Official Title: Adaptive Ankle Robot Control System to Reduce Foot-drop in Chronic Stroke

NCT02483676

Date: 1.17.2019

Consent Form

Department of Veterans Affairs

Research Consent Form

Participant Name: _____ Date:_____

Title of Study: Ankle Robotics for Foot-Drop in Stroke

Principal Investigator: Steven Kittner, M.D., MPH 410-706-0414 VA Facility: Baltimore 512

STUDY No: HP-00062671

SPONSOR: VA Rehabilitation Research & Development

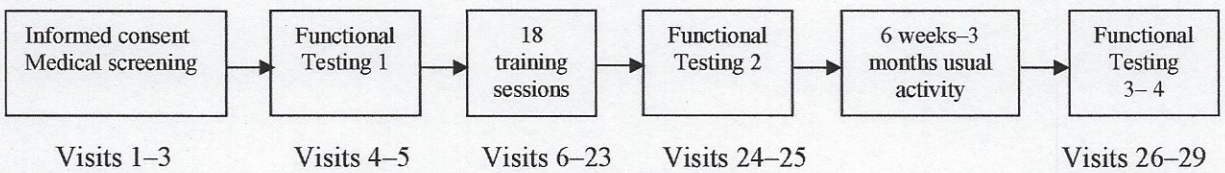
- You are invited to participate in a research study that tests a new ankle robot for persons with stroke. If you are eligible and wish to participate, please note that you are a volunteer. You may ask questions at any time.
- The research will occur at the following location(s) of the VA Maryland Health Care System (VAMHCS): the Baltimore VA Annex, the Baltimore VA Medical Center (VAMC), and/or the Loch Raven VA Medical Center (VAMC).

PURPOSE OF STUDY:

- The purpose of this research is to compare two types of treadmill training for persons who have had a stroke.
- You may qualify for this study if you had a stroke at least two months ago and have weakness in one leg due to the stroke.
- We plan to enroll 100 subjects at the VA Maryland Health Care System.

PROCEDURES:

- Please be aware that this study requires a large amount of time and effort. If you agree to participate, you will be asked to make about 29 visits to our medical facilities. This will take about 5–6 months. The figure below shows how the study will be conducted.



- This study compares the effects of two types of training on walking and balance in persons who have had a stroke at least two months ago.
- To be eligible, you must have an abnormal walking pattern due to the stroke.
- You must be finished with physical therapy.
- One group will wear an ankle robot while training on a treadmill for 18 sessions (2–3x / week) (TMR).

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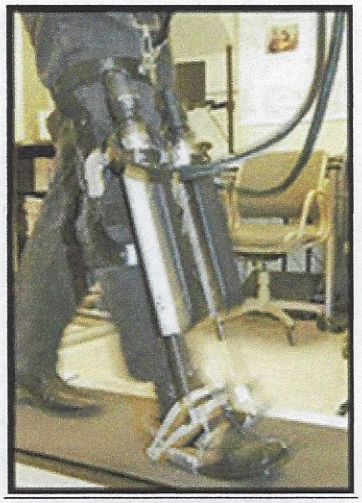
- A second group will receive 18 sessions (2–3x / week) of treadmill training only (TMO).
- The two groups (TMR and TMO) will have about 29 visits for this study.
- The figure below shows ankle robot training used in this study (TMR group). In Figure 1, a user is wearing the robot while walking on a treadmill. Note the robot's attachment at the knee with a brace and at the foot with special shoes. The robot will gently assist your ankle to do the proper motion while walking on a treadmill.

Figure 1



PHASE 1: Informed Consent and Medical Screening (Visits 1–3):

VISIT 1: Informed Consent (1–2 hours):

- During the consent visit, we will review the details of the research project in private. You, your family, and/or representatives will have time for your questions to be answered, for your concerns to be addressed or clarified, and for you to consider whether or not you wish to participate.
- You will be given a copy of the informed consent form.
- We will review the study eligibility criteria with you. You will be asked to complete a test to assess your ability to understand and think clearly. If you are eligible, you will be scheduled for the baseline tests. If you are not eligible, with your permission, a note with

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our findings will be sent to your primary care provider. If a medical cause for exclusion can be corrected, you may contact us for re-screening.

