- Intro(4+4+4+7+6+4)=29 seconds
    - We're Team 7, Wearable Computers for the Quantification of Lower Back Disorders
    - We are mentored by Dr. Jafari of ESP Lab at Texas A&M University
    - We're using wearable inertial sensors combined with a Microsoft Kinect to gather data to model a **patient's** lower back, and then transmit that data to a central computer.
    - These **signals** will be synchronized, corrected, and analyzed, giving a quantification of the severity of the patient's lower back disorder.
    - This information will be stored in a database and displayed for a medical technician.
- Wearables(7+6+8+7+6+7)=41 seconds
    - Two MotionNet sensors, provided by ESP Lab, will be placed along the lumbar region of the patient's spine, secured and buttoned to Polar Soft Straps.
    - I have collected over 20 hours of tests from the sensors in an attempt to characterize the "drift" error of the IMU's gyroscopes.
    - "Drift" error compounds, reducing the accuracy of the sensors over a long period of time as seen from the raw data on the left. On the right is the correction I have developed thus far.
    - Current drift correction models are not viable for hour plus long intervals. Which is the goal for repeated testing without recharging the sensors.
    - I will use the accelerometers and Kinect to error check and further the accuracy of the gyroscopes through Kalman filters.
    - Additionally, there is a small amount of movement between the PCB and the existing 3D box case, so I am working to print a new, fitted enclosure.

- Vicon (8+5+8)=21 seconds
    - We will use a Vicon, a highly accurate motion capture system of infrared cameras focused on a central point, to verify the accuracy of the IMU's and Kinect.
    - Ben Johnston is seen here demonstrating the trunk flex exercise, along with the resultant camera view of the Vicon.
    - **The** IMU's, Kinect, and Vicon data must be interpolated into the same relative global frame for the verification. This will be accomplished in the coming months.