

# **LIVERPOOL JOHN MOORES UNIVERSITY PARTICIPANT INFORMATION SHEET**

## **THE EFFECT OF EXERCISE MODE AND AMBIENT TEMPERATURE ON CARDIAC FUNCTION AND BIOMARKER APPEARANCE**

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You are being invited to take part in a research study. Before you decide it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Ask me if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not.

### **1. What is the purpose of the study?**

The purpose of the study is to monitor the effects of exercise mode (running versus cycling) and ambient temperature (16°C versus 32°C) on cardiac function during recovery and the appearance of cardiac biomarkers in the blood during and post-exercise. Research has provided evidence that prolonged bouts of exercise can result in transient alterations in left ventricular function as well as the release into the circulation of biomarkers of cardiac damage. These issues require further exploration to inform athletes in order to provide in-depth feedback regarding cardiovascular structure and function following strenuous exercise.

### **2. Do I have to take part?**

No. It is up to you to decide whether or not to take part. If you do you will be given this information sheet and asked to sign a consent form. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights or any future service you receive.

### **3. What will happen to me if I take part?**

The study will involve visiting the sports science labs at LJMU on five occasions after you have read this form, asked any questions and provided written informed consent form. The first two testing sessions will involve you completing tests to measure your cardiorespiratory fitness on a treadmill and on a bicycle. This will be done by performing a graded intensity, maximal oxygen uptake test. During this test you will be required to exercise to volitional exhaustion whilst wearing a mouthpiece that will monitor how much oxygen you use during exercise. You will also be asked to wear a heart rate.

The next three sessions will be organised in a random order with a minimum of seven days recovery between trials. In each of these trials (cycle at 16°C, cycle at 32°C, run at 16°C) you will cycle for 180 min and run for 120 min at ca. 90% of your anaerobic threshold that is determined from the initial maximal cycle and treadmill tests. For all three prolonged exercise trials you will arrive at the lab in the morning after a light breakfast having ingested a core temperature pill the night before and then before exercising you will have your urine osmolality assessed, be weighed, have your blood pressure taken, will have your core and skin temperature recorded, your heart rate measured, undergo a cardiac scan, a vascular scan and a canula will be fitted into a vein in your arm so that blood samples can be collected throughout the study without the need to insert a needle on multiple occasions. During exercise we will measure heart rate, blood pressure, oxygen uptake, core and skin temperature as well as take a further blood sample every 30 min. Upon completion of the exercise protocol the same data as taken at rest (except urine osmolality) will be collected immediately, 2 hours and 24 hours post-exercise

#### **4. Are there any risks / benefits involved?**

There is a small risk of infection due to a needle being used to fit a cannula during the testing. This may also result in bruising at the site of needle insertion. Running and cycling may result in a level of muscle damage/soreness if the athlete is unaccustomed to the intensity and/or duration of the exercise. This can last between 24 and 72 hours. Exercise in the heat may lead to dehydration and/or heat injury.

You will gain valuable information on your current state of fitness, the efficacy of your training regime and useful insights into your responses to prolonged exercise (cycling and running). Knowledge of your own physiological responses to exercise in a warmer environment will be useful in your preparation for competition (or training) in similar scenarios.

#### **5. Will my taking part in the study be kept confidential?**

All of the data collected will be anonymised so that your identity will not be revealed. All data will be stored on a password protected computer system and any paperwork stored in a locked cabinet for a specified time period.

#### **Contact Details of Researcher**

If you have any questions relating to any of the techniques used during the research study please feel free to contact me to discuss this further. Participation in this research study is voluntary and you are free to withdraw at any time without prior explanation.