VISITS 2–3: Medical Screening (up to 3 hours):

- These visits will see if it is safe for you to take part in an exercise study. The tests performed during these visits also will let us understand how your stroke impacts your walking and balance.
- A medical history, physical exam, and muscle strength tests will be administered (up to 2 hours). We will ask to review your medical records and the pictures of your brain from when you had your stroke. This will let us know the type and size of stroke you had.
- Screening Treadmill Test (up to 1 hour): This test will see if you can walk slowly on a treadmill for 5 to 10 min. We will observe your heart rate and rhythm with a heart monitor. If you are able to walk on the treadmill, we will ask you to exercise as long as you can (up to 10 min.) until you say you are tired or have to stop. You will not be asked to exercise more than you comfortably can. If there are any problems during the test (for example, if you have chest pain), it will be stopped immediately.

If any problems are observed or an adverse event occurs during screening and testing, or during exercise training, your primary care provider would be contacted for a consultation.

Please *initial* below indicating whether or not you agree to allow us to contact your primary care provider.

_____ Yes, you may contact my primary care provider with updates from any study-related visit that may affect my medical care.

_____ No, you may not contact my primary care provider with updates from any study-related visit that may affect my medical care.

Date: _____

PHASE 2: Functional Testing 1 (Visits 4–5):

VISITS 4–5 (up to 4 hours):

- These visits will include blood sampling and functional tests.

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- Blood sampling: A blood sample will be drawn during one of these visits to measure the function of certain cells in your blood. You may be asked not to eat in the morning before this appointment. A catheter (plastic tube) or needle is placed in a vein in your arm. A blood sample (12 teaspoons) will be drawn.
- Functional tests: The exact order of functional tests performed during these visits may vary. All functional tests will be followed by rest periods as needed to minimize fatigue. Functional tests during Visit 4, and a Visit 5 if needed, will include:
  - Affected ankle active range of motion, 15 min.
  - Ankle strength, 15 min.
  - Ankle robot measures of affected ankle function, 30 min.
  - Berg Balance Scale test, 15 min.
  - Self-selected and fast comfortable walks on a gait mat, 20 min.
  - Recordings of postural adjustments during gait initiation and walking at self-selected speed with 3-D motion analysis, 40 min.
  - Dynamic Gait Index, 15 min.
  - Postural sway test with eyes open and eyes closed, 5 min.
  - Wearing a pedometer during normal daily activities in the home-community setting
  - Self-assessment questionnaires on balance, physical activity, and stroke

PHASE 3: Training Group Assignment and Training Sessions (Visits 6–23):

After medical screening and functional testing, you will be placed in either the treadmill with robot (TMR) group or the treadmill-only (TMO) group. The group to which you will be assigned will be chosen by chance, like flipping a coin. Neither you nor the study team will chose to which group you will be assigned.

VISITS 6–23: 18 sessions of robotic and/or treadmill training (approx. 1 hour per session) (These training visits, 6–23, will take place at ***either*** the Baltimore VA Annex at 209 W. Fayette Street, Baltimore, MD 21201 ***or*** the Loch Raven VAMC at the Robotics and Rehab Center, 3901 The Alameda, Building 7, Baltimore, MD 21218. At which site your training visits will take place will be determined by participant preference, if possible, and/or by the availability of robots at each location.)

