Study Title: The Effect of Omega-3 Fortified Smoothies on Omega-3 Index and Physical Performance Related Outcomes Among Soldiers

Document date: 4/15/2024

EIRB Protocol Template (Version 1.4)

1.0 General Information

***Please enter the full title of your study:**

Evaluate the use of omega-3 fortified smoothies to improve omega-3 index and physical performance related outcomes among Soldiers

***Please enter the Protocol Number you would like to use to reference the protocol:**

H2F Omega-3
* This field allows you to enter an abbreviated version of the Protocol Title to quickly identify this protocol.

Is this a multi-site study (i.e. Each site has their own Principal Investigator)?

No

Does this protocol involve the use of animals?

○ Yes ◉ No

2.0 Add Site(s)

2.1 List sites associated with this study:

Primary Dept?	Department Name
◆	**R and E** - Uniformed Services University of the Health Sciences (USUHS)

3.0 Assign project personnel access to the project

3.1 *Please add a Principal Investigator for the study:

Rittenhouse, Melissa A, PhD

Select if applicable

☐ Student ☐ Site Chair
☐ Resident ☐ Fellow

3.2 If applicable, please select the Research Staff personnel:

A) Additional Investigators

Heileson, Jeffery Lee, Ph.D. MAJ
Associate Investigator

B) Research Support Staff

Khurana, Saachi
Research Coordinator
PATEL, NEHA Amrish
Non-engaged Administrator

3.3 *Please add a Protocol Contact:

Khurana, Saachi
PATEL, NEHA Amrish
Rittenhouse, Melissa A, PhD

The Protocol Contact(s) will receive all important system notifications along with the Principal Investigator. (i.e. The protocol contact(s) are typically either the Protocol Coordinator or the Principal Investigator themselves).

3.4 If applicable, please select the Designated Site Approval(s):

Add the name of the individual authorized to approve and sign off on this protocol from your Site (e.g. the Site Chair).

4.0 Project Information

4.1 * What department(s) will be associated with this protocol?

	Emergency Medicine

4.2 * Is the IRB of record for this study an IRB/HRPP that does NOT use EIRB? If Yes, complete the application according to the IRB/HRPP Determination.

If your Projects or Protocols are under the oversight of another IRB that does use EIRB, stop this submission and contact the core site and request an invitation as a performing site.

If your Project or Protocol is now being submitted for the first time to an IRB that does use EIRB, continue with this application and answer the questions to be reviewed by the IRB.

Answering yes means the board of record is an IRB that does NOT use EIRB.

○ Yes ◉ No

4.3 * Is this protocol research, expanded access, or humanitarian use device?

◉ Yes ○ No

4.4 * What type of protocol is this?

☑ Behavioral Research
☐ Biomedical Research
☐ Clinical trial (FDA regulated)

- [ ] Educational Research
- [ ] Expanded Access
- [ ] Humanitarian Use Device (HUD)
- [ ] Psychosocial Research
- [ ] Oral History
- [ ] Other

4.5 Are you conducting this project in pursuit of a personal degree?

- ( ) Yes (•) No

4.7 * Is this human subjects research? (As defined by 32 CFR 219) Human subject means a living individual about whom an investigator (whether professional or student) conducting research:
(i) Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or
(ii) Obtains, uses, studies, analyzes or generates identifiable private information or identifiable biospecimens.

- (•) Yes ( ) No

4.8 * Do you believe this human subjects research is exempt from IRB review?

- ( ) Yes (•) No

5.0 Personnel Details

5.1 Does the Principal Investigator have a Permanent Change of Station (PCS) Date or Estimated Institutional Departure Date (EIDD)?

- ( ) Yes (•) No

5.2 List any Research Team members without EIRB access that are not previously entered in the protocol:

Name: (Last, First, M.I.)	Phone Number:	Email Address:	Associated Institution:
Deehl, Christina Role on Protocol: Collaborator	270-412-5826	christina.e.deehl.mil@army.mil	Army, Fort Campbell
Name: (Last, First, M.I.) Lomax, Trevor Role on Protocol: Collaborator	Phone Number: NA	Email Address: NA	Associated Institution: Army, Fort Campbell
Name: (Last, First, M.I.)		Email Address:	

Booke Guttormson Role on Protocol: Collaborator	Phone Number: 740-641-05727	brooke.k.guttormson.mil@health.mil	Associated Institution: Army, Fort Campbell
Name: (Last, First, M.I.) Lee, Brandon Role on Protocol: Collaborator	Phone Number: 315-772-0689	Email Address: brandon.l.lee16.civ@army.mil	Associated Institution: Army, Fort Drum
Name: (Last, First, M.I.) Clark, Emily Role on Protocol: Collaborator	Phone Number: 315-772-0471	Email Address: emily.f.clark10.mil@army.mil	Associated Institution: Army, Fort Drum

