



401 W. Michigan St.  
Indianapolis, IN 46202  
Tel.: (317) 637-9200  
Email: [researchadmin@acsm.org](mailto:researchadmin@acsm.org)  
[www.acsm.org](http://www.acsm.org)

April 5, 2022

Thomas Gooding  
Washington State University  
Request #21-01498

Dear Thomas,

Congratulations! On behalf of the American College of Sports Medicine Foundation, I am pleased to inform you that your research proposal was approved for funding. The proposal was carefully and critically evaluated by the Research Review Committee and recommended for funding. Therefore, the ACSM Foundation will provide \$5,000.00 for your research under the ACSM Foundation Doctoral Student Research Grant, effective from July 1, 2022 to June 30, 2023.

Enclosed for your perusal are summary critiques from the reviewers. You are encouraged to review these comments thoroughly, as they are being offered by established research scientists. In some cases, the quality and impact of this project may be significantly increased by considering and/or incorporating some of the suggestions listed. We commend you for your development of a proposal which is anticipated to help advance the objectives of the College.

If you have not turned in your approved and signed institutional assurances, please upload the document to the ACSM Foundation Research Grant portal along with the attached "Letter of Acceptance" and your institutions W-9/W8-BEN form under 'Award Documents.' The LOA should include all appropriate signatures, and the name and address of the financial officer who should receive the funding check. A blank W-9 or W8-BEN form is available at the ACSM Foundation Research Grant portal under 'Award Documents.' ACSM must receive the Letter of Acceptance, institutional assurances and the W-9/W8-BEN form in the ACSM Foundation Research Grant portal by June 1, 2022 in order to release the funds on July 1. Please be advised that no institutional overhead costs are included.

Again, congratulations on this achievement!

Sincerely,

Jim Pivarnik, Ph.D., FACSM  
ACSM Foundation President



The ACSM Foundation acquires, manages, and grows the resources necessary for ACSM to fulfill its mission and vision, with special emphasis on supporting research that provides scientific information vital to human health and performance.

## Reviewer: Primary

### Overall Impact

This is a re-submission. The proposal was responsive to the previous review. The addition of Drs. Nieman and Wideman should have important mentoring and advice on how high intensity exercise training influences body systems.

This study has a high chance of providing unique and important information on how people respond to short term high intensity physical activity programs. The unique aspect of this study was the use of a laboratory based experiment rather than field testing of athletes. The study design, subject selection, training program, and outcome measures are clearly and carefully presented. It is not clear how many of the subjects will end up 'overreaching' so the sample size might be small for that important sub-population. However, some of the subjects will serve as natural controls by not demonstrating overreaching.

- **Significance (Strengths & Weaknesses)**

The significance of this study lies in the use of controlled laboratory exercise to produce an overtraining stimulus. This has the potential to eliminate many conflicting or potentially confounding factors associated with evaluating athletes performing their normal high intensity training.

The choice of a relatively untrained population has several advantages, one being that the adverse effects of training will not influence future competitive goals. The other being it might be easier to induce overtraining. However, a key for future relevance is whether the mechanisms found in this study will carry over to elite athletes.

- **Investigator (Strengths & Weaknesses)**

Gooding has experience training people with similar protocols and making the measurements needed.

- **Innovation (Strengths & Weaknesses)**

The innovation in this study is to perform a laboratory based 'overreaching' study. This is quite unique and is a strength of the study.

- **Approach (Strengths & Weaknesses)**

The study design, subject selection, training program, and outcome measures are clearly and carefully presented.

Both male and female subjects will be included. There is a control group that will not cycle. But come in once a week and do all the testing protocols.

The 3 week cycling program with 3 weeks of follow up, is designed to be very strenuous and consistent between subjects. Contingency plans are ready if a subject can't perform the target training goals. The training protocol seems to include six training days with one rest day each week. Training includes sprint interval training (12x45 s at 1.3 max). There is a progress of work levels to hopefully match or exceed the training adaptations of the subjects.

Measurements include progressive cycle ergometer test, vertical jump, handgrip strength, urine, blood, and sputum (lung) every week. Lung function testing (spirometry, residual volume, exhaled NO, forced oscillation). Also ASA24, POMS, PAR-Q, Wis upper respire sympt survey, Med/Hlth questions. Finally, sleep via watch.

It is not clear if the training limitation to recreational athletes will match those of more experienced and competitive athletes.

It is not clear if enough subjects will fall into the three outcome bins to allow for adequate comparisons between groups. Especially if comparisons between men and women are hoped for.

Secondary analyses such as comparisons of biomarkers to outcomes and controlling for training progression, etc will be underpowered.

- **Environment (Strengths & Weaknesses)**

The environment is good. The advising and mentoring team are strong enough to assist this project. The addition of more mentors with experience in the types of immune and other responses to exercise will be helpful.

The mentor provides strong support for this project. While not specifically stated, the implication is that the student wrote this proposal. The proposal states that recruitment of subjects will not be an issue, as there is 'strong interest' in participating.

**Protections for Human Subjects/Vertebrate Animals:**

Study approved. Strenuous exercise will result in discomfort and potential medical issues, but these will be carefully monitored.

Women will be included.

**Biohazards:**

None

**Budget Recommendations:**

Budget is adequate. No subject payment but costs for assays and blood draws

## Reviewer: Secondary

### Overall Impact

This was a resubmission with improvements based on feedback.