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- Treadmill with Robot (TMR) group:
  - The training program, 18 sessions (2–3x / week), is individualized, based on each participant's walking capacity.
  - When walking on the treadmill, you will wear a safety harness and have the use of handrails to prevent falling.
  - The first training session will measure how you walk on a treadmill at a slow, preferred speed—first, without the robot, and then while wearing the robot.
  - Once we know what settings to use with the robot, you will be asked to walk for several minutes with the robot turned on.
  - Over the course of the study, the goal is to have you increase to 30–40 minutes of walking with the robot on. At first, this may be challenging, so a training session may be split into shorter amounts of time, with rests between walks.
  - The research staff will check your heart rate and blood pressure to determine that you are not walking too fast or too slow.
  - You will also be asked to rate how hard you are working.

- Treadmill-Only (TMO) group:
  - The training program, 18 sessions (2–3x / week), is individualized, based on each participant's walking capacity.
  - When walking on the treadmill, you will wear a safety harness and have the use of handrails to prevent falling.
  - Treadmill training is started conservatively, at a slow, preferred speed for several minutes, as tolerated.
  - Over the course of the study, the goal is to have you increase to 30–40 minutes of walking. At first, this may be challenging, so a training session may be split into shorter amounts of time, with rests between walks.
  - The research staff will check your heart rate and blood pressure to determine that you are not walking too fast or too slow.
  - You will also be asked to rate how hard you are working.

PHASE 4: Functional Testing 2 (Visits 24–25):

VISITS 24–25 (up to 4 hours):

- These visits will occur within one week of your last training session.
- These visits will include blood sampling and functional tests.

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- Blood sampling: A blood sample will be drawn during one of these visits to measure the function of certain cells in your blood. You may be asked not to eat in the morning before this appointment. A catheter (plastic tube) or needle is placed in a vein in your arm. A blood sample (12 teaspoons) will be drawn.
- Functional tests: You will complete the functional tests as described in Visits 4–5.

PHASE 5: Functional Testing 3–4 (Visits 26–29):

After Functional Testing 2, you will continue normal activities at home.

VISITS 26–27:

- After 6 weeks of normal activities after Functional Testing 2, you will return for another round of functional tests.
- You will complete the functional tests as described in Visits 4–5.

VISITS 28–29:

- After 3 months of normal activities after Functional Testing 2, you will return for a final round of functional tests.
- You will complete the functional tests as described in Visits 4–5.
    - Some participants may complete these visits after 6 months, opposed to 3 months.

After completion of this study, you may be eligible to participate in future IRB-approved research studies for persons who have had a stroke. Please indicate whether or not you agree to allow us to contact you for participation in future research studies. Even if you agree to be re-contacted now, you may still change your mind about providing this information in the future.

Please *initial* below indicating whether or not you agree to allow us to contact you for participation in future research studies.

_____ Yes, I may be re-contacted to learn about future research studies.

_____ No, I may not be re-contacted to receive this information.

Date: _____

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Banked specimens: While you are in this study, blood will be taken from you that may be useful for future research. These samples will be stored for an indefinite time period at the Baltimore VA Medical Center. All samples will be coded to ensure your privacy (i.e., your name is not on the samples). Your identity can only be determined by matching the code on the sample with your name in the study file kept by the investigators at the Baltimore VA Medical Center. Your samples will be used only for research and will not be sold or used for the production of commercial products.

We will measure risk factors for stroke and blood vessel diseases in these samples. As new tests become available, we may measure additional factors that may influence risk for stroke. Reports about research done with your samples will be included in your study file and will be kept confidential to the best of our ability within state and federal laws. You will not be provided with the results of these tests, as these measurements are for research purpose only and are not of proven value to you or your primary care provider. You have the opportunity to request that your samples be withdrawn from future use. To do so, please inform Steven Kittner, M.D., MPH, at 410-706-0414, to request that your samples be destroyed.

