

**Project:** Identify significant problem (compare/contrast),

- Generate meaningful hypotheses based on mechanics and peer-reviewed literature
  - Design and conduct a biomechanical experiment (to test hypotheses)
  - Choose correct tools for the job (variables used to test hypotheses)
  - Present data to facilitate interpretation of results ( specific to hypotheses)
  - Discuss results in light of peer reviewed literature
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- **Presentation:** All slides >18 Font, no more than 8 lines of text(Min of 10, Max of 15 slides)
  - Slide 1: **Title** (names) picture of task in real world?
  - Slide 2: **Background/Significance of Problem of Interest**
    - What is known/unknown about the problem based on peer reviewed literature
    - Note references (McNitt-Gray et al., 2001)
  - Slide 3: **State Mechanical Objective of Task**
  - Slide 4: **Provide rationale for why comparing the task under two conditions**  
Guess/hypothesize what will be different/same and why
    - Forces causing changes in total body momentum?
    - Multi-joint coordination/ differences in kinematic context?
    - Joint kinetics to assess mechanical demand imposed on extremity
  - Slide 5: **Methods**
    - Sampling frequencies for force and kinematics
    - Instructions given to performer ( what was intent of task)
    - Image sequence of each task

Slide 6: Force-time curves on same graph depicting key aspects of **impulse generation**

- identify interval of interest (time1, time 2) specific to mechanical objective
- use net impulse = change in momentum relationship to analyze task mechanics

Slide 7: Angle-angle graph depicting key aspects of **multi-joint coordination**

- select angles that provide insight about how mechanical objective is achieved and kinematic context for muscle force generation
- plot using points so that can detect velocity changes

Slide 8: Use image sequence of each task and identify instant analyzed **joint kinetics**

- Draw FBD using known force and kinematics
- Use vector size and direction to note differences in joint kinetics between tasks

Slide 9: **Summarize your Results** specific to initial guess and discuss what you learned

Slide 10: **Compare your results to findings in the literature**

**Associated Materials:** HAND to Dr. McNitt-Gray BEFORE Present in Lab

- Print out slides (must be able to read all text numbers on graphs on printed version)
- Hand written Free Body Diagrams and calculations for joint kinetics (show all work)
- **Email Teaching Assistant:**
- Related scientific journal articles (.pdf emailed to TA prior to presentation)
- Peer evaluation of team (emailed to TA prior to presentation)