UNIVERSITY OF CENTRAL FLORIDA

Title of research study: Effects of Post-Exercise Recovery Drink Composition on Subsequent Performance in Masters Class Athletes

Investigator: Erica Goldstein

Key Information: Participants will consume either a carbohydrate drink (1.2g CHO/kg bm), a carbohydrate plus protein drink (0.8g CHO/kg bm + 0.4g PRO/kg bm), or a placebo drink matched for taste and appearance between bouts of high-intensity exercise to determine which drink most effectively moderates performance decrements in a subsequent bout of exercise.

Why am I being invited to take part in a research study?

We invite you to participate in a research study because you are a male between the ages of 35-59 and have been regularly engaged in endurance exercise (running, cycling, swimming) for a minimum of three years, with a weekly training volume of 5-10 hours.

Why is this research being done?

The purpose of this study is to determine whether just carbohydrate or carbohydrate plus protein is more effective at preventing decreases in exercise performance during subsequent bouts of exercise. This information will benefit any endurance-trained masters class athlete who may need to compete or train multiple times a day.

How long will the research last and what will I need to do?

We expect that you will be in this research study for 10-14 days. Visits 1 and 2 will take approximately 60-90 min each and will be separated by 48-72 hours. The last visit (#3) will take approximately 4 hours and includes one 2-hour rest period and one 30-min rest period.

You will be asked to perform high-intensity exercise on a cycle ergometer during all 3 visits. During some of that time, we will be collecting oxygen consumption data, and you will be wearing a small mask that covers your nose and mouth but does not obstruct your breathing in any way. On the final visit, you will be asked to perform fatiguing exercise and will then be asked to drink one of three drinks, one is a placebo, one is just carbohydrate, and one is a mixture of carbohydrate and protein. Two hours after drinking one of those drinks, you will be asked to exercise again; this is how we will test which drinks are most effective at moderating decreases in performance.

More detailed information about the study procedures can be found under ***"What happens if I say yes, I want to be in this research?"***

Is there any way being in this study could be bad for me?

High-intensity physical exercise may present a risk of musculoskeletal injuries (e.g., muscle strains) and temporary discomfort from perceived effort. Additionally, you may feel temporary nausea from maximal effort exercises. A rise in heart rate and blood pressure associated with

exercise may also occur. After completing these tests, you may experience feelings of muscle soreness and fatigue, which are a normal outcome of physical exercise.

Participants' physical risks will be minimized by having each testing session conducted by qualified investigators. All testing procedures will be done in a controlled manner in the presence of certified strength and conditioning and basic life support personnel.

More detailed information about the risks of this study can be found under ***"Is there any way being in this study could be bad for me?***

Will being in this study help me any way?

There are no benefits to you from taking part in this research. We cannot promise any benefits to others from your taking part in this research. However, possible benefits to others include knowledge of optimal post-exercise nutrition recovery practices.

What happens if I do not want to be in this research?

Participation in research is entirely voluntary. You can decide to participate or not participate. Your participation in this study is voluntary. You are free to withdraw your consent and discontinue participation in this study at any time without prejudice or penalty. Your decision to participate or not participate in this study will in no way affect your continued enrollment, grades, employment, or your relationship with the individuals who may have an interest in this study.

Detailed Information: The following is more detailed information about this study in addition to the information listed above.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team: at (407) 823-6424, Jeffrey.Stout@ucf.edu, Jeffrey R. Stout, Ph.D.; Erica.Goldstein@ucf.edu, Erica Goldstein, M.S., RDN

This research has been reviewed and approved by an Institutional Review Board ("IRB"). You may talk to them at 407-823-2901or irb@ucf.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

How many people will be studied?

We expect 30 people will be in this research study. However, no more than 50 participants will be recruited.

What happens if I say yes, I want to be in this research?

We ask that you do not exercise for 24 hours prior to every visit.

• Visit #1 will take 60-90 min and you will need to be 2 hours fasted. During the first visit (Visit #1), the study will be explained to you by the investigators. Eligible participants will be asked to provide their written informed consent. Those who are interested in participating in the study will be asked to complete the Exercise Preparticipation Health Screening Questionnaire for Exercise Professionals (PHSQEP), a physical activity readiness questionnaire (PAR-Q+), and a medical history questionnaire to determine the need for medical clearance from a health care professional. Participants presenting any sign or symptoms suggestive of cardiovascular, metabolic, or renal disease will be asked to seek medical clearance in order to participate. Following the written consent, anthropometrics, such as weight and height, and body composition (lean body mass, percent body fat) will be measured, and a graded exercise test (gradual and continual increase in intensity) to exhaustion will be completed. Weight and body composition will be assessed using bioelectrical impedance analysis. You will be asked to remove your footwear, including socks, and wear only light athletic attire. Then you will be asked to stand on a platform while holding two handles out to the side. You will hold this position as the bioelectrical impedance analysis sends a minute electrical current (that is safe and cannot be seen or felt) through the body to determine your body composition. There are no risks or discomforts associated with the use of bioelectrical impedance analysis.

For the graded exercise test, you will be wearing a mask covering your nose and mouth, using a one-way valve to collect expired oxygen, and provided with a heart rate monitor chest strap that should be placed just below the sternum. The gas exchange analysis device will be placed by the cycle ergometer. You will complete a five-minute warm-up on the cycle ergometer at a self-selected intensity and cadence before testing. The test will begin at an initial workload of 50 watts (W) for 2 minutes, then will be increased to 100W for an additional 2 minutes, then 150W, followed by an increase of 30W every 2 minutes until you can no longer maintain 60 revolutions per min (rpm).

Participants may choose to separate Visit #1 into two sessions, with the first to complete informed consent and screening, and the second for body composition and graded exercise testing.

