UNIVERSITY OF LIMERICK
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UNIVERSITY OF LIMERICK RESEARCH ETHICS COMMITTEE

RISK ASSESSMENT FORM – PROCEDURES INVOLVING HUMAN SUBJECTS

SS020

Title of Procedure	Measurement of power output using a friction braked cycle ergometer (Wingate Test & Repeated Wingate Test Procedure)
Name of Assessor	Brian Carson
Assessment date	October 2019
Does this procedure already have ethical approval?	**Yes**
If so, enter ethical number and expiry date	**Approval No:** 2020_02_58_EHS (RA) **End Date: October 2029**

1 **Please provide a brief description of the procedure**

The cycle ergometer will have been set up ready for use by the supervisor/teaching assistant/technician/researcher. A warm-up and familiarization session on the cycle ergometer is carried out first. During the test, friction loads, ranging from 1-10 % of body mass, are applied. The subject pedals at 60 rpm firstly with no friction load until a countdown command is given. On the command, the participant pedals as fast as possible until they reach a certain cadence (e.g. 100 RPM) at which point the assigned friction load (1-10 % of body mass) is applied. The subject then pedals at maximum effort for a set period of time (5-30 seconds) followed by at least a 60 second rest period. Depending on the specific protocol, there are 1-4 minute rest periods between repeated Wingate Tests/ repetitions.

In the period between repeated Wingate tests, participant can sit still, pedal against a low resistance or walk around the room.

See detailed procedure on page 5

2 **Location in which the procedure may take place**

x	PESS Teaching Facilities (PG 050)
x	PESS Research Facilities (e.g. PG 051, PG047)

3	**Eligibility of subject(s) to be used**

x	PESS student (U.G. or P.G.)
x	University staff or campus personnel

Others, please specify

x	Members of the general public engaged in research projects granted ethical approval.

4	**Potential risks. To be explained before obtaining consent**

x	Low – Moderate Risk

All exercise carries a risk of cardiovascular incident in those who are susceptible. The participants will complete a standard pre-test questionnaire prior to participation, and no one with a history of cardiovascular disease, or a recent lower limb musculoskeletal injury will undertake this procedure. Additionally, all subjects will complete a written informed consent form prior to participation, having read a participant information sheet in full outlining the risks and benefits of participation in the research. Risks include potential fatigue over repeated Wingate Tests, and delayed onset of muscle soreness.

Participants will have no contraindications to safe participation in exercise / physical activity.

5	**Action to be taken in the event of a foreseeable emergency**

The procedure will be terminated if the volunteer shows any sign of distress.
Standard first aid procedures may be required depending on the severity of the situation. The following standard procedure should be followed in the event of an incident occurring in the PESS building / UL Facility:

1. Stop the procedure. Position the subject to prevent self-injury.
2. If appropriate, raise the subject's lower limbs to improve blood flow. Should the subject fail to respond summon help immediately.
3. Check vital signs airways, breathing and circulation (ABC)
4. If required attempt CPR as soon as possible.
5. Requesting Help: Emergency Contact telephone numbers are listed on laboratory door:
    - During normal working hours 9am-5pm, use lab phone to contact the Student Health Centre on **061-20**2534
    - Outside of normal working hours, or if the Student Health Centre number is engaged/busy, use the laboratory phone to dial 3333 for UL security personnel who will then contact the ambulance service. Contact one of the PESS First Aiders – names are listed on the PESS laboratory door.
6. When contacting the above clearly state: Location, Building, Room Number, Nature of

Incident/Accident and provide a contact number.

