

THE SMALLEST WORTHWHILE EFFECTS OF STRENGTHENING EXERCISE ON PAIN INTENSITY FOR PEOPLE WITH KNEE OSTEOARTHRITIS: A BENEFIT-HARM TRADE-OFF STUDY

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BACKGROUND

- Clinical guidelines recommend exercise as a first-line treatment for knee osteoarthritis, but it is currently **unclear whether exercise provides worthwhile treatment benefits** based on published minimal clinically important differences (MCIDs)
- Using **MCIDs** to interpret findings of RCTs and meta-analyses has **limitations**, such as they do not take into account the potential downsides of an intervention
- Smallest worthwhile effects can overcome many limitations with MCIDs.** It is the smallest improvement in an outcome that individuals consider worthwhile to undergo an intervention, considering its costs, inconveniences, and risks.



RESEARCH AIM

To determine the smallest worthwhile effects (SWEs) of supervised individual, supervised group, or unsupervised digitally-delivered strength exercise on pain intensity, compared to no exercise, for individuals with knee osteoarthritis.

WHAT WE DID

Recruited **1,176 participants** with knee pain consistent with a clinical diagnosis of knee OA

PROCEDURES

- Participants allocated to read an exercise scenario for either: i) supervised individual exercise, ii) supervised group exercise, or iii) digital unsupervised exercise
- They were asked to **consider the costs, inconveniences, and risks of their allocated scenario**, along with the potential pain improvement they might experience without doing exercise (reported as 15%)
- Then, they selected the **smallest additional pain reduction** that would make participating in their allocated exercise scenario **worthwhile** relative to not doing the exercise

DATA ANALYSIS

- Smallest worthwhile effects reported as median (IQR) and 95% CI

WHAT WE FOUND

- The SWE of both supervised individual and group strength exercise was a **20%** (95% CI 15-20, IQR 5-30%) **knee pain reduction**, in addition to the pain reduction expected with no exercise
- The SWE of unsupervised digital exercise was a **15% additional pain reduction** (95% CI 10-20, IQR 5-25%)
- ^{WE} **SWEs were generally larger among males** and those **not expecting exercise** to be helpful.



POINT ESTIMATES OF SWES

Hypothetical baseline pain	Supervised individual	Supervised group strength	Unsupervised digitally-
1	0.2	0.2	0.15
2	0.4	0.4	0.3
3	0.6	0.6	0.45
4*	0.8	0.8	0.6
5	1	1	0.75
6	1.2	1.2	0.9
7	1.4	1.4	1.05
8	1.6	1.6	1.2
9	1.8	1.8	1.35
10	2	2	1.5

*The average baseline pain in our study

IMPLICATIONS FOR PRACTICE & RESEARCH

- Researchers, clinicians, consumers, and policy makers can use SWEs to inform evidence summaries of exercise interventions. Based on our findings, the thresholds for worthwhile effects are generally lower than those commonly used for **MCIDs**.
- Researchers can use SWEs to **inform sample size calculations** for RCTs. Based on our SWEs, past RCTs comparing exercise to usual care may have been underpowered
- Given that SWEs are context-specific, it is **unclear** how our findings **generalise to hip OA** and to **other treatments** for OA (e.g., medications and weight loss)