•For the second visit (Visit #2), you will report to the Physiology of Work & Exercise Response (POWER) Lab for exercise testing and to become familiarized to the testing protocols. Based on your performance from Visit #1, you will perform five 4-min intervals on the cycle ergometer at an assigned power output that will be separated by two minutes of low-intensity cycling. Following the final interval, you will cycle at a high intensity until voluntary exhaustion. This will familiarize you with the protocol for the next and final visit and teach you how to respond to the rating of perceived exertion (RPE) measure. Visit #2 will take 1 hour.

•For the last visit (Visit #3), you will need to consume 500 ml of water 2 hours prior to your arrival to the laboratory for testing. During this visit, you will complete the exercise protocol that was previously performed on Visit #2. You will be wearing a mask covering your nose and mouth, using a one-way valve to collect expired oxygen, and fitted with a heart rate monitor chest strap. Immediately following this exercise bout, you will be given either an isocaloric carbohydrate drink (1.2g CHO/kg BM), carbohydrate plus protein drink (0.8g CHO/kg BM + 0.4g PRO/kg BM), or placebo that have a similar appearance and taste and you will be blinded to the contents. You will then rest for two hours in the testing area. After completing the first exercise bout, and 2-hour recovery period, you will perform an identical second bout of exercise. You will then rest quietly for an additional 30 min to allow for recording of heart rate, and upon completion, this will conclude all required testing. You will be weighed in your cycling bib shorts immediately before and after the first and second bouts of high-

intensity interval exercise and time to exhaustion testing. Sweat rate will be determined based on the difference between pre-and post-weight changes for each bout of exercise, the amount of fluid consumed during the recovery period, and total exercise time in minutes. You will also be asked to report total sleep in number of hours and minutes for the night prior to testing. This is a randomized, double-blind design, and you will have a one in three chance of being given one of the recovery drinks on the final day of testing (Visit #3). You will not be told which drink you are getting; however, one investigator will know. Visit #3 will take 4 hours.

•Dietary Recall. The ASA24® is a validated, automated self-administered 24-hour dietary assessment tool developed by the National Cancer Institute (Bethesda, Maryland). You will be instructed on the use of the ASA24® during Visit #1, either by a registered dietitian or a trained volunteer research assistant. Following completion of the graded exercise test, you will be emailed a sample of a detailed diet recall and an individual username and password to access the ASA24® system. You will be asked to report a 24-hour intake that is typical for days that you train. The sample diet recall that you receive will demonstrate a level of detail that includes all foods and fluids consumed upon waking until bedtime, including foods and/or supplements consumed pre, during, and immediately post-exercise. Participants will be asked to complete the electronic diet recall during the 5-9-day period between familiarization (Visit #2) and the experimental protocol (Visit #3). Post-testing, the dietary intake will be analyzed for total energy (calories) and carbohydrate, protein, and fat consumed.

Postexercise Nutrition Knowledge and Practice. The Nutritional Recovery Practices, Knowledge and Beliefs of Australian Triathletes survey is an instrument that was previously designed to assess knowledge of postexercise nutritional recommendations and recovery practices in endurance athletes. You will be asked to complete a series of 34 total questions assessing your postexercise nutrition knowledge and recovery practices. Participants will complete the survey electronically during the 2-hour recovery period (Visit #3).

What happens if I say yes, but I change my mind later?

You can leave the research at any time, and it will not be held against you. If at any time during the study, you do not wish to continue, you are encouraged to inform the researcher. Discontinuation of participation may occur at any time. You have the right to discontinue participation without penalty, regardless of the status of the study. Data obtained until the point of withdrawal may or may not be used in the final analysis. Data pertaining to participant demographics, such as age, height, weight, and body composition, maximal aerobic capacity, and training history may be used even if a participant does not complete all three visits.

Is there any way being in this study could be bad for me? (Detailed Risks)

The exercise-based assessments carry the same inherent risks as participating in any physical activity, such as muscle soreness, and fatigue and possibly muscle strains, and/or joint sprains, elevated heart rate, feelings of nausea and possible episodes of emesis. To minimize these risks, participants will be instructed on the appropriate technique for the performance assessments and will be required to complete a warm-up prior to completing the assessments. Furthermore, participants will be informed that they can quit at any time before or during the test. All personnel involved in this study are CPR certified. Furthermore, all research personnel involved in data collection are experienced in the administration of the proposed assessments, and all Doctoral students involved in this study are Certified Strength and Conditioning Specialists through the National Strength and Conditioning Association. You will be instructed to immediately stop and report any injury or discomfort associated with the performance assessments to a member of the investigative team. The extent of the

injury/discomfort, as well as your ability to continue with the study, will be subsequently determined by the investigative team. If it is deemed that the discomfort/injury will prevent you from completing the study, or if the injury/discomfort may be exacerbated by further participation in the study, the investigative team will suspend your participation in the study.

There are no risks to others in the study who are not participants.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your personal information, including research study records to people who need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

Your information collected as part of this research will not be used or distributed for future research studies, even if all of your identifiers are removed.

Can I be removed from the research without my OK?

The person in charge of the research study can remove you from the research study without your approval. Possible reasons for removal include the inability to follow the study protocol.

What else do I need to know?

If you need medical care because of taking part in this research study, contact the investigator, and medical care will be made available. Generally, this care will be billed to you, your insurance, or another third party. The University of Central Florida has no program to pay for medical care for research-related injury.

Taking part in this research study may lead to added costs to you. If you do not have a valid permit to park on UCF's main campus, you may need to pay for a temporary parking pass for testing visits. Garage parking costs are $3-$5/day for visitors.

Signature Block for Capable Adult

Your signature documents your permission to take part in this research.

Signature of subject	Date
Printed name of subject	
Signature of person obtaining consent	Date
Printed name of person obtaining consent	