Sam Houston State University
Consent for Participation in Research

KEY INFORMATION FOR *Effects of beef-forward ready-to-eat meals before and after simulated fire suppressive activities on markers of cardiometabolic health, catabolism, and recovery: A Pilot Feasibility Study*

You are being asked to be a participant in a research study about whether the effects of consuming beef-based ready-to-eat meals, compared with plant-based meals, before and after a simulated fire ground test, which can improve recovery, reduce muscle damage, and support physical and cognitive performance in firefighters. You have been asked to participate in the research because you are a career male or female firefighter with the Fort Worth Fire Department, and you may be eligible to participate.

WHAT IS THE PURPOSE, PROCEDURES, AND DURATION OF THE STUDY?

The purpose of this study is to examine how different meal types—beef-based or plant-based—impact firefighter recovery, health, and performance. About 20 male and female career firefighters will be invited to participate. If you join, you will complete two 4-day testing sessions over about 4-6 weeks, with 2–3 weeks of rest in between. During each session, you will be provided with all of your meals, which are designed to look and taste similar but differ in their protein source. You will be asked to eat only the meals we provide during those days.

At each testing session, you will provide small blood samples (about 20 mL/draw; 160 mL in total for the whole study) to measure markers of health and recovery, complete firefighter-specific tasks such as hose deployment, ladder carry, stair climb, and dummy drag, and perform physical tests like the vertical jump. You will also complete computer-based tests that measure reaction time, attention, memory, and mood, and fill out questionnaires about muscle soreness, food satisfaction, and any possible side effects. Testing will occur before exercise and then again at 24, 48, and 72 hours afterward to track your recovery. All sessions will be held at the Fort Worth Fire Department training site, where trained staff and emergency medical technicians will be present for safety.

By conducting this study, we want to determine whether beef-based ready-to-eat meals better support firefighter health, recovery, and performance than plant-based meals. Your participation in this research will last about 1-1.5 months in total, including two separate 4-day testing periods with rest periods in between (about 2 to 3 weeks each).

WHAT ARE REASONS YOU MIGHT CHOOSE TO VOLUNTEER FOR THIS STUDY?

By participating in this study, you may benefit from receiving individualized feedback on your health, performance, and recovery (including blood markers, physical fitness testing, and cognitive assessments). You will also receive compensation for your time and effort. In addition, the meals provided may give you insight into how different types of nutrition affect your recovery and performance. While you may not experience a direct personal benefit, the

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information gained from this research may help improve firefighter nutrition strategies and contribute to better health and performance programs for first responders in the future.

For a complete description of benefits, refer to the Detailed Consent.

WHAT ARE REASONS YOU MIGHT CHOOSE NOT TO VOLUNTEER FOR THIS STUDY?

You might choose not to participate in this study because there are some risks, even though they are considered minimal. Blood draws may cause temporary discomfort, minor bruising, dizziness, or in rare cases, fainting or infection at the needle site. Exercise testing may result in temporary fatigue, muscle soreness, or minor musculoskeletal strain. There is also a small chance of mild stomach upset from the meals provided. Participation also requires a time commitment over several weeks, which may be inconvenient. This study is voluntary. Choosing not to participate will not affect your employment, training, or access to medical care. The alternative is to continue your normal diet and training routine without participation in the study.

For a complete description of risks, refer to the Detailed Consent.

DO YOU HAVE TO TAKE PART IN THE STUDY?
If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any services, benefits, or rights you would normally have if you choose not to volunteer.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS OR CONCERNS?
The person in charge of this study is Dr. Drew E. Gonzalez (PI) of the Sam Houston State University Department of Kinesiology. If you have questions, suggestions, or concerns regarding this study or you want to withdraw from the study his/her contact information is: drewgonzalez418@shsu.edu or 210-788-8616. If you have any questions, suggestions or concerns about your rights as a volunteer in this research, contact the Office of Research and Sponsored Programs – Sharla Miles at 936-294-4875 or e-mail ORSP at sharla_miles@shsu.edu.

