**SYNOPSIS OF PROPOSAL**

Neuromuscular Contributions to Knee Instability

1. The possible sources of volunteers for this study will be about 40 volunteers that are either pursuing an undergraduate and graduate degree at Texas State University. We will be using a strength testing machine and two video cameras located in the Athletic Training Research Lab in the Jowers building, room D108. The inclusion criterion is: subjects must be female, between the ages 18 to 25, and have been physically active for the past 6 months to year. This research is targeting the female population because females have a higher incidence rate of knee injuries than in males. Physical activity will be defined as 30 or more minutes per day at least 3 to 5 times per week. Subjects will be excluded from the study if they have had surgery or an injury to their low back or lower extremity within the past two years. To determine physical activity and past injuries a medical history form will be filled out along with the informed consent form.
2. Subject recruitment will take place at the Texas State University campus in classes that take place in the Department of Health, Physical Education and Recreation. Recruitment will be open to undergraduate and graduate students including athletes. Once the volunteers are recruited they will meet with the principle investigator. The principle investigator will go over the general reason for conducting the study, the step by step procedures, and requirements to maintain physical activity during the duration of the study and then will answer any questions regarding the study. After all questions are answered then each individual subject will read over the consent form and then sign in agreement to participate in the study. Each subject will be given a copy of the consent form for future reference if needed.
3. The procedures for the study will be completed as follows. First each subject will warm-up on a stationary bicycle before strength testing begins. The primary investigator will direct the subjects through the strength testing of their favorite thigh muscles on the strength testing machine. Reflectors will then be placed on the hip, knee and ankle as reference points. Once all reflectors are in place each subject will perform a practice single leg lowering exercise on a box and the principle investigator will assure that their form is correct. Each subject will then complete three single leg lowering exercises on a box with the favorite leg. Next each subject will go through a muscle fatiguing task of the thigh muscles. The thigh muscles will be worked until subjects are only able to produce 50% of their strength from the previously recorded strength testing results. Immediately following the fatiguing task three single leg lowering exercises will be completed on the favorite leg. All single leg lowering exercises will be recorded using video cameras from the front and side view. The data will be analyzed using the Dart Fish program.
4. This study does not pose any major risks to the subjects that are participating. Only minor discomforts may be experienced due to possible fatigue during the experiment. Discomforts may include delayed onset muscle soreness (DOMS) which may affect the subject within 24 to 48 hours.
5. The potential risks for this experiment are minimal because the subjects will be supervised by the principle investigator during the duration of the study assuring correct use of the strength testing machine and form during the single leg lowering exercise. Risk of injury and developing muscle soreness will be minimized by warming up prior to strength testing and cooling down post fatigue protocol and testing. All data gathered will be kept confidential by assigning the subjects with a random number for the duration of the study. Personal information will not be required and the consent forms will be secured in the principle investigator’s office.
6. The benefits from this investigation will provide information about the relationship, if any, between muscular strength, fatigue and lower extremity movement for the athletic and medical community. Furthermore, the results from this investigation may help the subjects learn about their thigh muscle strength, any lower extremity movement deficits, and the level at which the lower extremity is affected by fatigue.
7. There will not be any compensation offered or provided to the participants for this study. However, subjects will be provided with feedback regarding strength of the thigh muscles, fatigue level, and lower extremity movement.
8. It is clearly evident that the benefits of this study outweigh any potential risks to the subjects. Precautions are being taken to decrease the risk of injury or muscle soreness by maintaining content supervision and including a warm up before testing and a cool down session post testing.
9. The Athletic Training Research Lab in the Jowers Building at Texas State University will be used for testing. There are no current agencies for this study.
10. This study relates to my program of work by investigating the possible causes of lower extremity incidence of injuries in the female population. The results of this study will hopefully provide the subjects and the community with vital information regarding strength, fatigue, and movement of the lower extremity. My supervising faculty member is Dr. Jack Ransone.
11. This proposed study has not been reviewed by another IRB.
12. Future researchers and the committee will have access to the results of this study.