer app, or Kinovea software

- Chair

- Comfortable clothing (tight fitting is better)

 - Cell phone camera

**Procedures during Zoom meeting:**

* **Send participants to breakouts (15 min)**

- In your breakout groups, select one participant to take videos of themselves performing active hip internal and external rotation (make sure to select the appropriate plane and axis of view).

- Position: Sitting with hips and knees at 90 degrees of flexion - 3 trials for each movement

- The group should decide the best angle placement and consider the plane and axis of motion that would provide the best view. Make sure you are consistent with how you conducted your measurements.

- Observers should ensure that the testing position is the same for each trial.

- Note the anatomical landmarks used to make your angle measurements. Use an absolute angle with respect to the vertical line for this activity.

*You can do this in a single video file, just go through the motions 3 times for each direction.*

 [**SHARE YOUR VIDEOS HERE**](https://drive.google.com/drive/folders/1XbywaDjrNJET6ApBfxVVatkcZUuJAxcH?usp=sharing) before measuring to ensure you have the proper camera placement. Name your file after the breakout room number (example: group 1 if you are in breakout room 1).

- As a group, take 3 measurements of each position (using the Kinovea angle tool or another angle measuring tool), then calculate the average for each position.

- In an [**Excel spreadsheet**](https://docs.google.com/spreadsheets/d/14tgYu1R90nJPSyLdD0_V1-MK4dZ-LFIuIEd-L61g3Ws/edit?usp=sharing), record the average number measured for each trial.

**Data Analysis/ Discussion:**

Compare the results with hip ROM averages provided.

Discuss the effects of starting position, tester differences, and measurement methods on the results observed.

Questions?

**Check your measurement position with the** [**KEY**](https://docs.google.com/document/d/1lA13s9To-1c6dttHL8ZlCnYewmUItpfA4teNnj2IOb8/edit?usp=sharing)

**Reference:**

Normative Data:

Source 1: <https://www.jospt.org/doi/pdf/10.2519/jospt.1998.28.3.158>

Source 2: <https://blog.nasm.org/measuring-joint-range-of-motion-part-2>