Consent Form

TITLE: Effects of Sex and Menstrual Cycle Phase on Performance Decrement and Perceived Fatigue in Endurance Athletes after a High Intensity Training Session

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This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information. You will receive a copy of this form.

BACKGROUND

A decrease in performance can be used as a method to identify training stress in athletes by measuring the amount of fatigue after a workout. Performance decrease in cross-country skiers has not been studied following a high intensity training session. Males and females are known to respond to fatigue differently and there is limited research on this. As well the menstrual cycle is known to (MC) influence fatigue and training adaptation in competitive endurance athletes.

This study has two parts. Part A seeks to determine the daily change in 3000m running time trial (TT) performance in cross-country skiers. Part B seeks to understand the differences between males and females and whether the MC influences fatigue development by recording the change (decrease) in performance in 3000m running TT before and after a high intensity training session.

Competitive cross-country skiers will be recruited across Canada to participate in our study.

WHAT IS THE PURPOSE OF THE STUDY?

This study will investigate whether sex and menstrual cycle phase (Follicular (FP) or Luteal (LP)) influence fatigue and performance decrement following a high intensity training session in endurance athletes.

WHAT WOULD I HAVE TO DO?

You may choose to participate in the one of the three following options: 1) PART A, 2) PART B, or 3) both PART A and PART B (performed at separate times). Participation in PART A and/or PART B will be determined by your availability as an athlete and location. You can withdraw from the study by verbally telling the research assistant (RA) or thorough email (anneke.winegarden1@ucalgary.ca) stating you wish to withdraw. If the final 3000m TT has been completed, the data collected will be used in the final analysis.

Equipment:
We would like you to feel as comfortable as possible and therefore ask that you use your own heart rate monitor and watch. We also ask that you export your workout files and provide this to us after each session.

Prescreening:

You must complete the following prescreening procedures prior to running the 3000m TT:

- Physical Activity Readiness Questionnaire (PAR-Q)
- Resting heart rate (HR) and resting blood pressure (BP) taken by the RA (CSEP-CEP)
- Height and weight measurements taken by the RA (CSEP-CEP)

Pre-testing:

- We ask that you complete at least 1 track intensity workout within 2 weeks prior to 3000m TT testing
- We ask that you have at least 1 rest day prior to the 3000m TT testing

PART A (3hr time commitment over 3 days):

- Day 1: 3000m TT at race pace. We ask for your maximum effort, i.e. run a personal best time. A standardized warm up and cool down will be given to you to complete. Please wear your heart rate monitor and watch so that you can provide us with your maximum heart rate and average heart rates, during the 3000m TT. Your total time for the 3000m TT will be recorded by the RA. The total workout time will be approximately 1.5hrs. We ask that you treat the following hours as a partial rest day and do not do any other structured physical activity.
- Day 2: Rest day. We ask that you do not do any structured physical activity on this day.
- Day 3: Is a repeat of Day 1 3000m TT at race pace. Same instructions as above.

PART B (4.5hr time commitment over 3 days):

- Females Only: We ask that you track your menstrual cycle for 2-months prior to the first 3000m TT and email the start day and end day of your menstrual cycle to the RA.
- Females Only: We ask that you complete the urinary ovulatory testing beginning on day 10 of your cycle so that we determine the menstrual cycle phases within your last month. We will provide you with 10 days of the kits (Clearblue Advanced Digital Ovulation tests) and instructions on how to do this and how to store them.

We ask that you complete the following testing schedule:

- Day 1: 3000m TT at race pace. We ask for your maximum effort, i.e. run a personal best time. A standardized warm up and cool down will be given to you to complete. Please wear your heart rate monitor and watch so that you can provide us with your maximum heart rate and average heart rates, during the 3000m TT. Total time for 3000m TT completion will be recorded by the RA.
- The RA will administer the Rating of Fatigue Questionnaire and ask that you complete this before and after the TT. The total workout time will be approximately 1.5hrs. We ask that you treat the following hours as a partial rest day and do not do any other structured physical activity
- Day 2: Track Workout. You will be asked to complete 4-6 x 800m intervals with 3 mins rest at 90% of your max aerobic speed. This will be calculated from your recent 3000m TT results. You will be provided with a goal split time and a goal heart rate for the workout. Please wear your personal heart rate monitor and watch so that you can provide us with your maximum heart rate and average heart rate, during the 3000m TT. The RA will administer the Rating of Fatigue Questionnaire and ask that you complete this before and after the TT. Total workout time will be approximately 1.5 hrs. We ask that you do not do any structured physical activity on this day.
- Day 3: 3000m TT at race pace. Same instructions as Day 1.

WHAT ARE THE RISKS?

The risks associated with this study may include discomfort and fatigue associated with endurance performance testing and high intensity training. There is also the risk of a training related injury associated with high intensity running.

WILL I BENEFIT IF I TAKE PART?

If you agree to participate, upon completion of the study you will be offered a 1-1 meeting with a CSEP-Certified Exercise Physiologist to discuss your time trial results, fatigue levels and heart rate data collected during the study.

WILL WE BE PAID FOR PARTICIPATING, OR DO WE HAVE TO PAY FOR ANYTHING?

There will be no financial compensation to you. It is your responsibility to cover any costs associated with participation including travel to the track, parking, etc. as per a typical training session.

WILL MY RECORDS BE KEPT PRIVATE?

All of the information collected will remain strictly confidential. Only the investigators responsible for this study, the research assistant (RA) who will be doing the baseline assessments, and the University of Calgary Conjoint Health Research Ethics Board will have access to this information. " Confidentiality of your results will be protected by using a study identification (ID) number in the database (no names attached to it). This de-identified data will be stored for possible future use by other researchers. Any study results reported will in no way identify you, the study participant. You will be provided with a copy of your individual raw data.

IF I SUFFER A RESEARCH-RELATED INJURY, WILL I BE COMPENSATED?

In the event that you suffer an injury as a result of participating in this research, no compensation will be provided to you by the University of Calgary or the researchers. You still have all your legal rights. Nothing said in this consent form alters your right to seek damages.

SIGNATURES

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a participant. In no way does this waive your legal rights nor release the investigators or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time. If you have further questions concerning matters related to this research, please contact:

Dr. PK Doyle-Baker (Principal Investigator): (403) 220-7034

If you have any questions concerning your rights as a possible participant in this research, please contact the Chair, Conjoint Health Research Ethics Board, University of Calgary at 403-220-7990.

Please check all boxes below that apply:

☐ I consent to participate in PART A of this study.

☐ I consent to participate in PART B of this study.

Participant's Name	Signature and Date
Parent/Guardian Name (If <18 years)	Signature and Date
Investigator/Delegate's Name	Signature and Date
Witness' Name	Signature and Date

The University of Calgary Conjoint Health Research Ethics Board has approved this research.

A signed copy of this consent form has been given to you to keep for your records and reference.