5.3 Are any Contractors or Subcontractors involved in this study? If yes, please list them and describe their role.

(•) Yes ( ) No

Name: (Last, First, M.I.) Rittenhouse, Melissa A Role on Protocol: PI	Phone Number: 301-295-2621	Email Address: melissa.rittenhouse.ctr@usuhs.edu	Associated Institution: HJF/USU

5.4 Will you have a Research Monitor for this study?

( ) Yes
(•) No
( ) N/A

6.0 Data/Specimens

6.1 Does the study involve the use of existing data or specimens only (no interaction with human subjects)?

( ) Yes (•) No

7.0 Funding and Disclosures

7.1 Source of Funding:

Funding Source	Funding Type	Amount
: Other Defense Health Program	: Other	

Total amount of funding:

7.2 Do you or any other Investigator(s) have a disclosure of a personal interest or financial nature significant with sponsor(s), product(s), instrument(s) and/or company(ies) involved in this study?

○ Yes ◉ No

All personnel engaged in research must complete and attach a Conflict of Interest (COI) form.

8.0 Study Locations

8.1 Is this a collaborative or multi-site study? (e.g., are there any other institutions involved?)

◉ Yes ○ No

8.2 Study Facilities and Locations:

Institution	Site Name	Site Role	FWA or DoD Assurance Number	Assurance Expiration Date	Is there an agreement?	IRB Reviewing for Site
Army	Ft Campbell	Performance site	DoD			
Army	Ft. Drum	Performance site	DoD			

Other:

Other Institution Site	Site Role	FWA or DoD Assurance Number	FWA or DoD Expiration Date	Is there an agreement?	IRB Reviewing for Site
No records have been added					

8.3 Are there international sites?

Attach international approval documents, if applicable, when prompted. Note: Ensure local research context has been considered

○ Yes ◉ No

8.4 Is this an OCONUS (Outside Continental United States) study?

○ Yes ◉ No

Select the area of responsibility:

Have you obtained permission from that area of responsibility? (This is a requirement prior to study approval)

○ Yes ○ No

9.0 Study Details

9.1 Key Words:

Provide up to 5 key words that identify the broad topic(s) of your study

Omega-3 fatty acids, Holistic Health and Fitness (H2F), Army Combat Fitness Test (ACFT), Performance, Nutrition

9.2 Background and Significance:

Include a literature review that describes in detail the rationale for conducting the study. Include descriptions of any preliminary studies and findings that led to the development of the protocol. The background section should clearly support the choice of study variables and explain the basis for the research questions and/or study hypotheses. This section establishes the relevance of the study and explains the applicability of its findings

Evidence suggests that mental [1-11] and physical [12-17] health are positively related to the omega-3 intake, and studies indicate that supplementation of omega-3 fatty acids may improve muscle recovery and range of motion while decreasing soreness and pain. [16, 18-21]

Omega-3 fatty acids are an essential part of the diet and are found primarily in marine-based sources of fatty fish including salmon, mackerel, and herring. The Omega-3 Index (O3I) is a reliable method used to measure omega-3 status, more specifically it represents the sum of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), as a percentage of red blood cells. Currently, O3I is the preferred method for assessing omega-3 status given its low biological variability and its ability to be measured in either the fed or fasted state. Generally, the O3I increases with greater consumption of marine-based omega-3; however, the extent varies by individual. Research indicates the general population and Service Members alike have a low O3I (~4%) and therefore at risk for poor health and suboptimal physical performance. [22] For optimal health, performance and a decreased risk for cardiovascular disease an O3I of ≥ 8 % is desirable.

The research utilizing the Omega-3 Index as a measure of omega-3 fatty acids began in relation to preventing severe cardiovascular risks. The research has expanded shows that omega-3 fatty acids can reduce triglyceride levels [23, 24] and may serve as an effective treatment option for cardiovascular disease, [12, 25] osteoporosis, [26, 27] psoriasis, [28] and arthritis. [29-32] Omega-3 fatty acids are thought to inhibit eicosanoids and inflammatory cytokines leading to analgesic effects. Additionally, preliminary studies support a rehabilitative role of omega-3 fatty acids in maintaining muscle mass and minimizing muscle wasting during a prolonged period of limb immobilization (i.e., leg cast). [33] Furthermore, O3I levels have been positively correlated with muscle protein synthesis and enhanced recovery from muscle damaging exercise (i.e. delayed onset muscle soreness), in both athletic and military populations. [16, 18-21]

