Opportunity Title: Bioengineer/Biomechanics Fellowship for Knee Exoskeleton Project at the U.S. Army Research Institute of Environmental Medicine (USARIEM)
Opportunity Reference Code: USAMRDC-RIEM-2022-0035

Organization U.S. Department of Defense (DOD)

Reference Code USAMRDC-RIEM-2022-0035

How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description The U.S. Army Research Institute of Environmental Medicine (USARIEM) is offering an educational fellowship. The USARIEM biomechanics team is investigating the effects of knee exoskeleton on military performance and movements. This project will involve biomechanics equipment (markerless motion analysis system and force plates) for data collection and dissemination for those who are interested in knee exoskeleton study /movement biomechanics /military human performance research.

What will I be doing?

As an ORISE participant, you will join a community of scientists and researchers in an effort to contribute to investigating the effects of powered knee exoskeleton on military performance tests and musculoskeletal injury risk screening tests.

Exoskeleton technology augments human mobility by reducing the metabolic cost of walking and running in healthy individuals and by providing additional joint torque needed to complete activities of daily living in neurologically compromised individuals. Exoskeleton technologies are of interest to the military given they may be a viable biomedical materiel solution to improve occupational task performance and reduce musculoskeletal injury (MSKI) risk in Soldiers. While exoskeleton use is intended to benefit the Soldier, the added weight of the exoskeleton itself may actually compromise movement patterns and place Soldiers at greater risk of sustaining a MSKI. Whether current exoskeleton technologies augment occupational performance without affecting MSKI risk in Soldiers has not been determined.

Why should I apply?

Under the guidance of a mentor, you will gain hands-on experience to complement your education and support your academic and professional goals. Along the way, you will learn and be involved in the different aspects of project. These include, but are not limited to,

- regulatory-documents preparation
- become proficient/familiar with laboratory testing procedures
- recruitment/briefing
- data collection/analysis
- data dissemination/report/manuscript writing/conference presentation

You will be mentored by the Principal Investigator, Dr. Nagai.

Where will I be located?

Natick, Massachusetts

What is the anticipated start date?

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USARIEM is ready to make appointments immediately. Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and fellowships will be filled as qualified candidates are identified.

What is the appointment length?

This appointment is a twelve month research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the benefits?

You will receive a stipend to be determined by USARIEM. Stipends are typically based on a participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement (*Participants are eligible to purchase health insurance through ORISE)*
- Relocation Allowance
- Training and Travel Allowance

About USARIEM

USARIEM is a Department of Defense (DoD) research facility within the U.S. Army Medical Research and Development Command (USAMRDC). It is the research institute responsible for conducting basic and applied research to determine the effects of exposure to environmental extremes, occupational tasks, physical training, deployment, operational stress and nutritional factors on the health and performance of military personnel. Dry laboratories are capable of a broad range of experiments, including biomechanical analysis, resting metabolic rate (RMR) body composition/muscle cross-sectional area/bone mineral density assessment (dual x-ray absorptiometry [DEXA], bioelectrical impedance analysis [BIA], peripheral quantitative computerized tomography [pQCT]), marksmanship ability (EST 2000), physical performance assessment (exercise equipment including, but not limited to barbells, weight plates, kettlebells, Vertec force plates, treadmills, cycle ergometers, ruck sacks, etc.). The experience and expertise of USARIEM biomechamics researchers will be utilized for the purposes of executing this project. For more information, please visit, https://usariem.health.mil/index.cfm/research/divisions/mpd.

About ORISE

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the

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ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

Qualifications

The qualified candidate will have a bachelor's or master's degree in relevant fields (e.g. bioengineering, biomechanics, etc.) or expected to obtain a completed degree by 05/31/2023. Candidates with completed degree(s) must have received their degree within five years of the appointment start date. U.S. military veterans who have been honorably discharged (or who have been medically discharged because of a service-connected disability) and who received their degree within ten years of the desired start date are also eligible.

Highly competitive applicants will have education and/or experience in one or more of the following:

- Military human performance research.
- Kinematic analyses, modeling, etc. of human movements.

The candidate will be required to pass basic security clearance to obtain a common access card (the process will begin prior to the starting date).

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Click here for detailed information about acceptable transcripts.
- One Recommendation. Your application will be considered incomplete and will not be reviewed until one recommendation is submitted. We encourage you to contact your recommender as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application.

If you have questions, send an email to ARMY-MRMC@orise.orau.gov. Please list the reference code of this opportunity [USAMRDC-RIEM-2022-0035] in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials

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should be submitted via the “Apply” button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 months or anticipated to be received by 5/31/2023 12:00:00 AM.
- **Discipline(s):**
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (48 👁)
- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).