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Consent for Participation in Research

DETAILED CONSENT *Effects of beef-forward ready-to-eat meals before and after simulated fire suppressive activities on markers of cardiometabolic health, catabolism, and recovery: A Pilot Feasibility Study*

Why am I being asked?

You are being asked to be a participant in a research study about the effects of consuming beef-based ready-to-eat meals, compared with plant-based meals, before and after a simulated fire ground test can improve recovery, reduce muscle damage, and support physical and cognitive performance in firefighters conducted by Dr. Drew E. Gonzalez of the Department of Kinesiology in the College of Health Sciences at Sam Houston State University. You have been asked to participate in the research because you are a career male or female firefighter with the Fort Worth Fire Department and may be eligible to participate. We ask that you read this form and ask any questions you may have before agreeing to be in the research.

Your participation in this research is voluntary. Your decision whether or not to participate 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.

Why is this research being done?

This research is being conducted to determine whether eating ready-to-eat meals (RTEMs) containing beef protein can help firefighters recover more quickly after performing demanding job-related tasks compared to plant protein-based meals. Firefighting is physically and mentally stressful, and recovery is important for health, safety, and job performance. In this study, participants will complete two short diet phases where they will eat meals provided by the research team for about 3–4 days each. During each phase, participants will complete a firefighter training test, provide small blood samples, complete surveys on soreness, mood, and meal satisfaction, and take performance and cognitive tests. The risks include temporary discomfort from blood draws, normal muscle soreness or fatigue from exercise, or mild stomach upset from the meals. The potential benefits include receiving personalized information on recovery and nutrition, compensation for time and effort, and contributing to research that could improve firefighter health and safety, as well as nutrition practices. Participation is voluntary, and the alternative is simply to continue a normal diet and training without joining the study.

What is the purpose of this research?

The purpose of this research is: to find out whether eating high-quality protein meals for a few days can help firefighters recover faster and perform better after demanding job-related tasks.

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Specifically, this study will compare ready-to-eat meals (RTEM) made with beef protein and plant-based protein meals. We want to see whether beef-based meals reduce muscle damage, soreness, immune stress, and fatigue, and whether they improve both physical performance (e.g., job-specific firefighter tasks) and mental performance (e.g., attention and memory).

To answer this question, about 20 healthy male and female firefighters from the Fort Worth Fire Department will participate in a randomized, double-blind study. Each participant will complete two testing sessions over several weeks, separated by 2–3 weeks of recovery. This design will allow us to directly compare how different meal types affect recovery and performance in the same individuals.

What procedures are involved?

If you agree to be in this research, we would ask you to do the following things:

Screening and Enrollment: You will first complete an online screening and a short health history questionnaire to determine your eligibility. If you qualify, you will be invited to an orientation session where the study will be explained, you will sign informed consent, and basic measures such as your height, weight, heart rate, and blood pressure will be taken. You will also practice the computer-based and performance tests so you know what to expect.

Study Meals: During the study, you will be provided with ready-to-eat meals (RTEM) to eat for about 3–4 days. These meals will either contain beef protein or plant protein. The meals will look and taste similar so that neither you nor the research team knows which type you are receiving at the time (this is called a double-blind study). You will complete both conditions (beef and plant), with 2–3 weeks of normal eating and rest between each phase.

Testing Days: On the first day of each phase, you will arrive at the fire training site after fasting overnight. You will:

- Provide a blood sample taken by a trained phlebotomist.
- Answer questionnaires about food satisfaction, side effects, soreness, and mood.
- Complete short computer and paper tests to measure attention, memory, and mental performance.
- Perform physical assessments, including a vertical jump test and a firefighter-specific test called the Fire Ground Test (FGT). The FGT includes common tasks such as hose pulls, ladder carries, stair climbs, and a victim drag, while wearing full firefighting gear.

