

**Title of research study:** The Effect of Lateral Bicycle Dynamics on Maximal Power Output

**IRB Protocol Number:** 20-0293

**Investigator:** Ross Wilkinson, Ph.D.

### ***Purpose of the Study***

The purpose of the study is to measure the effect of leaning the bicycle (“rocking your bike”) on maximal power output. You are being asked to be in this study because you are a healthy, cyclist between 18 and 49 years of age. When cyclists sprint, they lean the bicycle from side to side. This technique is important for maintaining balance and possibly producing more power. In this study, we are measuring whether leaning the bike affects the maximum power output you can produce during a sprint. This research will help us understand optimal sprint cycling technique.

We expect that you will be in this research study for one session that will take less than two hours of your time. We will enroll up to 30 subjects in this research study.

### ***Explanation of Procedures***

Taking part in this study is completely voluntary. You do not have to participate if you don't want to. You may also leave the study at any time. If you leave the study before it is finished, you will still be paid for your time.

If you agree to take part in this study, you will be asked to participate in in one, 2-hour experimental session, which will be conducted outside on the CU Boulder campus. During the experiment, you will complete nine, maximal 5-second sprint trials on a stationary bike. We will measure the cadence and power that you exert on the cranks throughout each cycling trial.

We will ask you to ride the stationary bike for 15 minutes to warm up. We will then ask you to perform three practice sprints on the stationary bike. Between each sprint, we want you to rest for 3 minutes. We will then give you 10 minutes to rest before beginning the actual testing.

06.19.2020

IRB Approval Date

For each sprint, we will modify the stationary bike so that it either can or can't lean from side to side. We will ask you to sprint under three different conditions:

- 1) the bike can lean, and you can lean the bike however you prefer,
- 2) the bike can lean, but you will try to stop the bike from leaning, and
- 3) the bike can't lean.

You will repeat these conditions three times. Again, you will have a 3-minute rest between trials.

The order of the lean conditions will be assigned by chance, like flipping a coin. Neither you nor the investigator will choose what order you get. You will be told which order of trials you are riding.

### ***Voluntary Participation and Withdrawal***

Whether or not you take part in this research is your choice. You can leave the research at any time and it will not be held against you. If you choose to leave the study, we will immediately destroy any data that we had collected up to that point. If you decide to leave the research, simply tell the investigator that you wish to stop.

If you are a CU Boulder student or employee, taking part in this research is not part of your class work or duties. You can refuse to enroll, or withdraw after enrolling at any time, with no effect on your class standing, grades, or job at CU Boulder. You will not be offered or receive any special consideration if you take part in this research.

The investigators can remove you from the research study without your approval. Possible reasons for removal include not following safety measures to prevent the spread of COVID-19.

### ***Risks and Discomforts***

The study will take place outside on the CU Boulder campus. Thus, we cannot assure you of complete privacy because people on campus will be able to observe your participation in this study.

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 911, begin CPR and await EMS arrival. 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 building next to the research site.

There is a risk that you might fall while riding in this experiment.

If as a direct result of participating in this study, you experience a non-life threatening injury (for example: a cut, scratch or wrist sprain) that requires medical treatment, the

06.19.2020
------------

**IRB Approval Date**

IRB Document Revision Date: August 27, 2019

experimenters will provide reasonable assistance in getting you to Wardenburg Health Center, or Urgent Care at the Boulder Medical Center. Professor Kram has more than 25 years of experience conducting these sorts of experiments and has never had a subject experience a serious injury.

It is important that you tell the Principal Investigator, Ross Wilkinson, if you think you have been injured as a result of taking part in this study. **You can call him at (720) 727-4774.**

You may be exposed to COVID-19 by participating in this experiment.

We also request that you contact the Principal Investigator if you test positive for COVID-19 in the following 14 days after 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.

### ***Payment for Research Related Injury***

If you need medical care because of taking part in this research study, seek medical attention immediately (if it is a medical emergency, first call 911). Generally, this care will be billed to you, your insurance, or other third party. The University of Colorado – Boulder has no program to pay for medical care for research-related injury. Please contact the investigator as soon as possible to report an adverse event.

### ***Potential Benefits***

The only direct benefit of participating in this study is that you will get some vigorous exercise.

### ***Confidentiality***

Information obtained about you for this study will be kept confidential to the extent allowed by law. Research information that identifies you may be shared with the University of Colorado Boulder Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including people on behalf of the Office for Human Research Protections. The information from this research will be published for scientific purposes; however, your identity will not be given out.

### ***Payment for Participation***

06.19.2020

**IRB Approval Date**

IRB Document Revision Date: August 27, 2019

If you agree to take part in this research study, we will hand to you a \$25 gift card at the end of the session. If you choose to stop your participation in the study, or if you are withdrawn from the study, you will still receive the \$25 gift card. This payment for your participation is taxable income.

### Contact for Future Studies

We would like to keep your contact information on file so we can notify you if we have 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:

X Yes, you may contact me for future research studies. The best way to contact me is: (enter preferred telephone number and/or email address)

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

## Questions

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at (720) 727-4774 or [ross.wilkinson@colorado.edu](mailto:ross.wilkinson@colorado.edu).

This research has been reviewed and approved by an IRB. You may talk to them at (303) 735-3702 or [irbadmin@colorado.edu](mailto:irbadmin@colorado.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.

## Signatures

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

Henry Krietak

9/17/20

Signature of subject

Date \_\_\_\_\_

Henry Kvietok

Printed name of subject

Ross D. Wilkinson

9/17/2020

Signature of person obtaining consent

Date \_\_\_\_\_

Ross Wilkinson

Printed name of person obtaining consent

06.19.2020

IRB Approval Date

IRB Document Revision Date: August 27, 2019