POTENTIAL RISKS/DISCOMFORTS:

There are no major risks or discomforts that you are likely to experience as a participant in this research. There are some potential minor risks or discomforts that may occur. These are described below:

- There is a small risk of falling during functional tests of walking and balance, and during treadmill testing and training. To minimize this risk, a trained assistant will be next to you at all times. If necessary, you will be asked wear a gait belt.
- The risks for functional testing are minimal. These tests involve a variety of timed walks, getting up from a chair, and tests of balance. There is a small risk that you will fall, get chest pain, get shortness of breath, or become dizzy. There is a small risk of muscle strain or pulled muscles in the measurement of strength. A test will be stopped if you have any symptoms such as chest pain. We have performed more than 1000 tests of functional performance without complication.
- Both the TMR and the TMO groups of treadmill exercise training will be supervised by exercise physiologists who are certified in exercise training and cardiopulmonary resuscitation (CPR). There will be a clinical provider on call available for consult in case

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of any problems. An AED is available on site, and should there be any unanticipated medical emergencies, staff can initiate emergency care by calling 911. If 911 is activated, you would be taken to the nearest available hospital for care. We believe that it is highly unlikely that you will develop a medical emergency that would require the 911 system to be activated; in more than 25 years of training more than 1000 research subjects, we have only had one subject who had a heart attack during aerobic training.

- Aerobic exercise training is associated with the risk of cardiovascular complications such as chest pain, heart attack, or sudden death and complications related to stress and strains of muscles, twisted ankles, or falls. This risk is increased in people who have heart disease, poor circulation to the legs, or stroke. The risk of heart attack in these people is one in 300,000 hours of exercise, and risk of death is one in 800,000 hours of exercise. In over 1,000,000 miles of walking or jogging, there has been only one fatal event at the Cooper Exercise Clinic in Dallas, Texas. To minimize this risk, you will first undergo a medical evaluation and screening exercise treadmill test. The risk is lower in people with no evidence of heart disease. All exercise sessions will be supervised by exercise physiologists trained in CPR, and a clinical provider will be on-call. Your heart rate and blood pressure will be assessed by an exercise physiologist before and after each exercise session or more frequently, if indicated. If your blood pressure or heart rate go too high or you develop an irregular heart rate, chest pain or leg cramps, the training will be stopped immediately.
- Wearing the ankle robot may rub and irritate the skin while walking (TMR group). Comfort and protection from skin irritations are addressed by using foam cushions to reduce pressure on the leg.
- There is a very slight risk that the robot could move the foot in the wrong direction causing injury (TMR group). This is extremely unlikely, as maximal torque outputs by the robot are not sufficient to induce muscle, tendon, or ligament injuries. Further protection is provided by fail-safe switches that turn off the robot in 2 ms.
- There is a small risk of muscle soreness from using your affected ankle in the robot (TMR group). At the start and end of each training session, we will ask you about muscle soreness or problems. You will have a medical examination if any problems develop.
- The risks associated with blood sampling include discomfort, bruising, swelling, fainting, and possible infection at the site of sampling. This is minimized by having skilled professionals perform the sampling.

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- There is a small risk of a loss of your personal information. This risk will be minimized by storing your personal data in a locked office and locked cabinet. All computer data will be coded and stored on password-protected computers.
- There may be risks in this study that are not yet known.

POTENTIAL BENEFITS:

- You may or may not benefit by taking part in this study. There is no guarantee that you will receive direct benefit from participating in this study.
- A potential benefit of your participation is to help in the development of new robotic therapies for stroke survivors.
- There is a potential benefit in defining those who can successfully use this new robotic approach after stroke.

ALTERNATIVES TO PARTICIPATION:

This is not a treatment study. Your alternative is to abstain from this study.

COSTS TO PARTICIPANTS:

- It will not cost you anything to take part in this study.
- You will not be charged for any treatments or procedures that are performed for research purposes in this study. If you usually pay co-payments for VA care and medications, you will still pay these co-payments for VA care and medications that are not part of this study.

