Rethinking rehab after hip and knee arthroplasty

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Total hip arthroplasty (THA) and total knee arthroplasty (TKA) effectively reduce pain and improve function for end-stage osteoarthritis patients. Physical rehabilitation is a widely recommended post-surgical intervention, but its actual clinical benefit beyond natural recovery has remained uncertain. The DRAW2 trial aimed to replicate previous findings, specifically the DRAW1 trial, which also found no additional benefit from rehabilitation.1

KEY TAKEAWAYS

- The Pivot: The DRAW2 trial replicated earlier findings, confirming that structured physical rehabilitation offers no superior clinical benefit over no physical rehabilitation after THA or TKA.
- The Data: Mean group differences between physical rehabilitation and no physical rehabilitation were -0.5 points (95% CI -3.1 to 2.1; p=0.70) at 6 weeks on the primary outcome score.
- The Action: Clinicians should reconsider routine prescription of structured physical rehabilitation after THA or TKA, as current evidence does not support its superiority over natural recovery.

Patients undergoing total hip or knee arthroplasty typically receive recommendations for extensive physical rehabilitation. This practice stems from a long-held belief that structured exercise and guidance are essential for optimal recovery and functional improvement after major joint surgery. But the evidence base for this widespread recommendation has been surprisingly thin, often relying on observational studies or trials with methodological limitations. The DRAW1 trial previously challenged this assumption, finding no significant benefit from rehabilitation.1 The DRAW2 trial, published in Sci Rep, sought to definitively replicate these earlier findings. Investigators randomized 169 patients (76 THA, 93 TKA) across three parallel groups: home-based telerehabilitation (n=52), home-based rehabilitation (n=58), or no physical rehabilitation (n=59). The study included patients undergoing both THA and TKA, reflecting a broad surgical population. Mark-Christensen and colleagues designed the trial with blinded outcome assessment, a critical component for minimizing bias in rehabilitation studies.1

Replicating the Null Hypothesis

The primary outcome for DRAW2 was the Hip Disability and Osteoarthritis Outcome Score (HOOS) or Knee injury and Osteoarthritis Outcome Score (KOOS) ADL-subscale, measured at 6 weeks. These patient-reported outcome measures are standard for assessing daily living activities and functional status after joint replacement. The investigators specifically chose the ADL subscale to capture the practical, everyday impact of the interventions.1

The trial found no statistically significant difference between the physical rehabilitation groups and the no physical rehabilitation group. The mean group difference at 6 weeks was -0.5 points (95% CI -3.1 to 2.1; p=0.70). This result indicates that patients receiving either form of physical rehabilitation did not experience a clinically meaningful or statistically superior improvement in their ADL scores compared to those who received no structured rehabilitation. At

12 weeks, the difference remained negligible, at 0.8 points (95% CI -1.7 to 3.4; p=0.52).1
These numbers are stark. They do not just show a small difference; they show no difference at all. The 95% confidence intervals broadly overlap zero, confirming the lack of a significant effect. This outcome directly replicates the findings of the DRAW1 trial, reinforcing the conclusion that routine physical rehabilitation, at least in the forms tested, offers no added benefit beyond natural recovery for these patients.1

Trial Design and Patient Cohort

The DRAW2 trial employed a robust, three-arm, parallel-group randomized controlled design, which is the gold standard for evaluating interventions. Patients were randomized 1:1:1 to one of the three groups. The inclusion of both THA and TKA patients allowed for a broader applicability of the findings, acknowledging that both procedures are common and often receive similar post-operative care recommendations. The trial registered on ClinicalTrials.gov (NCT04960241) before patient enrollment, ensuring transparency and adherence to a pre-specified protocol.1
The rehabilitation interventions themselves were pragmatic and reflective of common practice. The home-based telerehabilitation group received guidance and monitoring remotely, a model increasingly relevant in modern healthcare delivery. The home-based rehabilitation group received in-person guidance for exercises to perform at home. Both approaches aimed to provide structured exercise programs and education, which are the core components of most post-arthroplasty rehabilitation protocols. The control group received no formal physical rehabilitation, allowing for a direct comparison against natural recovery.1
Patient demographics were balanced across the three groups, minimizing confounding factors. The study enrolled 169 patients, with 24 THA and 28 TKA patients in the telerehabilitation arm, 27 THA and 31 TKA patients in the home-based rehabilitation arm, and 25 THA and 34 TKA patients in the no physical rehabilitation arm. This distribution ensured that the findings were not skewed by an imbalance in the type of arthroplasty or other baseline characteristics. The blinding of outcome assessors further strengthened the internal validity of the trial, preventing knowledge of treatment assignment from influencing outcome measurements.1

