Participant Information Sheet

Project Title: Walking well with painful knees

Researcher(s): Ammar Albaradie[1], MSc, BSc - PhD Student; **Dr Natalie Collins**[1], PhD - Senior Lecturer **A/Prof Kylie Tucker**[2], PhD - Head of Motor Control and Pain Research Lab**; Dr Jason Bonacci**[3], PhD - Senior Lecturer**; Dr Taylor Dick**[2], PhD - Senior Lecturer & Head of Neuromuscular Biomechanics Lab

[1]School of Health and Rehabilitation Sciences, University of Queensland; [2]School of Biomedical Sciences, University of Queensland; [3]School of Exercise and Nutrition Sciences, Deakin University.

Introduction

Thank you for your interest in participating in this research project. Please read the following information about the project so that you can decide whether you would like to take part and ask any questions you might have about your involvement in the project. Please keep in mind that your participation is voluntary. If you decide to take part and later change your mind, you are free to stop at any time, without providing any explanation for your decision to stop participating. If you choose to stop participating, your data will not be used in the research.

You will be given this Participant Information Sheet for your records and be asked to sign a Consent Form that will be kept by the Researchers. Your decision whether you take part, or not, or to take part and then withdraw, will not affect your relationship with the University of Queensland.

What is this research about?

We are interested in understanding if people with patellofemoral osteoarthritis (painful knees) walk and squat differently to those without painful knees, and if specific footwear may influence movement and pain. We hope that the outcomes from this study will help guide future treatment strategies aimed at reducing pain, alleviating symptoms and improving quality of life in people with patellofemoral osteoarthritis.

Who can participate?

We need adults who are at least 45 years old and have patellofemoral osteoarthritis (painful knees), and others who do not have a history of painful knees. The specific inclusion criteria for both groups are available through talking with the researchers.

What will I need to do?

If you agree to participate, you will be asked to:

Walk on a level and declined treadmill at various speeds, while barefoot, and while wearing specific shoes.

Perform a weight-bearing lunge test to measure your ankle range of motion: You will be asked to place your foot perpendicular to a device and touch the vertical part of this device with your knee. Then, you will be asked to move your knee forward and stop when you feel that your heel is about to rise from the floor (Figure, right).

Perform a single leg squat task: This involves standing on one leg and lowering your body by bending at your knee. You will have support close by if needed for balance, and only need to lower as far as possible for you. This is repeated 3-5 times.

Perform submaximal and maximal calf contractions: This is performed while standing on a board and pushing your toes downward while straps are secured and positioned above your shoulders (Figure, right).

Complete a series of questionnaires: You will be asked to complete questionnaires about your pain, symptoms, activities of daily living, sport and recreation function, knee-related quality of life, and physical activity level. You will be asked to rate your knee pain before each task. You will also be asked to rate your knee pain and the overall comfort of the shoes during each task.

Provide reports (if available) from recent knee-related imaging: If you have patellofemoral osteoarthritis, you will be asked to provide the research team with a copy of any knee-related imaging report you've had in the 2 years prior to participation in this study. Please note that this is not required for participation in the research, but if you consent to provide these reports, they will be used to help describe the population who participated in the study.

Data collected will include:

Kinematics: *three-dimensional motion capture* will be used to track motions of body segments. To do this, we will place small reflective markers on your pelvis, legs and feet using double sided tape. Appropriate tight-fitting clothing will be required below the waist (e.g., bike shorts). Eight motion-capture cameras will use infrared light to record only the position of the markers in space so that these can be reconstructed in three-dimensions and tracked during walking and squatting activities.

Kinetics: *Force plates* will be used to collect forces exerted on the ground during the walking task using an instrumented treadmill with imbedded force plates.

Surface electromyography (sEMG): This non-invasive measure of muscle activation records the electrical signal produced by your muscles as they are activated. Sensors will be placed on your skin using double sided tape.

B-mode ultrasound may be used to define the boundaries of your muscles and to measure muscle-tendon architecture.

How long will this take?

Data collection, include participant preparation (placing the markers, EMG electrodes etc) and the required tasks will take between 2-3 hours.

What are the possible benefits of taking part?

There are no direct health-related benefits to the participant for taking part in this study, because this study is not a treatment program.

The overall benefit of this research is the potential for an increased understanding how people with painful knees (patellofemoral (kneecap) osteoarthritis), adapt their movement strategies. We also hope to understand more about the potential benefits of wearing flat-flexible shoes.

Participants will receive a voucher to the value of $20 and be provided parking on campus to facilitate their attendance in the laboratory for data collection.

What are the possible risks and disadvantages of taking part?

All data collection protocols are non-invasive and include minimal risk to the participant. The biomechanical measures outlined in this research have been used extensively in previous studies by the chief investigators.

Minimising the impact of COVID.

If you have any cardiorespiratory symptoms, are a close contact of someone that has tested positive to COVID-19, or have tested positive to COVID-19 in the last 2 weeks, please advise the researchers so that we may reschedule your data collection session. Surgical masks and hand sanitiser will be made available to you during data collection.

What will happen to the information about me?

All information collected about you will remain confidential. All data collected for this research will be stored locked filing cabinets, in a non-identified manner on the UQ Research Data Manager (UQRDM) server, and local data may be stored on computers that are password protected so that only the investigators will have access. According to the Australian Code for the Responsible Conduct of Research, data will be stored for at least 5 years from the date of publication.

You will be asked to indicate if you consent to your data to be used in future studies. If you indicate YES, your data may be included in future studies by our research team and collaborators. If you indicate NO, your data will not be used beyond the immediate study. You will also be asked to indicate if you consent to your data to be shared with other academic researchers outside of the study team. If you indicate NO, your data will not be shared with other researchers outside of the study team.

It is anticipated that the results of this research project will be published and/or presented in a variety of forms. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your expressed permission.

What will happen if I decide to withdraw?

Your participation in this research is voluntary and you are free to withdraw from the research anytime without needing to provide any explanation, and you would not receive any penalty or bias as a result of your withdrawal. Should you decide to withdraw, all the information collected from/about you will be destroyed and will not be used in the research.

Can I hear about the results of this research?

Results that are published in academic works (either conference presentations or scholarly articles) will be accessible to you directly from the investigators who will make these available on displays outside the relevant offices and laboratories, or via email. If you would like to be informed about the results of this research, please contact the researchers and we will provide a summary of results when they are available.

Who can I contact if I have any concerns about the project?

This study adheres to the Guidelines of the ethical review process of The University of Queensland and the National Statement on Ethical Conduct in Human Research. Whilst you are free to discuss your participation in this study with the researchers contactable on a.albaradie@uq.net.au; n.collins1@uq.edu.au; k.tucker1@uq.edu.au; t.dick@uq.edu.au; jason.bonacci@deakin.edu.au, if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Coordinator on +617 3365 3924 / +617 3443 1656 or email humanethics@research.uq.edu.au.

This research Ethics ID number: [2022/HE002285]

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