Recovery Days: For the next three mornings (24, 48, and 72 hours after the Fire Ground Test), you will return to the station. Each morning, you will provide another blood sample, complete the questionnaires, rate your muscle soreness, and repeat the cognitive tests. On the third recovery morning, you will also repeat the vertical jump test and the Fire Ground Test.

Crossover: After a break of 2–3 weeks, you will repeat the same procedures with the next type of meal until you have completed both conditions.

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Time Commitment: Your participation in the full study will last about 4-6 weeks, with two main testing periods lasting 4 days each.

Voluntary Participation: Taking part in this study is completely voluntary. You may stop at any time, and you will not be penalized if you decide not to continue.

Assignment to Groups: You will be randomly assigned to start with one of two meal conditions: (1) beef-based meals and (2) plant-based meals. Over the course of the study, you will complete both meal conditions in different testing phases. Neither you nor the researchers will know which type of meal you are receiving at the time (this is called a double-blind study).

Length of Time for Participation: Each testing phase lasts about 4 days, and there will be 2–3 weeks of normal eating and rest between each phase. In total, your participation will take about 4-6 weeks from start to finish.

Frequency of Procedures: During each phase, you will participate in one main testing day (with blood draws, questionnaires, cognitive tests, and firefighter performance testing), followed by three recovery mornings during which additional blood draws, questionnaires, and assessments will be completed.

Location of Procedures: All procedures will take place at the Fort Worth Fire Department (FWFD) Bob Bolen Public Safety Complex. Meals will be prepared in a controlled kitchen, packaged, and delivered to the station for you to pick up and eat daily.

Number of Participants: About 20 firefighters from the Fort Worth Fire Department will take part in this study.

What are the potential risks and discomforts?

Participation in this study involves minimal risks, similar to those firefighters may encounter during routine occupational training and standard medical procedures. The primary risks include:

Blood Draws (Venipuncture): Temporary discomfort, minor bruising, dizziness, or, in rare cases, fainting or infection at the needle site. These risks are generally mild, short-lasting, and reversible. All blood draws will be performed by trained phlebotomists using sterile techniques, and participants will be monitored closely.

Exercise and Performance Testing: Participants may experience fatigue, muscle soreness, or minor musculoskeletal strain, which are consistent with the physical demands of firefighting training. Testing will be conducted under supervision by trained research staff and Fort Worth Fire Department (FWFD) personnel. Emergency medical technicians (EMTs) will be present during testing to provide immediate medical support if needed.

Study Meals: The ready-to-eat meals (RTEM) are made from standard food products (beef- or plant-based). Potential risks are limited to mild gastrointestinal discomfort, such as bloating or

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upset stomach, and only if a participant has a sensitivity or intolerance to an ingredient. Participants with known food allergies will be excluded from the study.

All procedures will follow established safety protocols. If a participant experiences any unusual or severe symptoms, testing will stop immediately, and medical evaluation will be provided if necessary. Participants may also withdraw from the study at any time without penalty.

This study does not involve experimental drugs or medical devices, and therefore, the risks are minimal and consistent with everyday activities firefighters already encounter in their occupation.

Are there benefits to taking part in the research?

There may not be any direct health benefits to you from participating in this study. However, you may benefit from receiving information on your physical performance, recovery, and nutrition to better understand your health.

You will receive $200 as compensation for your time and effort in completing the study procedures. Please note that this payment is not considered a direct benefit of research participation, but rather compensation for your time and effort.

The primary benefit of this study is to help researchers gain a deeper understanding of how different types of protein in meals, such as beef-based versus plant-based protein, impact recovery, performance, and overall well-being in firefighters. This knowledge may be used to develop future nutrition strategies to support firefighters and other tactical athletes, thereby improving health, readiness, and performance in physically demanding professions.

In addition, findings from this research may benefit society by advancing scientific understanding of protein sources and recovery, which could inform recommendations for athletes, first responders, and the general public.

