# Participant Information Sheet/Consent Form

**Title:** The effect of handgrip on sprint-cycling performance

**Protocol Number:** #2020000354

**Project Sponsor:** This research is not sponsored or funded through any external source.

**Principal Investigator(s):** Assoc Prof Glen Lichtwark1, Prof Andrew Cresswell1

**Associate Investigator(s):** Mr Ross Wilkinson1, Mr Callum Hicks1, Mr Tobias Edmanson1

1 School of Human Movement and Nutrition Sciences, The University of Queensland

## Part 1 What does my participation involve?

### Introduction

You are invited to take part in this research project, The effect of handgrip on sprint-cycling performance. This is because you are a healthy, young person who is experienced in riding bicycles and is competent in using clip-in cycling shoes. The research project is aiming to measure the effect of adding torso mass and gripping the handlebar on the biomechanics of sprint cycling.

This Participant Information Sheet/Consent Form tells you about the research project. It explains the tests and research involved. Knowing what is involved will help you decide if you want to take part in the research.

Please read this information carefully. Ask questions about anything that you don’t understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative, friend, or local doctor.

Participation in this research is voluntary. If you don’t wish to take part, you don’t have to.

If you decide you want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling us that you:

* Understand what you have read
* Consent to take part in the research project
* Consent to the tests and research that are described
* Consent to the use of your personal and health information as described.

You will be given a copy of this Participant Information and Consent Form to keep.

### What is the purpose of this research?

This research has been initiated by senior researchers, Associate Professor Glen Lichtwark and Prof Andrew Cresswell, in collaboration with Mr Ross Wilkinson. The aim of this study is to measure the effect of handlebar grip on the biomechanics of sprint cycling. Previous research suggests that the upper body and arms can contribute significantly to maximal power output during sprint cycling. In this study, we are measuring whether gripping the handlebars to pull upwards effects the maximum torque and power you can exert on the bicycle during a sprint in both a seated and standing posture. This research will provide insight into the contributions of muscular and non-muscular sources of power during sprint cycling and will help to guide the design of future bicycles and sprint-cycling training programs.

### What does participation in this research involve?

If you agree to take part in this study, you will be asked to participate in one, 90-minute experimental session in the Neuromechanics Laboratory located on Level 2 of the Human Movement and Nutrition Sciences building at The University of Queensland St Lucia campus.

Upon arrival, an investigator will confirm your understanding of what is required of you by asking some basic questions about the experimental procedure. You will also be asked to complete an Adult Pre-Exercise Screening System (APSS) to confirm that it is safe for you to undertake vigorous physical activity. Then, if willing and able, you can consent or assent to take part in the research study.

Prior to beginning the experimental trials, your height and weight will be measured. Reflective markers will then be placed on the skin of your arms, torso, and legs, enabling us to track the position of your body using special cameras around the ergometer. Surface electromyography (EMG) units will then be placed on your skin over the belly of eight muscles, enabling us to measure the electrical activity of your muscles. Prior to adhering the EMG units, we will have to prepare small patches of your skin with a light abrasion gel. It will feel like we are rubbing your skin with a very-light sandpaper. An Inertial Measurement Unit (IMU) will then be secured to your lower back (L4/L5) using double-sided tape. An IMU is a lightweight, wireless electronic device which measures acceleration, rotation, and orientation.

Once fitted with the markers and EMG units, you will begin a 5-minute cycling warm-up at 100 Watts at your preferred cadence. After completing the warm-up, you will be familiarized to each condition by performing a 10-second sub-maximal cycling efforts. Once familiarized, you will complete twelve, 5-second maximal sprint trials in a randomized order in either seated or standing postures and gripping the handlebars or resting your fists on the handlebars for balance only. A 3-minute rest period will be given between the maximal sprint trials to reduce any potential fatigue effects.

For each trial, we will measure and record your power output, motion, muscle activity, crank angle, and crank forces.

### Other relevant information about the research project

This research project has been designed to make sure the researchers interpret the results in a fair and appropriate way and avoids investigators or participants jumping to conclusions.

There are no costs associated with participating in this research project, nor will you be paid.

### Do I have to take part in this research project?

Participation in any research project is voluntary. If you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

If you do decide to take part, you will be given this Participant Information and Consent Form to sign and you will be given a copy to keep.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with members of the research team or your relationship with The University of Queensland.

### What are the possible benefits of taking part?

There will be no clear benefit to you from your participation in this research.

### What are possible risk and disadvantages of taking part?

This research does not involve any interventional or medical treatments that cause side effects.

