Introduction

- As personal fitness is increasingly prevalent in society, a focus on maintaining safe exercise technique is crucial in avoiding training injury.
- Stationary biking, or spinning, is an exercise commonly done in large group settings led by an instructor who controls cycling intensity, but does not closely monitor individual technique.
- Over long duration training, fatigue may cause improper cycling form, leading to knee, hip, and back injuries. Performance fatigue research is also applicable to the military, athletics, and clinical rehabilitation.

Objectives

1. Develop streamlined protocol for long duration volunteer testing.
2. Establish analysis pipeline for post processing of kinematic, kinetic, and physiological data.
4. Identify volunteer parameters potentially linked to the fatigue process.

Methods

- **Guided Endurance Routine**
  - Duration: 2.5 minutes
  - Resistance: Low
  - Target RPM: 60-75
  - 2.5 minutes: Medium
  - 2.5 minutes: High
  - Maintain: High

- **Muscles of Interest**
  - Pre-Fatigue Lower Extremity EMG Signals
  - Fatigued Lower Extremity EMG Signals
  - Hip Adduction vs. Crank Angle
  - Hip Internal Rotation vs. Crank Angle
  - Lumbar Extension vs. Crank Angle
  - Patellar Center of Mass: Femur
  - Torso Center of Mass: Femur

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References