**Consent for Research Participation**

**Study title:** Exploring the Effects of Virtual Reality-Based Visual Perturbations on Balance and Postural Control in Older Adults

**Funding source:** National Science Foundation Alan T. Waterman Award

**Principal Investigator:** Dr. Lara Thompson, Professor of Biomedical Engineering

We are inviting you to participate in our research study. Participation is completely voluntary. If you agree to participate, you can always change your mind and withdraw at any time. Further, there are no negative consequences to whatever you decide.

**KEY INFORMATION**

**You are invited to participate in a research study** because you are either 18-38 years of age or 60- 80 years of age, are in relatively good health, are able to ambulate freely, and are not taking medications that could adversely impact your balance. Older adults with a history of falls are still able to join the study; however, the fall cannot have taken place closer than 6 months at the time of participation.

If you have questions or do not understand something, please ask.

Taking part in this research is voluntary and completely up to you. You are free to say no or to leave the research at any time. There will be no penalties, and you will not lose any benefits to which you are otherwise entitled.

**The main question this study is trying to answer** is how visual movements, presented through virtual reality, impact older adults' ability to maintain balance.

**If you join this research,** you will be asked to do the following:

- Attend an assessment session that should last 1 hour
- Complete balance assessments
- Complete clinical balance assessment surveys
- Wear motion markers (to measure body movements)
- Walk and stand on forceplate (pressure) mat (to measure forces exerted by the feet)
- Stand on hard and foam surfaces while in three different stances: regular, heel-to-toe, and single leg

**You may not want to be in this study if you are uncomfortable with:**

- Wearing sensors and markers
- Being recorded
- Wearing a virtual reality headset

- Visual movements

**Risks:**

- Motion sickness
- Minor skin irritation from sensor tape
- Mild postural-related discomfort
- Small risk of breach of confidentiality

We will take steps to protect your personal information. However, there is a risk of breach of confidentiality.

There may also be unforeseeable risks.

**Benefits:**

We cannot promise any benefits to you if you take part in this research. However, you may benefit in terms of your new knowledge about your own balance and posture. The results from this research will impact scientific knowledge tied to the role of vision in balance and control of posture in older adults. This could impact the types of training tied to alleviating fall-risk in this population.

**Alternatives:**

Your alternative is not to take part in the research.

**If you think you might like to participate in this research, please continue reading to learn more about the details of this study.**

**STUDY DETAILS**

**What is the purpose of this study?**
We want to understand how different types of visual information can impact older people's ability to balance.

**What will I do and how long will it take?**
You will come to the 4$^{th}$ floor Southwick lab for roughly 1-hr. During that time, you will:

- Wear small sensors on your neck, shoulders, back, and arms
- Fill out surveys and do assessments tied to your balance
- Stand on hard or foam surfaces
- Walk
- Wear a virtual reality head set and view a moving scene while standing or walking

**Recordings / Photographs**:

We will audio and/or video record and photograph you. The recordings will be used for the motion capture (body movement) recordings to assist us in understanding the measured data. Photographs will be used to share information about the study and also to depict the experimental test setup in our research publications. If you do not want to be recorded/photographed, you should not be in this study.

**Could being in this research hurt me?**

- There is a chance your data could be seen by someone who should not have access to it. We are minimizing this risk in the following ways:
    - Data is anonymous. All identifying information is removed and replaced with a coded participant ID.
    - We will keep your identifying information separate from your research data
    - We will store all electronic data on the UMass Lowell server or UMass Lowell OneDrive, which are password-protected
    - The laboratory requires approved card access; Only personnel conducting research are given card access in the laboratory
- There is a chance of physical discomfort:
    - The balance activities include standing or regular-paced walking, which we do not expect to inflict harm
    - It is possible that the virtual reality headset could cause motion sickness or migraine
    - Skin irritation and a rash from wearing or removing the sensors that stick to your skin could potentially result

**What happens if I am injured because I took part in this research?**

Your welfare is a concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form. The University of Massachusetts Lowell does not provide funds for the treatment of research-related injury. If you are injured as a result of your participation in this study, you or your insurance carrier will be expected to pay the costs of this treatment. No additional financial compensation for injury or lost wages is available. You do not give up any of your legal rights by signing this form. If you are injured while in the study, seek treatment and contact your doctor as soon as you are able.

**What other choices do I have besides taking part in this research?**

Your alternative is not to take part in the research.

**Will being in this research help me in any way?**

There are no direct benefits to participating in this research.

**Will it cost me any money to take part in this research?**

No.

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**Will I receive an incentive for participating in this study?**
There will be a $25 gift card incentive for participating in this study. Partial completion of the study will not be compensated.

**Can I be removed from the research without my approval?**
Inattentiveness to the session and/or assessments could warrant a participant being removed from the study.

**How will my information be stored, and when will it be destroyed?**
We will store all electronic data on a secure UMass Lowell server or UMass Lowell OneDrive. Any paper documents (such as the informed consent) will be kept in a locked cabinet by the PI. When data collection for all participants is complete, all paper documents will be converted and stored in electronic form. In accordance with federal regulations, the data will be kept for 3 years after the National Science Foundation award end date. Only the research team will have access to the data.

It is possible that we might use the research data in other future research. Further, we intend to publish our research findings. When results are presented, participants will be aggregate data, and completely deidentified.

If you would like to be contacted for future studies, we will reach out to you through the contact information provided.

**Who can see my data?**

- The researchers on this project will have access to all data. This is so we can analyze the data and conduct the study.
- The Institutional Review Board (IRB) at UMass Lowell may review all the study data. This is to ensure we're following laws and ethical guidelines.
- We may share our findings in publications or presentations. If we do, the results will be aggregate (grouped) data, with no individual results and no results linked to the participant's identity

**Contact information:**

**For questions about the research, complaints, or problems:** Contact Dr. Lara Thompson, lara_thompson@uml.edu.

**For questions about your rights as a research participant, complaints, or problems:** Contact the UMass Lowell IRB (Institutional Review Board) at 978-934-4134 or at IRB@uml.edu

Your signature documents your consent to take part in this research.

**Consent for Research Participation**

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|---|---|
| Signature of adult research participant | Date |
| Printed name of adult research participant | |
| Signature of the person obtaining consent | Date |
| Printed name of the person obtaining consent | |