Department of Veterans Affairs

# VA RESEARCH CONSENT FORM

**Subject Name:** _____ **Date:**_____

**ICF Template version: 3/10/2015**

**Title of Research Study:** Skeletal Muscle Hypertrophy and Cardio-Metabolic Benefits after Spinal Cord Injury

**Sponsor:** DOD-CDRMP

**Protocol No:**

**Investigator Name and Address**: Ashraf S. Gorgey, MPT, PhD, FACSM
1201 Broad Rock Blvd.
Richmond, Virginia 23249

## 1. What is this research study about? (Introduction)

You are being asked to volunteer for this research study because you are a person with a spinal cord injury (SCI). This study involves research to determine the effectiveness of surface neuromuscular electrical stimulation (NMES) accompanied with ankle weights and functional electrical stimulation (FES) bike on body composition and metabolism. NMES and FES are electrical shock exercises for your paralyzed legs and are described below.

If you participate, you will then be randomly assigned (like a flip of a coin) to receive NMES+FES and or just passive movement +FES (control +FES) for two 12 week periods. There will be 24 subjects in each group. The study visits for both groups will be twice weekly to exercise the knee muscle groups in the sitting position. A series of tests/procedures described below will be done at the beginning of your participation and after each 12 week period.

The expected duration of your participation is 27 weeks (3 weeks of testing +24 weeks of training, twice weekly). You will be one of 48 subjects enrolled in this study.

## 2. What is expected of me? (Procedures)

If you agree to participate and sign this consent form the following study procedures will be done.

MIRB APPROVED
9/17/15

**A. Measurements**
**Day 1-McGuire VA Hospital and Imaging Facility**

- You will be asked to undergo a complete physical examination, (One time- 30 to 45 minutes). Your blood pressure, heart rate and an electrocardiogram (EKG, heart tracing) will be done. Depending on the results of these tests the study doctor will discuss with you if you are eligible to continue in this study.

- If you are eligible to continue, your weight, height, waist and abdominal measurements will be taken. Your body fat, lean and bone mass will be measured using x-rays (DXA). While lying on a table, we will measure different components of your body. The measurements will be performed 3 times. Each scan takes 20 minutes.- Magnetic Resonance Imaging (MRI) scans will be obtained to measure abdominal fat and lower leg muscles size at Hunter Holmes McGuire VA Hospital. This procedure involves lying still on a table during the scan period. The measurements will be performed 3 times. Each MRI scan takes 45 minutes..

- You will then be escorted to the VCU Clinical Research Service (CRS) for dinner, and will remain overnight. The CRS is located on the 8th floor in the North Hospital at VCU. It is a section reserved only for subjects enrolled in research studies. You will need to sign a separate consent form for the procedures and test done at the VCUCRS.

**Day 2- VCU Clinical Research Service**

- At 6 am, you will be awakened for determination of basal metabolic rate (BMR). The BMR test is performed to determine how much oxygen your body uses at rest. This measurement requires that a large clear plastic dome is placed over your head and the air you breathe will be measured. The dome placed over your head will provide you with plenty of air. You will be instructed to remain awake, but quiet and still, during this testing procedure which will take approximately 45 minutes. Resting blood pressure s will be obtained.

- Two IV lines (small plastic tubes) will then be placed in your arms, and blood samples will be drawn at 6:30, 7:00 and 7:30 am.

- This will be followed by a 3-hour intravenous glucose tolerance test (IVGTT). An IVGTT examines your sugar tolerance and how your body uses insulin. Glucose and insulin will be injected into one IV line Blood samples will be drawn from the other IV line. Three blood samples will be obtained. Glucose will be injected in to your vein over 20 seconds at the start of the test. Blood samples will be taken at multiple times between minutes 3 and 180 of the test. Twenty minutes into the test, a small dose of insulin will be injected into your arm vein. The total amount of blood drawn during the entire study is about 7 tablespoons.

- During the 3 hour-IVGTT, a dietician will meet with you to ensure that you will follow a standard diet during the 24 week-interventions (45% carbohydrate, 35% fat and 25% protein). You will be asked to maintain a 3 day food record during the course of the study. The forms will be evaluated weekly by the dietitian to provide monthly feedback. You will be asked to meet with the dietitian two times during the course of the study (baseline and week 12) to make sure you follow the diet throughout the study.

**Day 2- McGuire VA Hospital**

- Immediately after the IVGG you will be transported back to the McGuire VA Hospital. Three small muscle biopsy samples will be taken from the knee muscle group to determine the effects of exercise. A numbing medication will be injected at the biopsy sites and a ¼ inch skin incision will be made with a small surgical scalpel. A special biopsy needle will be inserted through the skin incision and into the muscle and a small amount of muscle (3-4 pieces) will be collected, after which the site will be closed and a pressure dressing applied for at least 10 minutes. Muscle biopsy will be done three times, before and after each 12 week period . You are free to return home after this.