Improving Service Members health and maintaining the ability to perform optimally are high priorities. An average O3I of ~4% is concerning. These findings, although not surprising given the lack of foods containing omega-3 fatty acids across military installations, require action. Innovative solutions to provide Service Members with omega-3 fatty acids are needed to achieve health and performance benefits. Therefore, the purpose of this study is to examine whether

increasing omega-3 fatty acid intake using a novel fortified food product improves performance and recovery outcomes in Holistic Health and Fitness (H2F) soldiers.

9.3 Objectives/Specific Aims/Research Questions:

Describe the purpose and objective(s) of the study, specific aims, and/or research questions /hypotheses

Objectives 1:

- Assess the impact of 8-weeks of daily consumption of 1600mg of omega-3 fortified smoothie on O3I response.

Objective 2:

- Determine the relationship between O3I and measures of performance and recovery.

We hypothesize regular consumption (one smoothie per day, five days per week, for eight weeks) of omega-3 enhanced smoothies (1600 mg omega-3 per smoothie) will increase O3I to 8% compared to a control group. We also hypothesize improvements in performance markers related to strength, flexibility, aerobic capacity and power as assessed by the Army Combat Fitness Test (ACFT), rate of perceived exertion (RPE), and recovery (a visual analog scale (VAS) for pain) in the intervention group compared to control. We hypothesize the control group will not reach an O3I of 8% and measures of performance and recovery will be statistically lower than in the intervention group.

9.4 Study Design:

Describe study design in one to two sentences (e.g., prospective, use of existing records/data /specimens, observational, cross-sectional, interventional, randomized, placebo-controlled, cohort, etc.). Specify the phase – Phase I, II, III, or IV – for FDA-regulated investigational drug research

A double blind randomized-placebo control trial will be conducted in collaboration with the Army Holistic Health and Fitness (H2F) Program. Participants will be randomly selected from two H2F training sites: Ft. Campbell and Ft. Drum. In total, 100 participants will be randomly selected, 50 per site. Each site will have 25 participants assigned to the placebo group and 25 participants assigned to the omega-3 enhanced smoothie group. All interested soldiers will enter their name. Participants will be randomly selected until 100 participants consent. Participants will be excluded if they have a fish allergy or if they are unable to complete an Army Combat Fitness Test (ACFT) for any reason. Participants taking omega-3 supplements will not be excluded, but will be instructed to be consistent for the duration of the study.

9.5 Target Population:

Describe the population to whom the study findings will be generalized

Soldiers

9.6 Benefit to the DoD:

State how this study will impact or be of benefit to the Department of Defense

Previous research already indicates omega-3 status is low in military personal. Increasing omega-3 fatty acid intake will not only help maintain a healthy force by minimizing chronic disease risks, if we determine omega-3 fatty acids improve performance or recovery, then guidelines can be developed and soldiers can be educated and the demand for these types of foods will lead the way in improving the military nutrition environment.

10.0 Study Procedures, Data Management, and Privacy

10.1 Study Procedures:

Describe step-by-step how the study will be conducted from beginning to end

This is an 8-week protocol with baseline and post-intervention data collections including: demographics, digitized questionnaires (nutrition, physical activity and sleep), O3I (collected by finger prick) and ACFT scores. We will assess changes in O3I status, performance on, and recovery from the ACFT at two H2F training sites (Ft. Campbell and Ft. Drum), after providing omega-3 enhanced or placebo smoothies. All smoothies will be pre-made, iso-caloric and provided in similar ready to drink containers. Researchers and participants will be blinded, one staff member will not be blinded and maintain the key identifying which participants receive the placebo vs intervention. A smoothie log based on participant ID will be coded (i.e., A or B) to assist in distribution of the smoothies. Each smoothie will have a lot number that ends in A or B.

Baseline visit: To account for potential confounding factors, dietary intake assessed using the Health Eating Score (HES), daily physical activity using the Physical Activity Questionnaire (PAQ), and sleep using the Pittsburg Sleep Quality Index (PSQI) sleep questionnaire will be collected using REDCap. O3I will be collected by finger prick. A baseline ACFT will be conducted by trained Army staff (not researchers). The ACFT scores will be reported to the researchers by the participants. Participants will log into REDCap to report their ACFT score and report the Rate of Perceived Exertion (RPE), a score of 6-20 and the pain score, ranging from 0-10. This will be recorded one hour and 24 hour post ACFT.

