

## WHY IS EARLY POST-OPERATIVE KNEE FLEXION AND EXTENSION RANGE OF MOTION IMPORTANT WITH TOTAL KNEE ARTHROPLASTIES?

Studies have shown that the current measures of success following a total knee replacement (pain and ROM) may not be enough to ensure a positive experience and a return to safe functional levels (ref.3).

- 24% fall within the first year ( 4).
- Total knee replacement patients walk 18% slower (2,3).
- Total knee replacement patient climb steps 51% slower (2,3).
- Total knee patients typically have a 20-25% quadriceps strength deficit prior to surgery, 4 months post-op they have a 40% deficit, and one year later they return to a 20 – 25% deficit (2,3,5).

\*Investigators have linked the decline in walking speed and stair climbing to persistent quad deficit (3).

While it might be true that long term ROM outcomes are similar while using various early treatment interventions, the statistics above show that other outcome measures are being left unaddressed. We must not only measure pain and ROM in these patients, instead we also must focus on the functional outcome.

Early ROM is that achieved in the first two weeks after surgery. The goal of this accelerated program is to have 0-120 degrees of motion early. If we can achieve this early ROM by the time the patients are finished with their home health visits, then outpatient therapy can focus on strength, proprioception, neuromuscular re-education, balance, and gait quality.

ROM is, of course, an extremely important outcome, and we cannot achieve ROM without adequate pain control. Below are the knee flexion requirements for various tasks to be performed properly.

- Climb Stairs                      83 degrees
- Descending Stairs              100 degrees
- Sitting Down                      93 degrees
- Tying shoes                      106 degrees
- Lifting Grandchild              117 degrees
- Gardening                      125 degrees

- Taken from Are You Boomer Ready: Total Joint Rehabilitation a CEU Course by John O'Halloran

Achieving this ROM is just the tip of the iceberg in TKA rehabilitation. If we do not achieve ROM that allows function, therapy cannot and should not move further with higher level rehabilitation.

## **Outpatient Therapy**

To work on ROM: patients are brought in 2-3 times a week. They have more problems pushing themselves to achieve full ROM due to pain or a simple inability to produce the needed mechanical advantage to move the knee. Therefore, skilled intervention is needed to achieve ROM that will allow a return to normal tasks.

To work on Strength, Balance, Neuromuscular re-education, and Proprioception: patients can be seen 1 time per week or even every other week with a bigger focus on a home program and progressions. These exercises are more easily performed in the home setting.

Outpatient therapy co pays are getting higher with \$25 - \$75 becoming normal. Even 20% co pays are not unusual anymore. This is cost-prohibitive for some of the population. Outpatient therapy goals will define the final outcome for the total knee population. If patients begin their OP therapy visits with the ROM goal met, functional outcomes can then be the focus of the precious few visits that insurance companies are allowing.

## **TKA Rehabilitation Protocol**

Based on this information, early intervention should focus on promoting ROM. As mentioned above, managing pain will certainly impact how aggressively the patient is able to work on the knee ROM. Another important component that will affect joint ROM is the edema that is present. Edema can have detrimental effects on knee ROM, especially flexion. Further, once swelling begins in a lower extremity, it is challenging to reverse and can linger for months jeopardizing outcomes.

### Effects of Swelling in TKA

- Decreases muscular contraction in the muscles surrounding the joint. (Protective Shut Down)
- Stiffness
- Pain
- Poor Proprioception

Edema control can give patients an advantage and a head start with rehabilitation. Edema control has been used for decades utilizing Rest, Ice, Compression, and Elevation (R.I.C. E.). Therefore, the best TKA protocol follows these principles:

1. Rest: "limited activity" Instead of being up in a chair and walking constantly, patients are up only for therapy sessions, bathroom breaks, and when doing exercises.
2. Ice: in our setting this is achieved with an Ice Man ice machine
3. Compression: There is actually a small compression component when wrapping the ice pad around the knee
4. Elevation: LRU pillow

## References

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