PAYMENT TO PARTICIPANTS:

- Vouchers will be distributed to participants to equal payment for $10 per study visit. In total, participants who complete the study will receive up to $290. In the event participants do not complete the study, they will receive $10 per study visit to be paid upon their completion of the study. Participants will receive their vouchers at the Baltimore VA Annex or the Loch Raven VAMC at the Robotics and Rehab Center, to be redeemed at the Baltimore VAMC cashier's office, as per current VA regulations.
- Should injury occur during participation in this study, you will receive emergency medical care if needed, and you will receive assistance in getting other medical care as needed. The study staff can give you more information about this if you have a study-related injury. As a participant, you are not waiving any of your legal rights. You can

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seek legal compensation for any injury that may occur to you during the study as a result of an error by a member of the research staff, the sponsor, or others.

- Those who drive to the Baltimore VA Annex, Baltimore VAMC, or the Loch Raven VAMC will receive free parking within the respective VA parking facility.

MEDICAL TREATMENT AND COMPENSATION FOR INJURY:

Every reasonable safety measure will be used to protect your well-being. If you are injured as a result of taking part in this study, the VA Maryland Health Care System (VAMHCS) will provide necessary medical treatment at no cost to you, unless the injury was due to you not following the study procedures. This care may be limited by local or federal law.

If you should have a medical concern or get hurt or sick as a result of taking part in this study, call:

DURING THE DAY: Steven Kittner, M.D., MPH, at 410-706-0414

AFTER HOURS: Steven Kittner, M.D., MPH, at 410-706-0414

The VA does not normally provide any other form of compensation for injury. However, by signing this form, you have not waived any legal rights or released the VAMHCS or its agents from liability for negligence.

CONFIDENTIALITY AND ACCESS TO RECORDS:

- The study will involve use of confidential information. Study personnel will have access to the information, and it will be coded to protect your identity. The investigators will use the codes with all research data in electronic format, and all other files with confidential information will be stored in locked file cabinets within locked office or lab space. All study data will be securely stored as indicated above.
- Your research records and/or identifiers will be retained in accordance with the VA records control schedule. The "records control schedule" is a set of rules set by the federal government that states when federal agencies are allowed to dispose of records. The VA and VHA must follow these rules.
- The Veterans Health Administration (VHA) and its offices may inspect your research records. Your research records will be stored at the VA Maryland Health Care System (VAMHCS).

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- Efforts will be made to limit your personal information, including research study and medical records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the Institutional Review Board (IRB) at the University of Maryland, Baltimore; the VAMHCS Geriatric Research Education and Clinical Center internal safety monitoring board (GRECC I-SMB); the VAMHCS Office of Research Compliance (ORC); other offices within the VA and VHA, including the VA Office of Research Oversight (ORO), the VA Office of Research and Development (ORD), the VA Office of Inspector General, the VA Office of General Counsel, and the VA IRB and Research and Development Committee; and the Office for Human Research Protections.
- The data from the study may be published. However, you will not be identified by name. People designated from the institutions where the study is being conducted and people from the sponsor will be allowed to inspect sections of your medical and research records related to the study. Everyone using study information at the VAMHCS will work to keep your personal information confidential. Your personal information will not be given out unless required by law or authorized by you in the VAMHCS HIPAA Authorization to Obtain, Use and Disclose Protected Health Information for Research. However, if your information is disclosed to other entities, the VAMHCS no longer has control of that information. Please see the HIPAA Authorization for this study for further details.
- If you are a patient in the VAMHCS, the results of your medical tests for this study will be included in your medical record. Your medical and research records will be kept strictly confidential to the fullest extent permitted by law.
- The monitors, auditors, and the IRB will be granted direct access to your medical records for verification of the research procedures and date. By signing this document, you are authorizing this access.

RIGHT TO WITHDRAW:

- Your participation in this study is voluntary. You do not have to take part in this research. You are free to withdraw your consent at any time. Refusal to take part or to stop taking part in the study will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to stop taking part in this study; if you have questions, concerns, or complaints about this study; or if you need to report a medical injury related to this study, please contact the principal investigator, Steven Kittner, M.D., MPH, at 410-706-0414.