Intervention: To ensure compliance, participants will be provided an omega-3 smoothie or placebo daily (Monday-Friday) by brigade dietitians or assigned staff immediately following training.

Post-Intervention data collection: After eight weeks of intervention O3I, questionnaires and ACFT scores will be collected again with participants reporting their RPE and pain scores following the same format as the baseline visit.

Participants will be given a USU-approved tablet to complete a digitalized participant's questionnaire, utilizing a USU-secure web based platform such as REDCap or will be emailed an anonymous survey link. Using this link, they will access REDCap to complete the questionnaires on their laptop or phone. No personally identifiable information nor personal health information will be recorded in the questionnaires. Methods to complete the questionnaire are outlined below:

1. Use a USU-approved tablet to complete the questionnaire using the USU REDCap capabilities.
2. Use their personal phone or laptop to complete the questionnaire using the USU REDCap capabilities.
    1. Research staff will email them two options to access questionnaire via REDCap
        1. Website link with an accompanying Access Code
        2. QR code to access the electronic consent documents
3. Paper questionnaires will be available in case there are technical issues.

10.2 Data Collection:

Describe all the data variables, information to be collected, the source of the data, and how the data will be operationally measured.

Omega-3 Index This requires a finger prick with a lancet, similar to how a person with diabetes would check their blood sugar levels. This method will be used to obtain 1-2 drops of blood that will be placed on the provided collection card and sent to OmegaQuant to determine the Omega-3 Index.

Procedures for participants The Omega-3 kit include an alcohol pad to clean the finger, a blood collection card, a lancet, gauze and bandage. Instructions are included. Researchers will be assisting with the finger pricks.

Participants are instructed to: 1. Wash their hands with warm water, hold their arm down at their side for 20 seconds. 2. Use the alcohol pad to clean the index, middle or ring finger and remove any excess liquid with the gauze. 3. Twist off the blue plastic lancet cover. Place the lancet lightly on the side of the finger. Press down firmly onto the finger until you hear a click. Allow a drop of blood to collect on the finger. Lightly squeeze if needed. Then lightly touch the drop of blood to the dotted circle on the blood collection card. Completely fill the circle with blood. 4. When finished, apply pressure to the figure with the gauze pad and apply adhesive bandage. 5. Let the blood spot dry for 15-20 minutes then fold the collection card flap and place the card in the plastic bag. 6. Dispose of all materials in the trash.

Army Combat Fitness Test (ACFT) This is the standard fitness test for the soldiers. An ACFT will be conducted by trained staff at week 1 of the study and week 8. These will be standard practice ACFTs for the entire company (not only those in research).

Rate of Perceived Exertion (RPE) Immediately after the ACFT participants will be asked on a scale of 6-20 the how hard they were working during the ACFT.

Defense and Veterans Pain Scale Participants will report their pain score one hour and twenty four hours after each ACFT. Participants are shown a scale ranging from 0-10 with the picture of a face and a description that best matches how they feel.

Healthy Eating Score (HES) On the demographics questionnaire we also include 8 healthy eating questions. This will allow us to assess if there were any changes in diet throughout the duration of the study, and captures fish intake.

Diet ID An electronic method of capturing dietary intake that provides a complete picture of nutrient intake. Here is a product demo video: **https://vimeo.com/665298627**

Pittsburgh Sleep Quality Index (PSQI) PSQI will be utilized to qualitatively assess participants' sleep quality. The PSQI is a 19-item questionnaire that calculates sleep quality over the past month and assesses the following dimensions: sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. The PSQI generates a global score ranging from 0 – 21 with higher scores demonstrating worse sleep quality. Scores higher than 5 reflect poor sleep quality (clinical insomnia). The instrument takes 5 – 10 minutes to complete. It has been used in various populations. A global PSQI score > 5 yielded a diagnostic sensitivity of 89.6% and specificity of 86.5% (kappa = 0.75, $p < 0.001$) in distinguishing good (healthy subjects) from poor sleep.

Physical Activity Questionnaire (PAQ) The Physical Activity Questionnaire is an 8-item scale to assess weekly exercise patterns.

Participants will be given a USU-approved tablet to complete a digitalized participant's questionnaire, utilizing a USU-secure web based platform such as REDCap or will be emailed an anonymous survey link. Using this link, they will access REDCap to complete the questionnaires on their laptop or phone. No personally identifiable information nor personal health information will be recorded in the questionnaires. Methods to complete the questionnaire are outlined below:

1. Use a USU-approved tablet to complete the questionnaire using the USU REDCap capabilities.
2. Use their personal phone or laptop to complete the questionnaire using the USU REDCap capabilities.
    1. Research staff will email them two options to access questionnaire via REDCap
        1. Website link with an accompanying Access Code
        2. QR code to access the electronic consent documents
3. Paper questionnaires will be available in case there are technical issues.

