I. Quantitative Measures of Upper Extremity & Motion Analysis
   A. Surveillance / Monitor
   B. Objective assessment of UE activity & performance
   C. Augmenting performance during intervention

II. Opportunities
   A. Previously
      1. Videotape; parent diaries (Adolph et al., 1998)
      2. Kinematics / kinetic in lab (Duff et al., 2003, 2009)
      3. Direct supervision in rehab
   B. Now
      1. Trackers / Inertial sensors / Markerless systems (i.e., Kinect)
      2. Wireless SEMG systems (Trigno™, Delsys, Inc)
      3. Indirect tele-rehabilitation

III. Trackers / Inertial sensors
   A. Advantages
      1. Minimal set-up
      2. Portable - allows home & community monitoring
   B. APDM Opal Sensors (Horak et al., 2015)
      1. 3 Axes of data collection
         a. Acceleration: Translational acceleration (m/s²)
         b. Gyroscope: Angular velocity (rad/s)
         c. Magnetometer: Magnetic heading (μT)
      2. 20-200 Hz sampling rate
      3. Stream in real time or log data to download later
   C. Case examples
      1. Correlation with clinical assessments (Duff et al., 2016; 2017)
      2. Interlimb Coordination (Duff et al., 2017; Garrison & Wade, 2015)

IV. Triggered biofeedback
   A. Rational/Questions (Duff et al. 2007; Gilbert & Tassin, 1984; Waters & Pelijovich, 1999)
   B. Procedures - Results
VI. References