



# Reevaluation of the role of knee replacement in management of knee pain: Not whether it works, but whether it is always necessary

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## Abstract

Failure of knee replacement to invariably resolve pain, normalize function and achieve full patient satisfaction raises questions as to the efficacy and applicability of that surgical approach. It also raises the question—is the bone and cartilage damage (arthritis) actually the source of the patient’s pain and disability? The role of medial-lateral joint stability or lack thereof bears additional consideration. Compensating for that instability by improving quadriceps muscle strength appears an important adjunct in the armamentarium. That simple exercise approach performed at home is quite different from standard physical therapy approaches, which do not seem to improve stability.

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**Core tip:** Knee instability appears to be a major factor in knee pain and disability related to function of that joint. Improving quadriceps femoris muscle tone can compensate for the ligamentous instability which is so often responsible for pain and disability.

## Editorial

Why does total knee joint arthroplasty not routinely achieve elimination of pain, total normalization of function or produce satisfied patients and why is it not universally embraced? After all, 90% of patients have good or excellent result. Goodman et al [1] report ethnic variation, suggesting that use of “nontraditional methods such as prayer” and limited expectation for post-surgical relief of pain and disability are potentially responsible factors reducing inclination to undergo joint replacement. They further note the association of lower economic status, “preoperative pain, depression, and comorbidities” with worse perceived outcomes. In effect, it seems appropriate to ask why

arthroplasty does not solve the problem? After all, if the problem is the damage to the joint surface, shouldn’t resurfacing (by replacement of the entire osseous and cartilaginous articular structure eliminate pain and restore function?

If arthroplasty does not eliminate pain and restore function, was the damage to the bone and cartilage (arthritis) actually the source of the patient’s pain and disability? Loosening, wear, infection and patellofemoral and alignment problems may result in return of pain, but would not be anticipated to be responsible for a less than satisfactory immediate clinical response.



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The “experimental design” is quite clear (joint replacement to alter pain and disability) and thus, the hypothesis and rationale for joint replacement, perhaps falsified. While a joint may be severely damaged, experienced physicians recognize that some patients with such damage have no pain or disability. Conversely, many patients with normal osseous structures, some with apparently normal cartilage, have knee pain. A common physical finding in patients with knee pain is instability of that joint. This seems often overlooked as it is not revealed by the traditionally maneuvers utilized to identify meniscal- or cruciate ligament-related instability, but rather movement produced by medial-lateral stress applied to the leg with the knee as the fulcrum and the thigh stabilized.

Several years ago, I had the unique experience of being on the pathway of an orthopedic surgeon’s knee replacement surgery planning. I found knee instability almost universal and initiated a very simple exercise program to strengthen the quadriceps mechanism [2]. The patients were instructed to sit with legs dangling, so they did not contact the floor. They were then directed to extend one leg to produce a 30 to 45 degree knee angulation and hold that position for 10 seconds. They were to allow the leg to assume neutral position (90 degrees of knee flexion) and perform the same procedure for the other leg. This was to be repeated four times a day, four times at each sitting. Within two weeks, medial-lateral stability was restored in half of the patients (50 in number) and they felt so improved that the surgery was cancelled. The surgeon was actually pleased, indicating that he had only been considering surgery as a last resort as none of his other interventions resolved the patients’ pain and disability. That experience suggested that instability was the culprit and that damage to ligaments allowed joint motion beyond that which they normally constrain or that the ligaments had become lax with physical loss of the spacer effect normally provided by healthy cartilage and bone.

It seems standard to recommend physical therapy after joint replacement, especially to restore normal range of motion. But this may not be enough. While routine knee arthroplasty restores articular surfaces, it is unclear that it addresses ligaments damaged/stressed by preceding instability. The efficacy of knee

replacement surgery might be improved by adding a program to specifically strengthen the quadriceps mechanism. In my experience, such home exercises have not been part of the routine post-surgical rehabilitation effort. The orthopedic surgeon can contribute to the process of pain elimination and restoration of function by identifying knee instability and assuring correct performance of the simple exercise program that appears essential to eliminating that instability. Absent effectiveness of that approach, knee bracing will be required.

This report is a retrospective consideration of the routine approach utilized in my office. A prospective analysis of the efficacy of this simple exercise intervention should be conducted. It is proposed that the patient would be their own control, as restoration of stability and reduction or elimination of pain are the pertinent measures of efficacy.

The standing “joke” in one community was that if a patient had the temerity to mention knee pain in front of one proficient in the procedure, they were scheduled for replacement surgery. Obviously, that is not typical of orthopedic surgeons, but it does seem appropriate to consider reevaluation of the current inclusion and exclusion criteria used in the decision process and to assure compliance with pre-surgical stability-producing efforts.

#### References

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