10.3 At any point in the study, will you request, use, or access health information in any form, including verbal, hard copy and electronic?

○ Yes ◉ No

10.14 Managing Data (Data Management and/or Sharing Plan) and/or Human Biological Specimens for

this Study:

Include in this section the plan for acquiring data (both electronic and hard copy), access during the study, data/specimen storage and length of time stored, shipment/transmission, and the plan for storage and final disposition at the conclusion of the study. Describe any data agreements in place for accessing data within and/or outside of your institution (e.g., Data Sharing Agreement, Data Use Agreement, Business Agreements, etc.)

A password protected master key will be managed by USU researchers and will be the only document that contains the participant name and participant identification number. The master key will be shared between performance sites and researchers via DoDSAFE. The performance site researchers will use this key to prevent errors when distributing the smoothies. If a hard copy of the master key is needed to assist distribution of the smoothies it will be stored in a locked draw in collaborator's office at the performance sites and shredded after all the results of the study have been obtained. Only aggregated results of this research will be presented at a conference and a manuscript will be developed.

Is this a data repository?

○ Yes ◉ No

10.15 Managing Data (Data Management and/or Sharing Plan) and/or Human Biological Specimens for Future Research:

If the study involves collecting, storing, or banking human specimens, data, or documents (either by the Investigator or through an established repository) for FUTURE research, address. How the specimens/data will be used, where and how data/specimens will be stored (including shipping procedures, storage plan, etc.), whether and how consent will be obtained, procedures that will fulfill subjects' request as stated in the consent, whether subjects may withdraw their data/specimens from storage, whether and how subjects may be recontacted for future research and given the option to decline, whether there will be genetic testing on the specimens, who will have access to the data/specimens, and the linkage, the length of time that data/specimens will be stored and conditions under which data/specimens will be destroyed.

N/A

Is this a data repository?

○ Yes ◉ No

11.0 Statistical/Data Analysis Plan

11.1 Statistical Considerations:

List the statistical methods to be used to address the primary and secondary objectives, specific aims, and/or research hypotheses. Explain how missing data and outliers will be handled in the analysis. The analysis plan should be consistent with the study objectives. Include any sub-group analyses (e.g., gender or age group). Specify statistical methods and variables for each analysis. Describe how confounding variables will be controlled in the data analysis

We plan to analyze results using multiple regression analysis whereby we will regress outcomes (O3I, ACFT scores) onto treatment-allocation, controlling for pre-treatment factors (e.g., pre-O3I, demographics). This is equivalent to a two-group ANCOVA. For most analyses, we aim to keep outcomes continuous. In sensitivity analyses, we will also dichotomize O3I (e.g., at 8%, which is the cutoff for healthy O3I), examine mixed generalized linear models, and examine the design-effect of each site (which may decrease power somewhat). Alternative model specifications or variable-transformations will be considered in cases where gross violations invalidate certain approaches.

11.2 Sample Size:

80-100 participants

11.3 Total number of subjects requested (including records and specimens):

100

11.4 If you are recruiting by study arm, please identify the arms of the study and how many subjects will be enrolled in each arm

N/A

11.5 Please provide a justification for your sample size

Power calculations, performed using the pwr2ppl package in r (**https://www.routledge.com/Applied-Power-Analysis-for-the-Behavioral-Sciences-2nd-Edition/Aberson/p/book/9781138044593**), were executed based on the expected associations between treatment allocation (i.e., treatment vs control) and the outcome variables (post-O3I, ACFT scores), controlling for baseline statuses (e.g., pre-O3I). We also assumed there would 20% be missing data or attrition, and that baseline statuses would not be associated with treatment allocation. Alpha was set alpha at 0.05 and power at 0.8. Under these conditions, with an analytic sample size of 80 subjects, and assuming a correlation between pre- and post-O3I (or pre- and post-ACFT score) of 0.6, the study will be adequately powered to detect an association of $r = 0.25$ between treatment allocation and the outcome. This converts into a cohen's d (or standardized-unit difference) of 0.55. This is generally considered a moderate-to-strong effect size. Based on previous research examining distribution and change in O3-I in similar samples, this would likely be equivalent to a treatment-effect of of 0.6%-unit increase in O3-I. If there is a weaker association between pre- and post-O3I (or other outcomes), then the minimal detectable effect size would increase (e.g., if the pre/post association is 0.4, then the minimal detectable effect would be a Cohen's d of 0.6); if there is a stronger association between pre- and post-O3I, then the minimal detectable effect size would decrease (e.g., if the pre/post association is 0.8, then the minimal detectable effect would be a Cohen's d of 0.4).