7. Complete the UL 'Accident & Emergency' form (completed by the investigator, not the volunteer). Forms available on UL HR website: https://www.ul.ie/hr/hr-policies-procedures-and-forms-z

6	**Level of supervision required for procedure**

x	PESS lecturing, research staff and teaching assistants
x	PESS postgraduate researcher

Others, please specify

x	Trained PESS postgraduate students
	Trained PESS undergraduate Student

7	**Other documentation required for this assessment ?**

x	Pre-test subject questionnaire
x	Participant Information Sheet

Others, please specify

x	Participant Consent Form
x	Detailed protocol

UNIVERSITY OF LIMERICK EHS RESEARCH ETHICS COMMITTEE

PROCEDURES INVOLVING HUMAN SUBJECTS

Procedure No	**SS 020**

Title of Procedure	Measurement of power output using a friction braked cycle ergometer (Wingate Test & Repeated Wingate Test Procedure)		
Name of Assessor	Brian Carson	Assessment date	November 2019
			End Date: July 2029

8 **Committee approval for experiment**

X	Granted
Others, please specify	

Comments/conditions

Signed_____ Date 30/01/2020

(Head of Department)

Standard Operating Procedure – Wingate

1. Calculate body mass (kg)

Participant must be weighed in lightweight clothing with shoes and accessories removed.

2. Calculate the 'test weight' (kg)

- The 'test weight' is 1-10 % of the participant's body mass.

3. Set up

1. Connect the serial port to the port on the bike, plug in power cable to bike and a socket in the wall.
2. To tell whether the bike is switched on, the electromagnet which holds the basket up will be on. Test this by pulling the blue cord, the basket should now stay in place.
3. Connect the serial cable to the USB-Serial convertor; plug this into a USB port on PC

4. Load software

1. Load the Monark Anaerobic Test software from the desktop.
2. Select either database or add group, then select a pre-existing subject or add person; click run test once a subject has been selected
3. A test can now be selected in the protocol selection box, or a new test can be created.
4. Select a test.
5. Add subject's weight if required

5. Warm-Up

- **Start cycling –** For the warm-up, the participant should complete 5 minutes of unloaded cycling ~60-70 rpm.
- **Adding the test weight –** Halfway through the warm-up, the participant should briefly stop cycling, the tester should then add the test weight. Once the weight has been added, the tester should then raise the basket away from the flywheel so that the participant can continue cycling at 60rpm with no resistance.
- **Warm-up sprint –** With the resistance still raised above the flywheel, a 3-second countdown should begin. The subject must pedal as fast as they can until the countdown is over. The tester should count down "3 – 2 – 1 – GO!". On the 'Go' signal the tester must lower the test weight basket and the participant must pedal maximally and to maintain maximal speed for approximately 3-seconds. After ~3 seconds – once the pedalling speed is high, the tester should clearly shout "STOP" and should remove the test weight so that the particpant can continue cycling, without the test weight, for another minute or so.
- **After the warm-up –** After the warm-up is over, the participant should rest for two minutes before performing the sprint test.

6. Run Test

1. Right foot in same position at start of each Wingate (i.e. left leg fully extended)
2. Click start and get the subject to start pedalling up to speed.
3. The load will drop automatically (120rpm) or a button on the handlebars can be pressed to release it onto the flywheel. On the "GO" signal, the participant should begin to accelerate maximally and try to maintain maximal speed throughout the entire test (e.g. 30 seconds).
4. After an initial lag time, data will begin recording on the graph displayed.
5. The tester must provide verbal encouragement through the test. The test will automatically stop recording once it has been completed.

6. Pull basket up to electromagnet to release resistance.
7. Record supervisor name and bout number e.g. exercise session 1, Wingate 2 etc.
8. If running repeated Wingates repeat steps 1 to 7 until required number of repetitions are complete.
9. 3 minute standardised cool-down (<60 rpm). If the participant feels unwell or goes quiet or pale, they should get off the bike and lie down with their feet resting on a chair. The participant should not be left alone at any point in the testing.

Notes:

- Make sure the correct communication port is selected (usually COM3); this needs to be selected by going to: file – settings-communication port
- In between wingagte tests, the participant can remain still, pedal against a low resistance or walk around the room.