PARTICIPANT INFORMATION SHEET

Title: Is resistance training beneficial or a risk to eye health?

Investigators:
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To the Participant,

You are invited to participate in the above named research project. It has been shown that the intraocular pressure (IOP) may become elevated with muscle exertion, changes in body position and increased respiratory volumes, especially when Valsalva manoeuver mechanisms are involved. The Valsalva manoeuvre is most commonly associated with weight lifting and is described as a forced exhalation against a closed glottis. In other words, it is that act of holding the breath while contracting abdominal which in turn leads to an increase in pressure within the body.

Elevated IOP is a key risk factor for the development and progression of glaucoma. Glaucoma is a multi-factorial, complex eye disease with specific characteristics such as optic nerve damage, visual field loss and often increased IOP. Glaucoma causes irreversible damage to this nerve, and ultimately blindness. Understanding the effects of resistance training such as weight lifting on the elevation of IOP and by extension on the retina, will provide useful insights for clinic populations that are at risk, such as those diagnosed with glaucoma or those at risk of developing glaucoma.

This study aims to further investigate the effects or strength training exercise on eye health by performing a variety of lower and upper body dynamic high resistance exercises. You will perform these exercises in either a prone or supine position as this can influence the changes seen in IOP. Your eye health will be monitored before and after the various high resistance exercises from several
aspects 1) IOP measurement using iCare device, retinal thickness using optical coherence tomography (OCT), and retinal vascular changes using fundus photography.

We will recruit and track 60 healthy men and women. The inclusion criteria will consist of subjects aged 18 years or older, have prior 2 years of experience with each mode of exercise, are free of any musculoskeletal or cardiovascular limitations and have healthy vision.

Please take your time to think about the information provided below, and feel free to discuss it with your whanau, family or significant other support people. Taking part is completely voluntary (your choice). If you decline the offer to participate, your continuing health care will not be affected in any way.

What is the study about?

- This is a totally non-invasive study.
- The project will include about 60 adults
- The eye examination will be performed at the School of Optometry and Vision Science, Grafton Campus
- You will be asked to visit the eye clinic once for 30 minutes each time, prior to exercise session
- The Exercise sessions will be performed at Department of Exercise Science, Newmarket Campus.
- You will be asked to perform a series of resistance exercises, which will last no more than 2 hours.
- You will be asked to complete IOP measurements and an OCT scans at the beginning, during and at the end of your exercise session
- You will be given frequent opportunities to rest (shorter than 10 minutes each time) so you can rest between exercises
- The information about your identity collected during the experiments will be confidential and will not be used in any reports of the study.
- All the data collected from you will be stored securely, in locked cabinets and on secure computer networks.
- Only the investigators will have access to this information, and the data will be made confidential.

Am I eligible to participate?

Inclusion criteria: >18yrs, no history of musculoskeletal or cardiovascular limitations, healthy vision as assessed clinically, 2 years of experience with each mode of exercise

What does the study involve?

Full eye exam
Initially, your vision will be assessed by a qualified optometrist through a routine procedure. This eye exam will also include colour fundus photography, fundus autofluorescence. This eye exam will take 30 minutes.

**Resistance Exercise session**
You will be asked to arrive at Department of Exercise Science, Newmarket Campus. You should be well-rested and ready to engage in a long (<2hrs) exercise session, which will include upper and lower body movements, as well as ocular measurements.

**Risks and Benefits**
- You will receive a free full eye exam
- Participation will not cost you anything, and you will receive no payment
- You may withdraw from this study at any time without giving a reason

**Incidental finding**
Your eyes will be checked comprehensively at Auckland Optometry Clinic, University of Auckland. If a condition which is assessed to be a clinical abnormality is detected through performing a scan, you will be informed of this and will be advised to consult an optometrist or ophthalmologist. This research project is conducted under the direct supervision of Dr Gant and Dr Borges, whom hold current certificates in AED and CPR. This measurements and images obtained during the exercise sessions are reviewer by a registered optometrist.

**Participation**
Your participation is entirely voluntary (your choice). If you do agree to take part, you are free to withdraw from the study at any time, without having to give a reason and you may have your data withdrawn from the study within three months of your participation.
You can withdraw from this study without giving reason, within three months of participation. If you are a student of the School of Optometry and Vision Science, the Head of School has given assurance that participation or non-participation will have no effect on your grades or standing. If you are a staff member of the School of Optometry and Vision Science, your non-participation will not affect your employment.

**GENERAL INFORMATION**
This information relates to this study, so please read it carefully.
Your agreement to participate in this project will be obtained in writing on a Consent Form. Your eligibility will be based on information regarding your age and the presence of any health considerations that may affect your ability to take part in the investigation.

You may have your friend, family or whanau support help you understand the risks and/or benefits of this study and any other explanation you may require. You are also welcome to have a friend, family or whanau support with you during the session.

When the study is complete, you will be offered a lay written summary of the results.

Confidentiality

The confidential results of this study will be post-processed using common available image processing tools. These outcomes may be presented at conferences and included in published journal articles. No material that could personally identify you will be used in any reports on this study. The information and data collected from you will be stored securely, in locked cabinets and on secure computer networks at the University of Auckland. Only the investigators will have access to this information, and your data will be made confidential by assigning a unique code to it. Data will be securely destroyed after 6 years.

Summary of Your Rights

- Your participation is entirely voluntary
- You may withdraw from the project at any time without providing a reason.
- You may have your data withdrawn from the study within three months of your participation
- You may obtain results regarding the outcome of the project from the researchers upon completion of the study
- You will be asked to sign a Consent Form.
- Your identity will be kept strictly confidential, and no identification of you or your data will be made at any time during collection of the data or in subsequent publication of the research findings
- Ongoing discomfort or incapacity have not been reported from any of the procedures that will be used in this project, however, if the procedures cause you concern, you may withdraw from the project at any time
- You are encouraged to consult with your whanau/family, hapu or iwi regarding participation in this project
• You are welcome to have a family member or support person with you during the study sessions

Thank you for giving us your time to consider participating in this project. If you have any further questions about this project, please do not hesitate to contact us.

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For any concerns regarding ethical issues, you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142. Telephone 09 373-7599 ext. 83711., Email: ro-ethics@auckland.ac.nz

Approved by the University of Auckland Human Participants Ethics Committee on 14-Feb-2019 for three years, Reference Number 022578