11.6 Data Analysis Plan: Complete description: Background, Objectives, Design, Step by Step how the project is going to be done, Data analysis plan:

In addition to the analyses indicated in 11.1, additional measures will be undertaken to ensure that data are of high-quality over the course of the study, including double data entry where relevant, periodic inspection of data as it is collected, and periodic preliminary analyses. Statistical packages to be used will primarily include Microsoft Office Excel and IBM SPSS.

12.0 Participant Information

12.1 Subject Population:

Holistic Health and Fitness Soldiers

12.2 Age Range:

Check all the boxes that apply. if the age range of potential subjects (specimens, records) does not match the range(s) selected, please specify in the text box.

- ☐ 0-17
- ☑ 18-24
- ☑ 25-34

- [x] 35-44
- [x] 45-54
- [x] 55-64
- [ ] 65-74
- [ ] 75+

12.3 Gender:

- [x] Male
- [x] Female
- [x] Other

12.4 Special categories, check all that apply

- [ ] Minors /Children
- [ ] Students
- [ ] Employees - Civilian
- [ ] Employees - Contractor
- [ ] Resident/trainee
- [ ] Cadets /Midshipmen
- [x] Active Duty Military Personnel
- [ ] Wounded Warriors
- [ ] Economically Disadvantaged Persons
- [ ] Educationally Disadvantaged Persons
- [ ] Physically Challenged (Physical challenges include visual and/or auditory impairment)
- [ ] Persons with Impaired Decisional Capacity
- [ ] Prisoners
- [ ] Pregnant Women, Fetuses, and Neonates
- [ ] Non-English Speakers
- [ ] International Research involving Foreign Nationals - Headquarters Review is necessary

You must also consider the requirements of DoDI 3216.02, Enclosure 3, paragraph 7.e.

12.5 Inclusion Criteria:

Order Number	Criteria
1	Current soldier at Ft. Drum or Ft. Campbell.
2	Able and willing to complete two Army Combat Fitness Test (ACFT) (Week 1 and week 8)
3	Willing to obtain two finger pricks for the Omega-3 Index (week 1 and week 8)

12.6 Exclusion Criteria:

Order Number	Criteria
1	Allergic to fish

13.0 Recruitment and Consent

13.1 Please describe the recruitment process, including how subjects will be identified and selected for the study.

Recruiting
Recruitment will be done by briefing select companies where command has approved the soldiers to participate (See recruitment brief). Volunteers who are interested and meet the eligibility criteria will provide their name and email address. Once recruitment has ended participants will be randomly selected to participate and notified by email. Participants selected will review the eICD with researchers. Once all 100 participants are selected and have signed the electronic informed consent (eICD) they will be allocated to either the intervention (smoothie enhanced with omega-3) or placebo (smoothie with no omega3) group.

13.2 Compensation for Participation:

N/A

13.3 Please describe the pre-screening process. If no pre-screening, enter Not Applicable in the text editor

N/A

13.4 Consent Process: Revised Common Rule, Section 219.116: General requirements for informed consent, whether written or oral, are set forth in this paragraph and apply to consent obtained in accordance with the requirements set forth in paragraphs (b) through (d) of this section. Broad consent may be obtained in lieu of informed consent obtained in accordance with paragraphs (b) and (c) of this section only with respect to the storage, maintenance, and secondary research uses of identifiable private information and identifiable biospecimens.

Are you requesting a waiver or alteration of informed consent?

○ Yes ◉ No

Please explain the consent process:

Consenting
Participants that are interested and eligible will review the ICD with a member of the research team. The participant will be encouraged to ask any questions he/she has, both in writing as part of the ICD and verbally by the person conducting the consent process. Once all questions have been answered to the volunteer's satisfaction, he/she will be given a USU-approved tablet to do an electronic (e) consent using the USU REDCap capabilities.They will provide an e-signature and a copy of the consent form will be emailed to them with their permission. Once the consent document is signed, they will be enrolled in the study. As an alternative, paper ICD forms will be available in case there are technical issues.

13.5 DoDI 3216.02 requires an ombudsman to be present during recruitment briefings when research involves greater than minimal risk and recruitment of Service members occurs in a group setting. If applicable, you may nominate an individual to serve as the ombudsman.