**Day 5-McGuire VA Hospital**

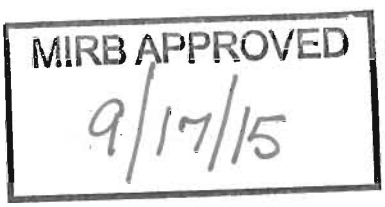
- Three days after completing the muscle biopsy, you will be asked to return to McGuire VA Medical Center to measure the force that can be generated from your knee muscle group as well as the tone in your muscle by using a special chair. The chair is located at the SCI Exercise Physiology laboratory. You will be transferred to the chair by using a ceiling lift. Then each knee muscle group will be stimulated with electrical stimulation current and the force will be recorded. These measurements will be done 3 times. This is followed by riding an electrical bike to determine your cycling performance. Your time commitment is 120 minutes/ visit.

- A small clear mask will be placed on your face and you will be asked to ride a Functional Electrical bicycle, which is a stationary bicycle at the start of the study and again at the end of both 12 week intervals to determine the amount of energy you use during exercise. Your heart rate will be measured.

-You will be asked to complete a questionnaire about the level of your physical activity at the beginning, middle, and the end of the study.

**Randomization:**

You will be assigned by chance (like the flip of a coin) to one of two groups **Group 1 NMES +FES bike** (Resistance Training (RT) using electrical stimulation and electrical stimulation bike or **Group 2 the Control group + FES bike.** A diet recall form will be given to you to record everything you eat and drink for 3 days. You will be asked to give this form to the study staff.



**B. Interventions for 24 weeks (NMES+FES vs Control +FES) at the McGuire VA Hospital**

If you have been assigned to the NMES +FES **group**, you will receive 12 weeks of electrical leg shock with ankle weights that will be done while sitting in your wheelchair. Electrical current from the stimulator will be slowly increased in 5-second intervals to cause full leg extension. Once full knee extension is achieved in a sitting position, an extra 2 lbs of weight will be added on a weekly basis. Each session will consist of 4 sets of 10 knee extensions and it will last for 45-60 minutes. Training will be alternated between right and left legs.

If you are assigned to the control+ FES group, you will receive 12 weeks of passive movement that will be done while sitting in your wheelchair. One of the research staff will be moving your leg up and down to perform 4 sets of 10 knee extensions. Training will last for 30 minutes

For the second 12 week period, you will ride an electrical stimulation bike while sitting in your wheelchair. Every 10 minutes, the resistance of the bike will increase to make you work harder. Two patches will be placed on the skin of both knees, upper legs and buttocks. A small electrical current will stimulate the leg muscles to pedal. The study staff will monitor your blood pressure and pulse at the beginning, during and at the end of each exercise session. We are expecting a duration of 30 minutes of active cycling, plus 10 minutes warm-up and 10 minutes of cool down for a total of 50 minutes.

**3. Will the research benefit me? (Benefits)**

It is possible that you may receive no benefit from participating in this study. Information from this study may help others in the future.

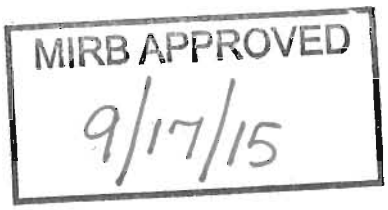
**4. What are my alternatives to being a research subject? (Alternative Therapy)**

You do not have to participate in this study to receive treatment for your condition. Your alternative is to decline participation in the study.

**5. What are my risks? (Risks, Inconveniences, Discomforts)**

Participation in this study may involve risks that are unknown at this time. Your condition may stay the same, may improve or may worsen from study participation.

All drugs have the potential to cause allergic reactions including the drugs used in this study. Allergic reactions may be mild to severe, and include the following symptoms: chills, fever, skin rash, hives, itching, watery eyes, swelling, headache, difficulty breathing, difficulty swallowing, severely low blood pressure, organ failure, and death. Serious allergic reactions require immediate medical attention.



