Participant Information Statement - Physique traits, muscle performance and health status of natural bodybuilders and powerlifters

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Physique Traits, Muscle Performance, and Health Status of Natural Bodybuilders and Powerlifters

PARTICIPANT INFORMATION STATEMENT

(1) What is the study about?

The overall aim of this study is to examine the differences in physique traits, muscle performance (i.e. muscular strength, endurance, and power), and health status (i.e. cardiovascular disease risk) of natural bodybuilders and powerlifters across age groups. Another part of this study is to examine the changes to these measures across time (~4-5 months and <2 weeks prior to competition).

(2) Who is carrying out the study?

The study is being conducted at The University of Sydney (Faculty of Health Sciences, Cumberland Campus, C Block, 75 East Street Lidcombe NSW 2141) by the following researchers:

- Dr Daniel Hackett, Faculty of Health Sciences, The University of Sydney
- Dr Helen O’Connor, Faculty of Health Sciences, The University of Sydney
- Mrs Jillian Clarke, Faculty of Health Sciences, The University of Sydney
- Dr Yorgi Mavros, Faculty of Health Sciences, The University of Sydney
- Dr Justin Keogh, Faculty of Health Sciences and Medicine, Bond University
- Dr Chris McLellan, Faculty of Health Sciences and Medicine, Bond University
- Dr Mandy Hagstrom, School of Science & Technology, University of New England
(3) What does the study involve?

If you are interested in participating in this study you will be invited to attend some testing sessions at the School of Exercise and Sports Science and a Douglass Hanly Moir pathology collection center. Prior to commencing the study we will do a pre-exercise screening session to check that you are eligible and medically fit to participate in the study.

Testing (three visits) will be required at two time points leading up to an ASADA (Australian Sports Anti-Doping Authority) accredited state or national competition (i.e. approximately 4-5 months and less than 2 weeks prior to the competition).

<table>
<thead>
<tr>
<th>Visit</th>
<th>Testing</th>
<th>Approximate time required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 4</td>
<td>Anthropometry, dual-energy x-ray absorptiometry (DXA), pulse wave analysis, and echocardiogram</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>2 &amp; 5</td>
<td>Muscular strength, endurance, and power testing, and questionnaires</td>
<td>1 hour</td>
</tr>
<tr>
<td>3 &amp; 6</td>
<td>Douglass Hanly Moir pathology collection center (blood collection)</td>
<td>0.5 hour</td>
</tr>
<tr>
<td>At two time points</td>
<td>7-day food and training diary</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

Therefore, a total time commitment of approximately 8 hours is required for this study (~4 hours at each time point). The visits at each time point must be at least 24 hours apart.

During the study you will undergo the following:

- Dual-energy X-ray Absorptiometry (DXA)
- Anthropometry
- Urine Test for Prohibited Substances
- Pulse wave analysis
- Echocardiogram
- Muscle strength, endurance, power testing
- Seven day food and training diary
- Blood testing
Dual-energy X-ray Absorptiometry (DXA)
A DXA scan will be used to determine the amount of muscle, fat, and bone in your body. The DXA measure will require that you lay on a table whilst the images will be obtained. Each scan will expose you to a very small dose of ionising radiation.

Anthropometry
You will have your standing height, weight, waist circumference, and skin folds recorded.

Urine Test
A urine sample will be collected and screened for substances that enhance athletic performance based on the 2013 World Anti-Doping Agency (WADA) List of Prohibited Substances. If you are currently taking any of the prohibited substances on the WADA list or have during the last 12 months, it is important to report this information to the principal investigator Dr Daniel Hackett prior to commencing the study.

Pulse Wave Analysis
You will be required to lie down on a table while a device similar in size to a pencil is placed on your neck, leg, and arm which will provide information about the blood vessels in these areas of the body.

Echocardiogram
An experienced accredited sonographer will apply gel onto the skin over the center of the chest (location of the heart). The use a small hand held device will be used to scan the heart and take measurements. The device emits high-frequency sound waves and a computer measures how the sound waves bounce back from the body. The computer changes those sound waves into images to be analysed so that structures of the heart can be measured.