What other options are there?

The only option is not participating in the study.

What about privacy and confidentiality?

The only people who will know that you are a research participant are members of the research team. No information about you, or provided by you during the research will be disclosed to others without your written permission, except:

- if necessary to protect your rights or welfare (for example, if you are injured and need emergency care or when the SHSU Protection of Human Subjects monitors the research or consent process); or
- if required by law.

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When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. If photographs, videos, or audiotape recordings of you will be used for educational purposes, your identity will be protected or disguised.
Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

No information that could identify you will be released to anyone outside of the research team without your written permission, unless required by law. Data collected in this study will be de-identified using participant codes, and your name or personal information will not appear in any reports, presentations, or publications.

We will not be audio- or videotaping you during this study. Only written questionnaires, blood samples, and performance testing data will be collected.

All personal information (e.g., consent forms, health questionnaires) will be kept separate from your coded research data. Paper documents will be stored in a locked filing cabinet in the principal investigator's office, and electronic files will be password-protected and encrypted. Only the research team will have access to the data.

Survey and questionnaire responses will be stored securely and linked only to your participant code. Once data entry and analysis are complete, paper forms will be securely shredded, and electronic data will be retained in encrypted storage indefinitely, in accordance with SHSU IRB policy.

If researchers ever wish to use your data for any other purposes outside of this study, you would be asked for additional consent.

What if I am injured as a result of my participation?

In the event of injury related to this research study, you should contact your physician or the University Health Center. However, you or your third-party payer, if any, will be responsible for payment of this treatment. There is no compensation and/or payment for medical treatment from Sam Houston State University for any injury you have from participating in this research, except as may by required of the University by law. If you feel you have been injured, you may contact the researcher, Dr. Drew E. Gonzalez at 210-788-8616.

What are the costs for participating in this research?

There is no cost to the participant for participating in this research study.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will be compensated for your time and effort in this study. The total payment for completing the entire study is $200. This amount reflects the time commitment required, including multiple testing sessions and blood draws. Payment will be prorated if you withdraw before completing

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all study sessions. Participants who complete only one part of the study will receive $100 (approximately one-third of the total commitment). Those who complete two full parts will receive $200. You will not be reimbursed for any additional expenses such as transportation, parking, or childcare.

Can I withdraw or be removed from the study?

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

You may choose to stop participating in this study at any time and for any reason without penalty or loss of benefits to which you are otherwise entitled. If you decide to withdraw, please inform the research team so we are aware, but you do not need to provide a reason. If you complete only part of the study, you will receive prorated compensation: $100 for completing one session and $200 for completing both sessions.

Although rare, the investigator may withdraw you from the study if you do not follow the study protocol (for example, if you do not follow the dietary requirements or testing instructions), if it is determined that continued participation could put you at risk, or if other circumstances arise that make continuation unsafe or impractical.

Who should I contact if I have questions?

The researchers conducting this study are Dr. Drew E. Gonzalez. You may ask any questions you have now. If you have questions later, you may contact the researchers at: Phone: 210-788-8616.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or you have any questions about your rights as a research participant, you may call the Office of Research and Sponsored Programs – Sharla Miles at 936-294-4875 or e-mail ORSP at sharla_miles@shsu.edu.

You may choose not to participate or to stop your participation in this research at any time. Your decision whether or not to participate 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.

Agreement to Participate

I have read (*or someone has read to me)* the above information. I have been given an opportunity to ask questions, and my questions have been answered to my satisfaction. I agree to participate in this research.

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Consent: I have read and understand the above information, and I willingly consent to participate in this study. I understand that if I should have any questions about my rights as a research subject, I can contact Dr. Drew E. Gonzalez at 210-788-8616 or by email at drewgonzalez418@shsu.edu. I have received a copy of this consent form.

Your name (printed): _____

Signature: _____ Date: _____

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