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## **MyeEx-Impact: a randomised controlled trial of bone-targeted exercise for people with multiple myeloma –an overview of study performance**

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### Objective:

Preclinical models using osteogenic exercise have demonstrated mechanical load-induced changes delay osteolytic activity and rescue bone loss. Our recent work in multiple myeloma (MM) identified individualised targeted exercise can reduce bone pain; however, research is yet to explore the potential effect of exercise on bone health. The MyeEx-Impact multi-site randomised controlled trial aims to examine whether bone-targeted exercise can improve bone health in people with MM.

### Methods:

Following baseline testing, people with MM (n=78), residing in Queensland and New South Wales in Australia, are randomised to exercise (EX) or control (CON). The EX group performs two supervised and one unsupervised sessions of individualised bone-targeted exercise each week over 9 months. The CON group receives usual care and maintains current physical activity levels. Primary outcomes (bone density and microarchitecture measured via dual-energy x-ray absorptiometry and peripheral quantitative computed tomography) and secondary outcomes (bone pain, quality of life, fatigue, physical function, psychological constructs, gut microbiome, bone biomarkers, immune function, disease response and progression) are assessed at baseline, 3-, and 9-months. Adverse events and adherence to the exercise program are monitored.

### Results:

The MyeEx-Impact trial is on track to reach its a priori recruitment target. Participants have had high adherence to the resistance and impact loading exercises. Seven low-grade (Grade 1 and 2) adverse events have been reported, none of which have impacted subsequent exercise or study participation.

### Conclusion:

The findings of this study will identify whether bone-targeted exercise is safe, feasible, and can improve bone health in people with MM. This study will provide evidence of the effects of bone-targeted exercise on common MM- and treatment-related side-effects, as well as the potential mechanisms underpinning these effects. Collectively, this novel study will identify the potential role of exercise as an adjuvant therapy for the management of bone health for people with MM.

## **Keywords**

multiple myeloma, bone-targeted exercise, randomised controlled trial, bone health

## **Conflict of Interest & Ethical Approval**

yes

## **Abstract submitters declaration**

yes

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