◉ N/A
○ Propose ombudsman

13.6 Withdrawal from Study Participation:

Explain the process for withdrawal and specify whether or not the subjects will be given the opportunity to withdraw their data their data/specimens in the event they wish to withdraw from the study

Information about processes for withdrawing from the study will be provided to participants at the time of consent. A participant may decide to withdraw from the study at any time. Refusal to part icipate will involve no penalty or loss of benefits to which the subject is otherwise entitled and the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled. If a participant withdraws, any previously collected data will be retained unless they provide written request for removal of your data in the withdrawal letter.

14.0 Risks and Benefits

14.1 Risks of Harm:

Identify all research-related risks of harm to which the subject will be exposed for each research procedure or intervention as a result of participation in this study. Consider the risks of breach of confidentiality, psychological, legal, social, and economic risks as well as physical risks. Do not describe risks from standard care procedures; only describe risks from procedures done for research purposes

All of the research procedures described are associated with minimal risk, but there are still expected risks and potential reasons to stop data collection. For example, there is potential risk associated with the finger prick. Participants may experience some discomfort, and some bruising and/or transient pain at the site of the finger prick. In addition, there are slight risks of infection. There is also a risk of an allergic reaction, if a participant has an unknown food allergy.

14.2 Measures to Minimize Risks of Harm (Precautions, safeguards):

For each research procedure or intervention, describe all measures to minimize and/or eliminate risk of harms to subjects and study personnel

To minimize risk participants will be given specific instructions to clean the finger with an alcohol pad prior to the O3I prick. Participants will be informed they can put ice on their finger if it is sore, or to minimize potential soreness. During the consenting process participants will be informed of common signs of infection, including redness and swelling, and instructed to go the medical clinic if they have any symptoms 24 hours after the finger prick.

To minimize harm from an allergic reaction researchers will monitor participants as they drink the beverage and watch for any signs of intolerance. Medical help will be called if there are signs or symptoms of an allergic response.

14.3 Confidentiality Protections (for research records, data and/or specimens):

Describe in detail the plan to maintain confidentiality of the research data, specimens, and records throughout the study and at its conclusion (e.g., destruction, long term storage, or banking). Explain the plan for securing the data (e.g., use of passwords, encryption, secure servers, firewalls, and other appropriate methods). If data will be shared electronically with other team members/collaborators outside the institution, describe the method of transmission and safeguards to maintain confidentiality. Explain whether this study may collect information that State or Federal law requires to be reported to other officials or ethically requires action, e. g., child or spouse abuse

Records of participation in this research study may only be disclosed in accordance with state and federal law, including the Federal Privacy Act, 5 U.S.C.552a, and its implementing regulations. DD Form 2005, Privacy Act Statement - Military Health Records, contains the Privacy Act Statement for the records. A copy of DD Form 2005 can be given upon request, or you can read on-line at: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2005.pdf. Procedures to protect the confidentiality of the data in this study include, but are not limited to assigning a unique participant ID that will be used on all data collections. All forms will be kept in a restricted access, locked cabinet for five years after the study completion. Following this time period, any documentation will be destroyed or erased. To enhance the privacy of the information, survey data will be entered directly into a USU secure database such as REDcap by the participant. Individual responses are not identified and will be password protected. After verification of the database information, paper copies of all materials containing identifiers will be shredded five years after completion of the study. Researchers will make every effort to protect your privacy and confidentiality; however, there are risks of breach of information security and information loss. All efforts will be made to keep the personal information private. Information may be shared with the USUHS Institutional Review Board. Complete confidentiality cannot be promised for military personnel, because information regarding your health may be required to be reported to appropriate medical or command authorities to ensure the proper execution of the military mission, including evaluation of fitness for duty.

14.4 Potential Benefits:

Describe any real and potential benefits of the research to the subject and any potential benefits to a specific community or society

If the individuals in the research are considered experimental subjects (per 10 USC 980), and they cannot provide their own consent, the protocol must describe the intent to directly benefit all subjects

The potential benefits include enhanced knowledge about how individual dietary habits influence the Omega-3 Index. There is also a potential benefit to performance or recovery.

14.5 Privacy for Subjects:

Describe the measures to protect subject's privacy during recruitment, the consent process, and all research activities, etc.

Participants will only express interest in the study at the brief, selection will not occur until after; therefore, nobody will know who is selected unless the participant tells others they are participating. During the study, the smoothies will be handed out at a set location close to the training facility, but not where everyone in the company can see.