| What may present a risk? | Possible Risk/Side Effect | How often has it occurred? |
|---|---|---|
| Venous catheter insertion and Blood draws | 1. Localized swelling, soreness, bruising, and chance of infection, bleeding, pain, light-headedness or possible fainting. A total of 7 tablespoons will be collected. | It occasionally occurs |
| Muscle Biopsy | 1. Localized swelling, soreness, bruising, chance of infection, bleeding, pain, lightheadedness or possible fainting<br>2. The numbing medication can cause allergic reaction including skin rash and rapid heart rate | It is uncommon<br>It is uncommon |
| IVGTT | 1. Hypoglycemia (low blood sugar) with dizziness, sweating, and nausea<br>2. Seizures, coma, or death | 1. It occasionally occurs.<br>2. Unlikely |
| IV line failure | Discomfort, swelling, redness over the IV line site causing failure to use the line. Another IV will need to be placed in another part of your arm. | Occasionally occurs |
| Pressure wound from skin irritation during exercise | Break in your skin creating a wound requiring daily wound care. | Occasionally occurs, but no more so than usual activities. |
| DXA | This research study will involve exposure to radiation from 3 whole body DEXA scans. This radiation exposure is not necessary for your medical care and is for research purposes only. All radiation increases the risk of developing cancer in the future. The total amount of radiation that you will receive in this study is equal to less than 6 days of exposure from natural background radiation. The McGuire VA Medical Center Radiation Safety Committee has reviewed the use of radiation in this research study and has approved this | Unlikely |

| | | |
|---|---|---|
| | use as involving acceptable risk and necessary to obtain the research information desired. Please tell your doctor if you have taken part in other research studies or received any other medical care recently involving radiation. | |
| MRI | Anxiety, dizziness, and claustrophobia | Occasionally |
| Electrical Stimulation Exercise | 1. Light-headedness, shortness of breath and altered heart rate& blood pressure leading to autonomic dysreflexia. Muscle soreness at your neck, upper back, shoulders, arms & hands<br>2. Fracture<br>3. Autonomic dysreflexia (slow heart rate, high blood pressure, headache flushing &sweating) which may be life threatening<br>4. Pressure Ulcers<br>5. Fainting, heart attacks or death | Unlikely<br>Unlikely<br>Unlikely<br>Unlikely<br>Unlikely |

**6. Will I get paid? (Compensation)**
You will receive $2,000 for your participation in this study according to the following schedule. After completion of the initial 6 weeks of testing and training, you will receive $500. You will get $500 at weeks 12, 18 and 24. The compensation offsets for transportation costs and participation in the study.

If you receive payments from McGuire Research Institute greater than $600 in a calendar year they will be reported to the IRS along with your social security number.

**7. Will I have to pay? (Cost of Participation)**
You will <u>not</u> have to pay for care received as a subject in a VA research project regardless of whether you are a Veteran or a non-Veteran. If you get a bill for research services contact your study doctor or research nurse. Some Veterans are required to pay co-payments for medical care and services provided by the VA. These co-payment requirements will continue to apply to medical care and services provided by the VA that are <u>not</u> part of the study.

**8. Does pregnancy prevent me from participating? (Pregnancy)**
Every effort will be made to have females enter this study. Medically accepted birth control is required to enter this study. This may include, but is not limited to, birth control pills, IUD's, condoms, diaphragms, implants, being surgically sterile, or being in a post-menopausal state. However, no birth control method completely eliminates the risk of pregnancy. If you are a female and if pregnancy occurs there may be a risk of miscarriage, birth defects, other medical complications or unforeseen risks to yourself or to the unborn baby (i.e. embryo or fetus). If you are a female of childbearing age, you must have a negative pregnancy test before entering the study. If you become pregnant during the study, your participation will end.

**9. What if I get injured? (Research Related Injury)**
In the event of injury resulting from your participation in this research study, McGuire Veterans Affairs Medical Center may or may not provide compensation, depending on applicable federal regulations. A research injury is any injury or illness caused by your participation in the study. In the event of a research injury, necessary medical treatment will be provided to assist your recovery from the injury. For research related injury, the VA must provide necessary medical treatment regardless of whether you are a Veteran or a non-Veteran.

This agreement to provide medical treatment does not include treatment for injury/illness that is not a result of the study. To help avoid injury, it is very important to follow all study directions. You are not giving up any of your legal rights by signing this form.

**10. Who Will See My Information? (Confidentiality)**
The confidentiality of your research records will be maintained according to professional standards of confidentiality and VA regulations. Records identifying you may be reviewed by the members of the research team, DOD (Department of Defense), the Research and Development Committee and its sub-committees, accrediting agencies, officials from the Veterans Health Administration, the Office of Research Oversight, the VA Office of the Inspector General, Richmond VAMC, McGuire Research Institute and its auditor, and other federal oversight agencies such as the Food and Drug Administration, Office for Human Research Protections, or as required by law.

All subjects will be identified by an assigned number and their initials. Subjects' research charts will be kept inside a locked file cabinet in a locked office. Only study staff will have access to your study records and medical information.