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- If you wish to confirm that this study is, in fact, IRB-approved and is being conducted at the VAMHCS, you may contact Steven Kittner, M.D., MPH, at 410-706-0414. Additional information can be found at the U.S. National Library of Medicine clinical trials registry at https://clinicaltrials.gov, under the ClinicalTrials.gov study number NCT02483676.
- You will be told of any significant new findings that develop during the study that may affect your willingness to participate in the study.
- There are no adverse consequences (physical, social, economic, legal, or psychological) if you decide to withdraw from the research.
- You may withdraw from this study at any time without penalty or loss of VA or other benefits to which you are entitled. Your participation will not affect the way you now pay for medical care at the VAMHCS.
- If you withdraw from this study, data already collected may not be removed from the study database. You will be asked whether the investigator can collect data from your routine medical care. If you agree, this data will be handled the same as research data.

CAN I BE REMOVED FROM THE RESEARCH?

The person in charge of the research study or the sponsor can remove you from the research study without your approval. Possible reasons for removal include failure to follow instructions of the research staff or the principal investigator decides that the research study is no longer in your best interest. The sponsor can also end the research study early. The study physician will tell you about this, and you will have the chance to ask questions if this were to happen.

HUMAN RESEARCH PROTECTION OVERSIGHT:

The VA Maryland Health Care System (VAMHCS) has designated the University of Maryland, Baltimore (UMB) Institutional Review Board (IRB) to review this research study. Please read the University's statement below.

The University of Maryland, Baltimore (UMB) is committed to providing participants in its research the rights due them under State and federal law. You give up none of your legal rights by signing this consent form or by participating in the research project. This research has been reviewed and approved by the Institutional Review Board (IRB). Please call the Institutional Review Board (IRB) if you have questions about your rights as a research subject.

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Participating in research may result in an injury, as explained above. If you suffer an injury directly related to your participation in this project, UMB and/or one of its affiliated institutions or health care groups will help you obtain medical treatment for the specific injury and provide referrals to other health care facilities, as appropriate. UMB and/or its affiliated institutions or health care groups will not provide you with financial compensation or reimbursement for the cost of care provided to treat a research-related injury or for other expenses arising from a research-related injury. The institution or group providing medical treatment will charge your insurance carrier, you, or any other party responsible for your treatment costs. If you incur uninsured medical costs, they are your responsibility. The study staff can give you more information about this if you have a study injury.

By signing this consent form, you are not giving up any legal rights. If this research project is conducted in a negligent manner and you are injured as a direct result, you may be able to recover the costs of care and other damages from the individuals or organizations responsible for your injury.

If you have questions, concerns, complaints, or believe you have been harmed through participation in this research study as a result of researcher negligence, you can contact members of the IRB or the UMB Human Research Protections Office (HRPO) to ask questions, discuss problems or concerns, obtain information, or offer input about your rights as a research participant. The contact information for the IRB and the HRPO is:

University of Maryland, Baltimore
Human Research Protections Office
620 W. Lexington Street, Second Floor
Baltimore, MD 21201
410-706-5037

You may also contact the VAMHCS Human and Animal Research Protections Officer (HARPO). The contact information for the HARPO is:

VAMHCS Human and Animal Research Protections Officer
Baltimore VA Medical Center
10 North Greene Street, Mail Stop 151
Baltimore, MD 21201

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410-605-7000, extension 56582
Room 3D-150

The VAMHCS Human and Animal Research Protections Officer may contact you in the future to ask you about your experiences with this research study.

CONSENT TO STUDY PARTICIPATION:

Signing this consent form indicates that you have read this consent form (or have had it read to you), that your questions have been answered to your satisfaction, and that you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.

If you agree to participate in this study, please sign your name below.

_____
Participant's Signature

Date: _____

_____
Investigator or Designee Obtaining Consent Signature

Date: _____

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