Muscle Strength Test
The one-repetition maximum (1RM) test will be used to assess your maximal muscle strength. The objective of this test is to determine the maximal load that you can successfully lift once, with full range of motion and good form. The 1RM will be tested for the chest press and leg press under direct supervision by a skilled assessor.

Muscle Endurance Test
Muscle endurance is a test of muscle fatigue. You will be instructed to perform as many consecutive repetitions as possible, of a load that is heavy for you (~60-80% 1RM), through your full range of motion using good form. Muscular endurance will be tested for the chest press and leg press with direct supervision by a skilled assessor.
Muscular Power Test
This will be assessed via lifting loads of 40-90% 1RM as explosive as possible, for the chest press and leg press.

Questionnaires
You will be required to fill out demographic, Muscle Dysmorphia Inventory (MDI) and three-factor eating questionnaires (TFEQ).

Training and Food Diaries
You will be required to record all food/fluid ingested and training performed over a 7-day period at the two time points.

Blood Testing
You will be required to visit an external laboratory (Douglass Hanly Moir pathology collection center) where blood will be collected. This will be used to analyse a variety of hormones such total testosterone, free-testosterone, cortisol, and growth hormone.

Risks
During the course of taking blood samples, mild pain and/or bruising may occur at the site of the needle entry.

Some musculoskeletal soreness is likely to occur in the days following the testing sessions; however there is a small risk of musculoskeletal injuries. The risk of injury will be minimised by testing being closely supervised by trained and experienced health professionals.

Radiation
This research study involves exposure to a very small amount of radiation from x-rays. The effective dose of radiation from this study is about 0.03 millisieverts (mSv). For comparison, everyone receives a dose of about 2 mSv each year from natural sources as part of everyday living, so the study is equivalent to a few days of natural ‘background’ radiation. No harmful effects have been demonstrated at this level and the risk is minimal.

Please inform our researchers if you have participated in any research study in the last five years where you were exposed to radiations. If you volunteer for another research study in the next 5 years, you should take this statement with you and show it to the researchers.

Adverse Effects
During each visit, we will ask you to inform us of any side effects that you may experience. It is important that you contact the study staff immediately if there are any unusual health experiences, injury or bad effects. This notification should take place whether or not you believe that the problem is related to the study or from some other cause. In the event of any adverse effect you will be able to contact the principal investigator Dr Daniel Hackett at the School of Exercise and Sport Science, University of Sydney on 9351-9294.
(4) **How much time will the study take?**
You will need to come to the School of Exercise and Sports Science (at the Cumberland Campus, University of Sydney) for testing on four occasions and to a Douglass Hanly Moir pathology collection center on two occasions. A total time commitment of approximately 8 hours is required for this study.

(5) **Can I withdraw from the study?**
During all study procedures, you will be monitored very closely by qualified and experienced health professionals. Being in this study is completely voluntary - you are not under any obligation to give your consent and - if you do not give consent - you can withdraw at any time without affecting your relationship with The University of Sydney. You may also be withdrawn from the study by us, if we find that your participation can be unhealthy for you.

(6) **Will anyone else know the results?**
All aspects of the study, including results, urine test findings etc will be strictly confidential and only the researchers will have access to information on participants, except as required by law. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

(7) **Will the study benefit me?**
Individual feedback will be made available to participants via a one page lay summary following all visits. Brief oral explanations of data interpretation will be given to participants if requested. Overall findings will also be made available once data analysis has been completed (via email).

(8) **Can I tell other people about the study?**
Yes, you can! Feel free to talk about your experience as a participant of the study and also about the research we are doing here.

(9) **What if I require further information about the study or my involvement in it?**
When you have read this information, Dr Daniel Hackett will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact Dr Daniel Hackett (9351-9294) (working hours).

(10) **What if I have a complaint or any concerns?**
Any person with concerns or complaints about the conduct of a research study can contact The Manager, Human Ethics Administration, University of Sydney on +61 2 8627-8176 (Telephone); +61 2 8627-8177 (Facsimile) or ro.humanethics@sydney.edu.au (Email).

*This information sheet is for you to keep*