The ways your study doctor will use your study-related health information and the people who may receive it are identified in a separate form entitled, Authorization for Use & Release of Individual Identifiable Health Information for Veterans Health Administration Research. You will be asked to sign that form to show that you give permission for these uses and sharing of your information. You do not have to sign the authorization form. However, if you do not sign, you will not be able to participate in the study.

A description of this clinical trial will be available on http://www.clinicaltrials.gov, as required by U.S. Law. This Web site will not include information that can identify you. At most, the Web site will include a summary of the results. You can search this Web site at any time.

Information published or presented about the results of this study will not identify you.

**11. Do I have to participate in this study or can I withdraw from the study? (Voluntary Participation and Withdrawal)**

Participation in this study is voluntary and you may refuse to participate without penalty or loss of benefits to which you are otherwise entitled. The study staff will answer any questions you may have about the study. You are free to withdraw your consent and stop participation at any time. If you decide to withdraw from this study, you should contact *Dr. Ashraf Gorgey, MPT, PhD* to discuss termination of your participation. It is important that you do this so that *Dr. Gorgey* can withdraw you safely. Stopping will in no way change the quality of care you receive now or in the future at this institution or your right to participate in other studies.

Withdrawal from a research study may have serious effects on your health or welfare. The following withdrawal procedures are necessary for your safety and for orderly termination of your participation in this research study. A follow up visit with your regular provider will be scheduled.

Any significant new findings that develop during the research study that may affect your decision to continue participating will be provided to you as soon as possible.

Your participation in this research study may be ended without your consent for the following reasons:

- If the study doctor believes, for any reason, that it is within your best interest.
- If you develop side effects that are considered dangerous.
- If you fail to return for follow-up as recommended by your study doctor or fail to follow the study doctor's instructions.
- If you refuse to have tests that are needed to determine the effects of the study procedures.
- If you become pregnant.
- If other causes prevent continuation of the clinical research study.
- DOD, FDA, McGuire IRB may also end the study at any time.

12. Whom should I contact for questions? (Contacts)

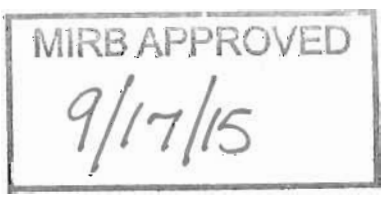
If you have any questions, concerns or complaints regarding this study, unexpected reactions, or you are injured and become ill as a result of participation in this study please call AM or PM:

| | Office | Off Hours |
|---|---|---|
| Dr. Ashraf S. Gorgey | (804) 675-5000 ext. 3386 | 804-750-4814 |

| | | |
|---|---|---|
| Dr. Robert A Adler | (804) 675-5424 | 804-659-0281 |
| Dr. Lance Goetz | (804)-675-5455 | 804-615-5676 |
| Dr. Teodoro Castillo | (804) 675-5000 ext 4582 | 804-659-0186 |
| Dr. Timothy Lavis | (804) 675-5455 | 804-351-0753 |
| Dr. Jeannie Savas | (804) 675-5112 | 804-338-1791 |
| Dr. Ranjodh Gill | (804) 675-5424 | 804-539-7420 |

If you are unable to reach any of the study staff listed and need immediate medical assistance, please call the VAMC hospital operator at 800-784-8381 and ask for the Emergency Room physician to obtain advice, or call the Emergency Room directly at (804)-675-5527. If you have any questions, concerns or complaints about your rights as a research subject you may contact the McGuire Institutional Review Board (IRB) at (804) 675-5676. The IRB is responsible for reviewing research in humans and making sure that their safety and rights are protected.

**13. Date of Consent Form Revision: 9/14/2015**



Subject Name:_____ Date:_____

Research Study Title: **Skeletal Muscle Hypertrophy and Cardio-Metabolic Benefits After Spinal Cord Injury**

Principal Investigator: **Ashraf Gorgey, PhD** VAMC: **Ri chmond, VA**

**RESEARCH SUBJECTS' RIGHTS**: I have read or have had read to me all of the above.

Dr. Gorgey (or an associate) has explained the study to me and answered all of my questions. I have been told of the risks or discomforts and possible benefits of the study. I have been told of other choices of treatment available to me.

I understand that I do not have to take part in this study, and my refusal to participate will involve no penalty or loss of rights to which I am entitled. I may withdraw from this study at any time without penalty or loss of VA or other benefits to which I am entitled. The results of this study may be published, but my records will not be revealed unless required by law. By signing below, you are agreeing to participate in this research study. I will receive a signed copy of this consent form.

_____ _____
Subject's Signature Date

_____ _____
Signature of Person Obtaining Informed Consent Date