A. **Briefly describe overall research program at your laboratory.**  The Laboratory of Orthopaedic Design and Engineering conducts research, innovation, and design in the areas of musculoskeletal orthopaedics, rehabilitation, and sports medicine.

B. **Briefly describe specific project(s) for your teacher:** For golfers of all skill levels and age groups strength, flexibility, and balance have been studied for direct effect on performance. Adequate strength, flexibility, and balance are believed to combine to optimize swing mechanics and can lead to improved swing outcomes, such as carry distance and accuracy. The golf swing is a complex three-dimensional movement that utilizes numerous muscle groups and requires high levels of hand-eye coordination, balance, and flexibility. High speed 3D motion capture systems are often used to examine the golf swing in detail. These motion capture systems rely on multicamera tracking of strategically placed reflectors to provide detailed information of the motion of the subject. The aim of the project is to examine the effect of balance and balance improvements on internal swing consistency in golfers. Initial piloting of the research methodology will be required. The proposed methodology includes balance assessments using both visual inspection and force plate data and swing kinematics assessments using 3D motion capture. The project will require development of effective and efficient balance assessment using previously developed methods. Additionally, the project will require the teacher to assist with initial 3D motion capture set up and analysis. The project will analyze balance and swing kinematics.

C. **Will any other people (post docs, grad students, undergraduate students, colleagues, etc.) be involved directly with your teacher?** There will be two graduate students that will work directly with the teacher.

D. **Will you require any advanced reading/preparation for the teacher? If yes, please briefly describe.** Some brief reading will be required. Reading will consist of background on 3D motion capture in golf and the different balance assessments that will serve as a base for the development of the balance protocol.