Exercise can cause fatigue and minor discomfort. In the unlikely event of a life-threatening event (e.g. a heart attack), the investigators would call triple zero (000) and begin CPR until medical help arrives. At least one person trained in CPR and how to use an AED (Automated External Defibrillator) will be present during the experiment. The investigators have a functional AED in the Neuromechanics Laboratory.

If as a direct result of participating in this study, you experience a non-life-threatening injury (e.g. a cut, scratch, or wrist sprain) that requires medical treatment, the investigators will provide reasonable assistance in getting you to either UQ St Lucia medical clinic or St Lucia Village Medical Centre.

It is important that you tell the Principal Investigator, Glen Lichtwark, if you think you have been injured as a result of taking part in this study.

In addition to these risks, this research may hurt you in ways that are unknown. These may be a minor inconvenience or may be so severe as to cause death.

### What if I withdraw from this research project?

If you decide to withdraw from this research project, please notify a member of the research team before you withdraw. A member of the research team will inform you if there are any special requirements linked to withdrawing.

If you do withdraw your consent during the research project, the Principal Investigator and Associate Investigators will not collect additional personal information from you, although personal information already collected will be retained to ensure that the results of the research project can be measured properly and to comply with law. You should be aware that data collected by the investigators up to the time you withdraw will form part of the research project results. If you do not want them to do this, you must tell them before you join the research project.

### What happens when the research project ends?

We would like to keep your contact information on file so we can notify you of future research studies we think you may be interested in. This information will be used by only the Principal Investigator of this study and only for this purpose.

Please initial your choice below:

\_\_\_ Yes, you may contact me for future research studies.

The best way to contact me is: (enter preferred telephone number and/or email address)

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\_\_\_ No, you may not contact me for future research studies.

## Part 2 How is the research project being conducted?

### What will happen to information about me?

By signing the consent form, you consent to the Principal Investigator and Associate Investigators collecting and using personal information about you for the research project. Any information obtained in connection with this research project that can identify you will remain confidential. This data will be managed according to UQ’s Research Data Management Policy and will be backed up via the UQ Research Data Manager (UQRDM). Data will be accessible only to the listed investigators and will only be accessible via their institutional usernames and passwords. All data will be stored in a completely unidentifiable manner for a minimum of 5 years.

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission.

Any information obtained for the purpose of this research project that can identify you will be treated as confidential and securely stored. It will be disclosed only with your permission, or as required by law.

In accordance with relevant Australian and/or Queensland privacy and other relevant laws, you have the right to request access to the information collected and stored by the research team about you. You also have the right to request that any information with which you disagree be corrected. Please contact the research team member named at the end of this document if you would like to access your information.

### Complaints and compensation

If you suffer any injuries or complications as a result of this research project, you should contact the study team as soon as possible and you will be assisted with arranging appropriate medical treatment. If you are eligible for Medicare, you can receive any medical treatment required to treat the injury or complication, free of charge, as a public patient in any Australian public hospital.

### Who has reviewed the research project?

This study adheres to the Guidelines of the ethical review process of The University of Queensland and the National Statement on Ethical Conduct in Human Research.

### Further information and who to contact

Whilst you are free to discuss your participation in this study with project staff (contactable on +61 424 108 018), if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Coordinators on +617 3365 3924 / +617 3443 1656 or email humanethics@research.uq.edu.au.

# Consent Form

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1 School of Human Movement and Nutrition Sciences, The University of Queensland

### Declaration by Participant

I have read the Participant Information Sheet, or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research described in the project.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time during the project without affecting my future health care.

I understand that I will be given a signed copy of this document to keep.

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|  | Name of Participant (please print) | |  |  |  |  |
|  | | | | | | |
|  | Signature |  | | Date |  |  |
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|  | Name of Witness\* to Participant’s Signature (please print) | |  | | |  | |
|  | | | | | | | |
|  | Signature |  | | Date |  | |  |
|  | | | | | | | |

\* Witness is not to be the investigator, a member of the study team or their delegate. In the event that an interpreter is used, the interpreter may not act as a witness to the consent process. Witness must be 18 years or older.

**Declaration by Senior Researcher†**

I have given a verbal explanation of the research project, its procedures, and risks and I believe that the participant has understood that explanation.

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|  | | | | | | |
|  | Name of Senior Researcher (please print) | |  |  |  |  |
|  | | | | | | |
|  | Signature |  | | Date |  |  |
|  | | | | | | |

† A senior member of the research team must provide the explanation of, and information concerning, the research project.

Note: All parties signing the consent section must date their own signature.