

Lay summary

Overview:

Knee osteoarthritis is one of the most common chronic joint conditions, affecting approximately 8-12% of the Australian population. Pain and structural disease worsening of the joint are the main reasons for requiring costly and invasive knee joint replacement surgery. People who walk by placing excessive or imbalanced load through the knee are at greater risk of osteoarthritis worsening and pain.

Retraining the walking pattern (or gait pattern) to reduce load off the medial (inside) compartment of the knee (the most affected region) presents a novel intervention for people with medial knee osteoarthritis. There are a few different strategies that have been proposed and tested in the literature and been shown to reduce knee load and reduce pain. However, it is unknown which walking strategy is best at targeting the risk factors for disease worsening (knee load during walking) and which is most effective in relieving pain. We conducted a randomised clinical trial, and allocated people to one of three 6 weeks gait retraining groups to evaluate which gait retraining strategy was most effective at reducing biomechanical risk factors for knee osteoarthritis.

We conducted the study at The University of Sydney Camperdown campus. Participants were assessed in a human biomechanics laboratory and received weekly training by a clinician using gait biofeedback equipment, with assessments of knee loading and symptoms occurring prior to the commencement of the study, immediately after intervention (6 weeks), and 3 months after to check if benefits are maintained.

What did you discover during the course of the grant?

We screened 272 people and successfully recruited and randomized 74 participants for our study on gait retraining for knee osteoarthritis. Of these, 70 have completed the 6-week assessment, and 66 have completed the 3-month follow-up. Final analysis awaits the last four participants' assessments, however we can provide the following general discoveries of the grant:

- The study showed that conducting a gait retraining intervention is feasible.
- Participants were highly committed, with 89% attending at least four of six sessions and practicing at home for an average of 53 minutes daily.
- Preliminary results indicate that gait retraining improved pain and physical function, with some participants significantly reducing knee loading by 20-30% while walking.

Have the findings of the research already benefited people with knee osteoarthritis? How might the findings inform further research to help sufferers in the future?

Overall, participants in all groups benefited with improved pain and physical function (finding it easier to walk around and perform activities) in all groups with the intervention, compared to the beginning of the study.

The findings of this study will help to develop further research and guide clinicians on how to implement gait retraining and understanding their effects on the biomechanics of the lower limb and expected symptomatic benefits.

Are you planning to continue the research?

Yes. Thanks to the support for this trial, we have enough evidence that gait retraining is a feasible, achievable and effective way of improving symptoms for people with knee osteoarthritis. We are now applying for major grant funding (NHMRC Clinical Trial) to determine if load-modifying gait retraining can slow the progression of knee osteoarthritis.