**Consent to Participate in Research-**

**--Skeletal Muscle Biopsy section--**

Four skeletal muscle biopsies will be obtained (before and after each running session in the lab). Skeletal muscle biopsies will be obtained using sterile techniques under the supervision of a medical doctor with a surgical background (Dr’s Name, Address, & Phone Number Here).

Skeletal muscle biopsies will be obtained from your thigh before and after each run trial to exhaustion. The post-run biopsy will be obtained about one inch from the pre-run biopsy site. Skeletal muscle samples will be collected from the opposite leg for the second run trial, with leg order randomly assigned.

Local anesthesia (2% Lidocaine) will be injected under your skin and near your muscle so that the area of the biopsy will be numb. Muscle biopsy samples will be obtained using a special needle biopsy procedure. The muscle biopsy procedure is used in many laboratories nationwide, and involves the insertion of a hollow bored needle under local anaesthetic and sterile conditions to obtain a small “plug” of muscle (~75-100 mg). Just prior to muscle biopsy collection, you will hear a verbal description of the procedure and be given a chance to ask questions. You will be asked about any allergy to “caine” anesthetics commonly called xylocaine (lidocaine) or novocain (procaine). Hair will first be removed from your thigh (outer side area above the knee). The skin will be cleaned with surgical prep. A local anesthetic (xylocaine or novocain) will be injected into a small area through three or four punctures, and this will cause some burning and mild stinging. A sterile scalpel blade will be used to make a small incision (approximately half an inch long) through the skin and fascia (the connective tissue surrounding the muscle). Pressure will be applied to the area with sterile gauze to limit bleeding. Prior to the muscle biopsy, you will be instructed to keep the thigh muscle as relaxed as possible and to be aware that you will feel an unusual pressure in the muscle and a slight tendency for the muscle to cramp. The sterile biopsy needle will be inserted through the skin and fascia into the muscle, and a small “plug” of muscle removed (size of a green pea). After the biopsy a cold pack will be placed over the incision for 10-15 minutes. The incision will be closed with surgical adhesive, butterfly stiches (elastic skin closures) will be applied over the adhesive, and a pressure wrap will be applied to keep the incision site closed. You will be instructed not to remove the bandage for 4 days. You will be provided with instructions on how to treat the incision as well as what to expect for the normal healing process, and provided with phone numbers of the investigators and Dr. ----- to call if concerns or questions about the incision arise (e.g., undue redness and swelling). You will be instructed to keep the butterfly stiches on the muscle biopsy site for at least 4 days before self-removal. You will not be able to take pain relief medications after the muscle biopsy procedures.

**What are possible harms or discomforts that I might experience during the research?**

The risk of harm for participating in this research study involves greater discomfort than normally encountered in daily life. Ingestion of ----- is safe and has no known side effects.

You are being asked to perform high-intensity or maximal exercise that may lead to physical discomforts (e.g., fatigue and nausea). The risks associated with participating in this study may include muscle cramps, muscle strain and/or joint injury, delayed muscle soreness, light headedness, and fatigue. You may feel delayed muscle soreness (24-48 hours) after exercise. There is a risk of cardiovascular event (approximately 6 in 100,000 middle aged men) such as a heart attack or rhythm disturbance, since the exercise will be very high intensity. To manage possible risks, there will be at least one CPR-certified investigator present at the testing, as well as a telephone available should an emergency arise. If at any time during the test you want to stop, you can signal as instructed and we will stop the test. You will feel very tired at the end of the test, but should recover within a few minutes. Subjects will be supervised at all times by someone trained in first aid and CPR.

The risks of collecting a blood sample (venipuncture) from you include the possibility of requiring more than one attempt to obtain the blood sample, local discomfort (pinch when the needle enters your skin), minor bruising or bleeding at the site (10%), or possible temporary lightheadedness, infection (<0.01%), or development of a blood clot (< 0.01%). The amount of blood being withdrawn during this study from each blood sample is a little over two tablespoons. Six blood samples will be taken during the entire study (14 tablespoons). The amount of blood being withdrawn will not affect your ability to participate in normal daily or training activities. A trained and experienced individual will perform the technique and your blood will be collected in a hygienic setting with sterile materials and biohazard protection measures to minimize these risks. In the rare case of exposure of your blood or tissue to research personnel, we will analyze your blood for HIV and hepatitis (a positive HIV or hepatitis test will be reported to you).

There are some risks associated with the skeletal muscle biopsy technique. These risks may include slight discomfort with pressure or “tugging” sensations; however, most of the discomfort will subside 1-2 days after the technique. The use of a local anesthetic (numbing agent) will help minimize these risks. You may experience some mild discomfort (burning or stinging) when the local anesthetic is injected (before the area becomes numb). There is an extremely small risk that you will have an allergic reaction to the local anesthetic; however, subjects with this history will not be allowed into the study. Other risks associated with the muscle biopsy technique include infection, bleeding at the biopsy site, bruising of the area, damage to the muscle tissue or other tissues in the area (very rare; 2 in 1,600 cases), and temporary lightheadedness. Using sterile materials/techniques and applying a cold compress and pressure to the biopsy site will minimize these risks. The muscle biopsy incision site will be closed by surgical adhesive and butterfly stiches. You will be given a checklist of symptoms to watch for and asked to report the occurrence of any of the symptoms immediately to the research staff. You will be asked to seek medical attention if you have any of the symptoms on the list. Standard precautions (samples taken in a hygienic setting with sterile materials and biohazard protection measures) will be used throughout all muscle biopsies. All muscle biopsies will be performed under the supervision of Dr. ----- to minimize these risks. In the rare case of exposure of blood or tissue to research personnel, testing will be conducted for HIV and hepatitis (a positive HIV or hepatitis test will be reported to the subject).