



Knee Arthroplasty Activity Trial

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Support



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**Arthritis
Foundation**

Background

- Total knee replacement (TKR) is common, with an annual incidence in the US of over 680,000 and annual costs exceeding \$12 billion
- Growing evidence suggests that while pain and functional status improve following TKR, PA typically does not surpass pre-TKR levels
- Engagement in PA meaningfully improves quality of life
- Given the large investment in TKR and the rich evidence documenting its benefits, the effectiveness and cost-effectiveness of TKR could be increased substantially if TKR recipients became more physically active

Problem to address

- Persons with symptomatic knee OA live sedentary lifestyle likely due to pain
- Increasing PA may be challenging for TKR recipients
 - Many have obesity and other medical comorbidities
- Underlying comorbidities, lack of self-efficacy, and inability to trade short-term gratification for long-term benefits contribute to post-TKR sedentary lifestyle
- We all face PA-related decisions daily
 - Tradeoffs between current 'costs'—such as time, discomfort, and fatigue—and the future health benefits of PA such as decreased incidence of comorbidities
- Evidence suggests that PA is frequently forsaken in favor of options with immediate gratification, such as watching television or surfing the internet
- Behavioral economic confronts questions: how can we bring benefits of PA and other healthy behaviors 'closer', perhaps, using financial incentives

Potential public health impact

- Currently about 5 million of Americans are living with at least one knee replaced
- The number of people with at least one knee replaced is ~4 times higher than the number of people with RA in US
- About 700,000 Americans undergo TKR each year
 - Most are no more physically active post-TKR than they were pre-TKR
- The dramatic reduction in pain provides an enormous opportunity for physical activity intervention
 - with the potential to avert hundreds of cases of diabetes and cardiovascular disease and improve well-being of TKR recipients

Overarching goal of KArAT

- KArAT (**K**nee **A**rthroplasty **A**ctivity **T**rial) is designed to test an innovative application of behavioral science principles that invoke both ***internal motivation*** (using motivational interviewing) and ***external motivation*** (using financial incentives) to improve PA among persons with knee osteoarthritis (OA) undergoing TKR

The Three Arms

1. Usual Care
2. Attention Control (Fitbit)
3. TAC(MI) + FI Intervention

KArAT Sites



Inclusion criteria

- Age: 40-85 years
- English-speaking
- Scheduled to undergo a primary, unilateral TKR with OA being principal underlying diagnosis
- No concurrent inflammatory arthritis
- Able to wear the ActiGraph for $\geq 4/7$ days for ≥ 10 hours per day during pre-screening
- Low baseline PA (ActiGraph) during pre-screening assessment period

Select Intervention Components

	Usual Care	Attention Control (Fitbit)	TAC(MI) + FI Intervention
Fitbit offered	No	Yes, as an a AC	Yes, to guide TAC and FI
Calls	No regular calls	AC calls	Coaching calls
SMS	Only related to Actigraphs	Actigraph and Fitbit wear	Actigraph and Fitbit wear and rewards-related
Reward for 'wear'	No	Yes*	Yes*
Reward for 'achieving the goals'	No	No	Yes

* Both AC and TAC(MI)+ FI arms will receive \$5 for every week they wear the Fitbit for ≥ 10 hours for ≥ 4 of 7 days