What the Evidence Does Not Establish

While the DRAW2 trial provides compelling evidence against the superiority of physical rehabilitation, it does not suggest that all movement or activity is unnecessary after joint replacement. Patients in the 'no physical rehabilitation' group were not instructed to remain sedentary; they were simply not given a structured, prescribed rehabilitation program. Natural recovery, which includes general activity and self-directed movement, likely plays a significant role in post-operative improvement. The trial highlights that the *added value* of formal, prescribed rehabilitation is what is lacking.1
The trial also focused on a 6-week and 12-week follow-up period for its primary and secondary outcomes. While these are critical early recovery phases, the long-term effects of rehabilitation, or lack thereof, were not fully explored. It is possible that for some specific subgroups of patients, or for very particular functional goals, longer-term or more intensive rehabilitation might offer benefits not captured in this study. But for the general population undergoing THA or TKA, the short-to-medium term data are clear.1
The study also did not examine specific mechanisms of recovery or patient-reported satisfaction with the rehabilitation process itself. While functional scores are objective, the psychological benefits of feeling supported or actively

participating in recovery might still hold value for some individuals, even if objective functional gains are not superior. This trial focused strictly on functional outcomes, which is appropriate for evaluating efficacy, but it leaves other aspects of patient experience unaddressed.1

Implications for Clinical Practice

These findings challenge a deeply ingrained practice in post-operative care. For general practitioners and specialists managing patients after THA or TKA, the routine referral to physical rehabilitation may need re-evaluation. The data from DRAW2, coupled with DRAW1, suggest that resources currently allocated to universal rehabilitation programs could be redirected to other areas, or targeted more precisely to patients who might genuinely benefit, such as those with specific pre-existing functional deficits or complications.1

This does not mean abandoning all post-operative guidance. Patients still require education on activity levels, pain management, and warning signs. But the expectation that a structured, often resource-intensive, rehabilitation program will yield superior functional outcomes compared to simply allowing natural recovery appears unfounded by this evidence. Clinicians might consider providing general advice on activity and mobility, perhaps supplemented by resources like the Oxford Handbook of Rheumatology, rather than mandating formal rehabilitation for all.1

The telerehabilitation arm's lack of superiority is also noteworthy. While telerehabilitation offers convenience and accessibility, its efficacy here was no better than in-person home-based rehabilitation, and neither was superior to no rehabilitation. This suggests that simply delivering rehabilitation remotely does not inherently improve its effectiveness when the core intervention itself lacks added benefit. This insight is particularly relevant as healthcare systems increasingly explore virtual care models.1

Where the Evidence Falls Short

The study's sample size of 169 patients, while sufficient for replication, might not be powered to detect very small, but potentially clinically relevant, differences in specific subgroups. For instance, patients with severe pre-operative functional limitations or those with specific surgical complexities might still derive a marginal benefit from structured rehabilitation that this trial could not capture. The trial did not stratify outcomes by severity of osteoarthritis or specific surgical approach, which could be relevant factors.1

The duration of the intervention, six weeks, is also a point to consider. While many rehabilitation programs are structured around this timeframe, some patients might benefit from longer or more intensive interventions, particularly if their recovery trajectory is slower. The trial's focus on the early post-operative period means it cannot speak to the potential benefits of rehabilitation for optimizing long-term function or preventing late complications. Still, the primary functional gains are typically expected within this initial window.1

The definition of "no physical rehabilitation" is also important. This group received standard post-operative care, including pain management and general advice, but no prescribed exercises or therapist-led sessions. It is not a group that was entirely inactive. This distinction is important for understanding the trial's findings; the trial is comparing structured rehabilitation against natural, self-directed recovery, not against complete immobility. The results indicate that the *structure* and *prescription* of rehabilitation did not add value.1

CLINICAL IMPLICATIONS

The DRAW2 trial delivers a blunt message: the routine prescription of physical rehabilitation after total hip or knee arthroplasty is largely unsupported by evidence. This is not a finding with subtle distinctions; it is a direct replication of a previous trial, reinforcing the conclusion that for most patients, natural recovery is just as effective as structured rehabilitation for improving daily living activities. Clinicians should question the default referral and consider whether these resources are better spent elsewhere.

This outcome has significant implications for healthcare systems. If formal rehabilitation provides no added benefit, then the costs associated with these programs, both in terms of direct healthcare expenditure and patient time, are essentially wasted. Payers and guideline bodies will need to review their recommendations and reimbursement policies in light of this consistent evidence. The focus should shift to identifying the rare patient subgroups who might genuinely benefit, rather than a blanket approach.

For patients, this means less time in formal therapy and potentially less financial burden. While some may prefer the structured support of rehabilitation, the data suggest they should not expect superior functional outcomes. Instead, patients can be empowered to engage in self-directed activity and focus on general mobility, knowing that their recovery trajectory is unlikely to be hindered by the absence of a formal program. This aligns with a broader trend towards less intensive interventions for musculoskeletal conditions when the evidence does not support them.

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REFERENCES

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