- **Significance (Strengths & Weaknesses)**

n/a

- **Investigator (Strengths & Weaknesses)**

n/a

- **Innovation (Strengths & Weaknesses)**

n/a

- **Approach (Strengths & Weaknesses)**

n/a

- **Environment (Strengths & Weaknesses)**

n/a

### Protections for Human Subjects/Vertebrate Animals:

n/a

### Biohazards:

n/a

### Budget Recommendations:

n/a



**American College of Sports Medicine Foundation  
Letter of Acceptance - Research Grants  
Request #21-01498**

***In the acceptance of this award from the American College of Sports Medicine Foundation, I understand that:***

1. The funding period for this award is July 1, 2022– June 30, 2023, unless otherwise stated. In the case of an extension, written notice of the approved extension will indicate the extended funding period.
2. A Progress Report will be submitted within ninety (90) days after completion of funding. An awardee will not be considered for any future funding if he/she fails to comply.
3. An expenditure report, signed by the financial officer, will be submitted within ninety (90) days after completion of funding and at the end of the grant cycle.
4. All the equipment purchased by the grant will belong to the institution and cannot be moved to another location without approval of the Foundation.
5. The award will cease if the research project is relocated to another institution without prior approval of the Foundation.
6. All findings resulting from research under grant support published in a recognized scientific journal should carry the acknowledgement, "*This research was supported by the **ACSM Foundation Doctoral Student Research Grant** from the American College of Sports Medicine Foundation.*" Email the PDF version of the publication to [researchadmin@acsm.org](mailto:researchadmin@acsm.org) and indicate the grant number.
7. All discoveries resulting from work carried out under the award will be subject to current patent policies of the American College of Sports Medicine Foundation. Written approval to apply for patents must be obtained from the Foundation following a recommendation of the Research Review Committee, and by the administrator of patents in the institution where the research was done, if such an individual exists.
8. Salary support from an American College of Sports Medicine Foundation Grant is not allowed for a principal investigator, co-investigator, research associate, postdoctoral fellow holding doctoral degrees, or any student in a program to obtain a degree, unless that student's activities relate directly to the project for which the Principal Investigator was funded.
9. Structural alterations will not exceed \$250.00.
10. Subscriptions to journals and purchase of books, membership dues to organizations or societies are not permissible.
11. Operational research (i.e. management studies such as time and motion, cost effectiveness and other administrative research studies) are not permissible.
12. Funds for clinical traineeships are not authorized.
13. Payments for malpractice insurance premiums are not authorized.
14. Funds are to cover direct costs only. No part of this grant can be used for indirect costs.
15. The research project may not commence until a signed Letter of Acceptance and documented proof of IRB approval have been received by the ACSM Research Administration and Programs office.
16. The funding for this award is \$5,000.00.
17. Any remaining money over \$100.00 must be sent back to ACSM (401 W. Michigan St., Indianapolis, IN 46202).

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Name of PI and Title of Grant:  
(Type or Print)

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Name of Financial Officer & Address where to mail  
(Type or Print)

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**Signature** \_\_\_\_\_  
(Principle Investigator)

**Signature** \_\_\_\_\_  
(Financial Officer to Receive Funding Check)

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**Please sign and upload using the ACSM Foundation Research Grant portal by June 1, 2022**

**ACSM FOUNDATION PATENT POLICY**

- 1) All inventions made with the financial support, in whole or in part, of the American College of Sports Medicine Foundation (“the Foundation”) must be reported in a timely fashion to the American College of Sports Medicine (ACSM) and will be subject to certain rights and limitations as shall be set forth in a written agreement between the inventor, the Foundation and any other necessary party, including any grantee Institution.
- 2) Title to any invention will be determined initially by United States Patent law and subsequently by policies of the institutions that employ the inventors
- 3) Distribution of net income from royalties from the invention shall be in accordance with established policy of grantee institution, provided that the policy directs a substantial portion of the net income to further research at the grantee institution. Otherwise provided, the division of net income will be guided by the subparagraph below.

The American College of Sports Medicine Foundation shall participate in the income derived from the invention to an extent to be determined by negotiation between the Board of the Foundation and the grantee institution after reporting of the invention to the Foundation. Such agreement is to be guided by the principle that the Foundation’s proportion of sharing in the net income shall be reasonably related to the Foundation’s proportion of financial support for the invention in relation to total contributions, including salaries, facilities, equipment, long-term research support, and infrastructure costs, from all other sources.

- 4) No patent or patent application shall be abandoned without first notifying the Foundation and giving the Foundation the opportunity to continue the patent or patent application at its own expense and thereby receive an exclusive license to the grantee institution’s interest in the invention.
- 5) The grantee institution shall agree that if it or its licensee has not made diligent and reasonable efforts, within three years after a US patent issues on an invention supported by the Foundation and administered by such institution, to bring that invention to the point of commercial application, or has not made such invention available for licensing, the Foundation shall have the right to identify and propose potential licensees to grantee institution, and grantee institution agrees to diligently pursue license opportunities with those potential licensees.
- 6) If a grantee institution has no established patent policy or procedure for administering inventions, the Foundation and the owners of the patent, as determined by US patent law, shall negotiate the disposition of invention rights.
- 7) If any invention is made with the joint support of the Foundation and other organizations, at the time of disclosure of an invention, the inventor will inform the Foundation of any other entity that may claim rights to the invention. Royalty distribution shall be in accordance with the terms of this policy.