Records of participation in this research study may only be disclosed in accordance with state and federal law, including the Federal Privacy Act, 5 U.S.C.552a, and its implementing regulations. DD Form 2005, Privacy Act Statement - Military Health Records, contains the Privacy Act Statement for the records. A copy of DD Form 2005 can be given upon request, or can read on-line at: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2005.pdf. During data collection no identifiable information will be collected. All data will only be recorded by participant ID number. Surveys are stored on a password protected secure USU REDcap database.

14.6 Incidental or Unexpected Findings:

Describe the plan to address incidental findings and unexpected findings about individuals from screening to the end of the subject's participation in the research. In cases where the subject could possibly benefit medically or otherwise from the information, state whether or not the

results of screening, research participation, research tests, etc., will be shared with subjects or their primary care provider. State whether the researcher is obligated or mandated to report results to appropriate military or civilian authorities and explain the potential impact on the subject

Information collected through data collection for this study consists of coded data. This information is unlikely to expose a medically-sensitive concern. If found, the Principal Investigator will notify our Medical Director and appropriate Office of Human Research contact.

Similarly, data collected is unlikely to expose findings for which a researcher would be mandated to report results to appropriate military or civilian authorities.

15.0 Study Monitoring

15.1 Your study requires either Data and Safety Monitoring Plan (DSMP) or a Data and Safety Monitoring Board (DSMB).

- ○ DSMP
- ○ DSMB
- ○ Both
- ◉ Not Applicable

16.0 Reportable Events

16.1 Reportable Events: Consult with the research office at your institution to ensure requirements are met. Describe plans for reporting unexpected adverse events and unanticipated problems. Address how unexpected adverse events will be identified, who will report, how often adverse events and unanticipated problems will be reviewed to determine if any changes to the protocol or consent form are needed and the scale that will be used to grade the severity of the adverse event.

Consult with the research office at your institution to ensure requirements are met

• Describe plans for reporting expected adverse events. Identify what the expected adverse events will be for this study, describe the likelihood (frequency, severity, reversibility, short-term management and any long-term implications of each expected event)

• Describe plans for reporting unexpected adverse events and unanticipated problems. Address how unexpected adverse events will be identified, who will report, how often adverse events and unanticipated problems will be reviewed to determine if any changes to the research protocol or consent form are needed and the scale that will be used to grade the severity of the adverse event

Participation in the study should not entail any physical or mental risk beyond those described. In the event of a medical emergency while participating in the study, treatment and care will be provided. Information about procedures for providing medical care to participants is disclosed in the informed consent process with participants. Any events will be reported to USU IRB.

We do not anticipant risk of many adverse or reportable events. Some potential expected risks may include: participants that do not like the drink taste or consistency may have a food aversion. In this event, participants will be asked if there is anything different that could be done to enhance their experience (ie. make the drink colder), if there isn't anything these participants may want to drop out.

Another potential risk is that participants who physically pushed themselves really hard may not be able to tolerate food or beverage immediately after finishing PT. In this scenario, researchers will let the participant rest and recovery and make sure they feel better before providing the

smoothie. We will recommend participants drink the smoothies within 30-60 minutes after finishing PT. This will allow the body time to adapt.

17.0 Equipment/non-FDA Regulated Devices

17.1 Does the study involve the use of any unique non-medical devices/equipment?

- ○ Yes
- ◉ No

18.0 FDA-Regulated Products

18.1 Will any drugs, dietary supplements, biologics, or devices be utilized in this study?

- ☐ Drugs
- ☐ Dietary Supplements
- ☐ Biologics
- ☐ Devices
- ☑ N/A

18.5 Sponsor (organization/institution/company):

- ☑ N/A

If applicable, provide sponsor contact information:

19.0 Research Registration Requirements

19.1 ClinicalTrials.gov Registration:

- ○ Registration is not required
- ◉ Registration pending
- ○ Registration complete

19.2 Defense Technical Information Center Registration (Optional):

- ◉ Registration is not required
- ○ Registration pending
- ○ Registration complete

20.0 References and Glossary

20.1 References:

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20.2 Abbreviations and Acronyms:

Army Combat Fitness Test (ACFT)
Docosahexaenoic acid (DHA)
Eicosapentaenoic acid (EPA)
Health Eating Score (HES)
Holistic Health and Fitness (H2F)
Omega-3 Index (O3I)
Physical Activity Questionnaire (PAQ)

Pittsburgh Sleep Quality Index (PSQI)
Rate of Perceived Exertion (RPE)
Uniformed Services University (USU)