

## KIN 147

### Lab 04: **Walking** Video and GRF Data Collection

#### GENERAL INSTRUCTIONS

- Labs will be conducted in two parts: Monday labs will be for data collection; Wednesday labs will be for data analysis.
  - Data Collection Days
    - You will be assigned to 1 of 4 groups
    - Each group will have 5 students
      - One student in each group will be the participant
        - The student who is the participant will change each week
        - No student can be the participant a second, or third, time until all of the members of the group have been the participant for the first, or second, time.
      - The other four students will collect the data
- If you are the participant, you **MUST** wear the following during data collection sessions
  - Athletic shoes
  - **Tight-fitting shorts (no leggings, no yoga pants, no baggy shorts!)**
    - **Examples: biking shorts, compression shorts, and spandex shorts**
  - A tight-fitting t-shirt
- Failure to wear the appropriate clothing will result in a loss of 20% for the entire lab group.

#### LAB SPECIFIC INSTRUCTIONS

- Read the instructions **COMPLETELY** before coming to your data collection session.
- You will be collecting 2D video and ground reaction force data.
- **Each member of your group will be performing the following walks.**
  - Shod Walking
  - Barefoot Walking
- **Pre-Movement Activities**
  - **BEFORE** coming to the data collection lab section, your lab group should get together and **MAKE SURE**, the participant
    - **KNOWS** exactly what movement they are going to perform
    - **PRACTICES** the movement before coming to lab
    - Points will be **DEDUCTED** if from each member of your lab group, if the participant is **NOT PREPARED** for the data collection session.
  - **For the Participant**
    - Wrap flexwrap around the left thigh (once) 3-4 inches above the knee
    - Wrap flexwrap around the left thigh (once) as close to the pelvis as possible

- **Video camera setup**
  - **You will be using two video cameras**
  - Turn on each video camera. Look at the digital viewfinder and perform the following:
    - Put the camera into the Shutter Speed AE mode
      - There is a circular dial on the top of the video camera
      - Rotate this dial until a capital letter “S” appears in the middle top of the display.
    - There is a circular ring around the “set” button
      - Push the bottom edge of the ring. This will bring up menu on the left hand side of the display
      - Set the camera EV shift to +1.0
        - Push the top edge of the ring to move the selection to the label “EV Shift”
        - Push the right edge of the ring to change the EV shift to +1.0
      - Set the camera shutter speed to 1/1000 of a second
        - Push the top edge of the ring to move the selection to the label “S”
        - Push the right edge of the ring to change the shutter speed to “1/1000”
      - Set the camera focus to “∞”
        - Push the top edge of the ring to move the selection to the label “focus”
        - Push the right edge of the ring to change the focus to “∞”
      - Set the camera white balance to “Day/White Fluorescent”
        - Push the top edge of the ring to move the selection to the label “white balance”
        - Push the right edge of the ring to change the white balance to “DayWhite Fluorescent”
        - “Push the “set” button
    - Press the “menu” button
      - Two tab menus will appear at the left edge of the display
      - Make sure the tab with the little camera is selected
        - If it is not, push the left edge of the ring to select the current tab
        - Push the top edge of the ring surrounding the “set” button to select the tab with a little camera on it.
        - Push the right edge of the ring surrounding the “set” button to select the menu for this tab
      - Push the bottom edge of the ring surrounding the “set” button to select “Movie Quality”
      - Push the right edge of the ring surrounding the “set” to bring up a list of camera speeds (i.e., frame rates).
      - Push the top or bottom edge of the ring surrounding the “set” to select HS240.
      - Push the “set” button.
      - The letters and numbers HS240 should in the top right corner of the display if you do this correctly.

- **Place the video cameras and tripods in their **NEW** designated locations.**
- **Adjust each video camera and tripod for the participant**
  - Make sure the video camera is horizontally level (left-to-right AND front-to-back)
    - In the video camera field of view, the floor should be horizontal
    - Look at the camera from the side, it should not be tilted down or up. It should be level horizontally.
  - Adjust the video camera and tripod so that they are perpendicular to the sagittal plane of the walker
    - In the video camera field of view, the 2-inch wide white line should point straight towards the opposite wall.
  - Adjust the tripod so the lens of the video camera is at waist height of the participant when they are standing on the force plates
  - Adjust the video camera zoom
    - Using the video camera's zoom feature, zoom the field of view so that the participants head is close to the top of the field of view.
- **In your data collection journal,**
  - Before a member of your group performs their walks, you must record the following:
    - The name of the student performing the walks (the **participant**)
  - After each walk, you must record the following:
    - Which walk was performed?
    - Whether or not the walk was a good data collection trial or one that needed to be redone
      - **For this lab, a good walk occurs if the LEFT FOOT contacts the first force plate AND the participant DOES NOT CHANGE their STRIDE or their CADENCE when walking over the force plates when compared to their stride and cadence before reaching the force plate – THIS IS IMPORTANT**
      - **Ms. Watson and Dr. Kao will be reviewing video from the Nexus system that gives a wide field of view of the walking trials. Should we find that there was a change in stride, a change in cadence, or the left foot did not contact the first force plate, we will not grade either your video or your GRF data.**
- **Data Collection Activities**
  - **Collecting the Data**
    - **The participant will initially stand where the two white lines intersect on the first force plate. The participant must face the east wall**
      - **You will be calibrating this standing height**
    - Once everyone is ready, the student in charge of data collection gives the command to **START the video cameras.**
    - The students in charge of each video camera performs the following:
      - Push the button with the “solid red circle” on it.
      - **BE CAREFUL TO NOT MOVE THE VIDEO CAMERA WHEN YOU PUSH THIS BUTTON**
    - The student in charge of the data collection then waits 2 seconds and then gives the command **FOR THE PARTICIPANT TO walk to the starting point (orange cone I) for the walking trial at the end of the green walkway near the desk area**

- Once the participant is in the starting position, the student in charge of data collection gives the command **READY**.
- Dr. Kao or Ms. Watson will start the vertical ground reaction force data collection system and say **GO**.
- The student in charge of the data collection then waits 2 seconds and then gives the command for the participant to **perform the required walk**
- **After the participant's the end of the walk (orange cone II),**
  - **The video data collectors perform the following:**
    - **Push the button with the "solid red circle" on it.**
    - **BE CAREFUL TO NOT MOVE THE VIDEO CAMERA WHEN YOU PUSH THIS BUTTON**
- Repeat the preceding steps for the other footwear condition.
- Repeat the process for each member of your group

**KEEP THE FOLLOWING IN MIND:**

- 1) Your lab grade is dependent on good data collected by your lab partners.
  - a) **If you don't believe good data were collected for any reason, redo the walk**
- 2) There will be **NO** changes to lab grades because poor data were collected.