Total Knee Replacement Rehabilitation

Quiet Knee vs. Early Rehabilitation After Total Knee Replacement

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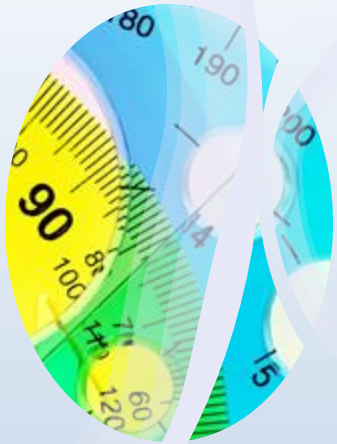
Introduction

- Objective: To compare the 'quiet knee' approach with early rehabilitation for optimal recovery following Total Knee Arthroplasty

Overview:

- - Background on Total Knee Arthroplasty (TKA)

- Over 700,000 total knee arthroplasties (TKA's) are performed each year in the USA to alleviate pain and disability associated with the knee OA, with 3.5 million per year expected by 2030. [1,2]

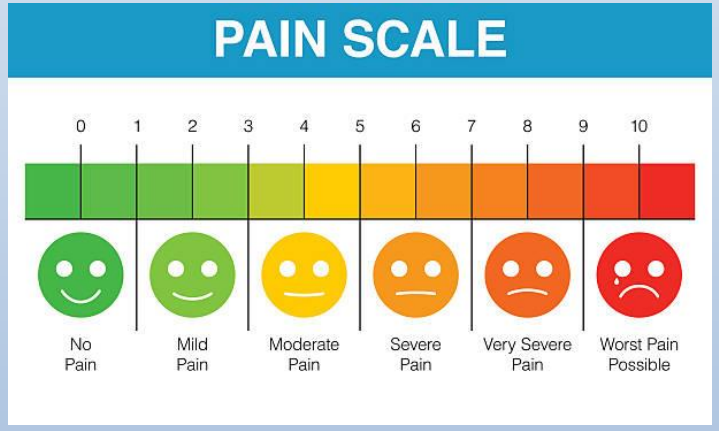


GOALS

- Mobility [3, 4]
  - Timed Up and Go Test - TUG
  - Stair Climb Test (SCT)
  - 2-Min Walk test (2MWT) or 6 Minute Walk Test (6MWT)
  - Single Leg Stance Test (SLST)
  - 5X sit to stand
- Strength
  - Dynomometry
  - Isokinetics
- ROM
  - Goniometry

Goals

- Pain Management
  - Reduced pain allows for the possibility for better sleep, increased tolerance to activity, and theoretical increased compliance with any level of therapy and/or HEP.[5, 6, 7])



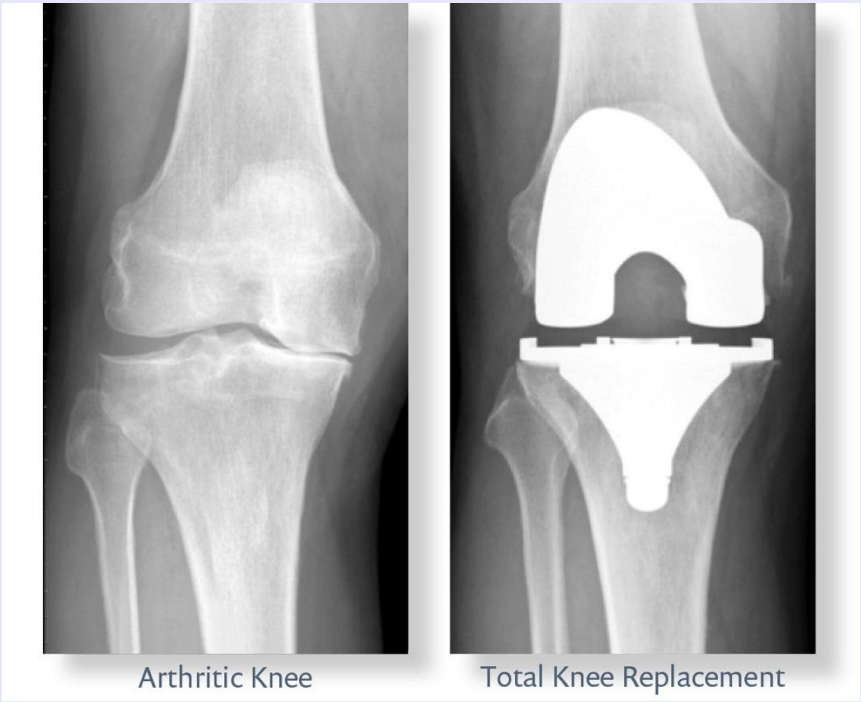
Goals

Function-PROM's[3, 8]

- OKS (Oxford Knee Score)
- OLS-APQ (Oxford Knee Score Activity and Participation questionaire)
- KOOS-12 (12 Item short form Knee Injury and Osteoarthritis Outcome)
- KOOS-PS (Physical Function Short Form)
- WOMAK-TKR (Western Ontario and McMaster Universities Arthritis Index-Total Knee Replacement)
- LEFS (Lower Extremity Functional Scale)
- FJS (Forgotten Joint Score)
- PKIP (Patient's Knee Implant Performance)
- UCLA activity Score (University of California Los Angeles Activity Score)

What is the Quiet Knee Approach?

- Swelling / Edema Management
- Knee Extension Range of Motion
- Quadriceps Activation
- Gentle Knee Flexion Range of Motion



What is the Quiet Knee Approach?

- Definition: A method focusing on rest, elevation, and minimizing inflammation post-surgery.

- Key Components:[9, 4]
  - Limited movement initially (ADLs, restricted flexion ROM, short but frequent ambulation)
  - Emphasis on icing, compression, elevation and controlled pain management
  - Delayed (4 weeks) transition PREs (Progressive Resistive Exercises)

Quiet Knee Approach

Swelling/Edema Management

Elevation- knee above the heart 20 min. 2-3 times per day. But resting position is satisfactory as “toes higher than knee, knee higher than hip”

Icing – Not in direct contact with skin, so can be advised as “ice constantly”. Ice is removed every hour for ambulation activities.

Compression wrap[10]

Quiet Knee Approach

Knee Extension

Heel Prop Stretch

Gentle Hamstring/Gastroc stretching

Manual Therapy – Patellar Mobilization[4]

Quiet Knee Approach

Quadricep Activation[9, 12]

Gentle Quad Setting

NMES of quads

(Neuromuscular Electrical Nerve Stimulation)

Quiet Knee Approach?

Gentle Knee Flexion Gains

Seated knee flexion (≤90˚)

Supine or Seated Heel Slides (13)

Pedaling-Based Protocol(14)

Advantages of the Quiet Knee Approach

- Reduced swelling and pain
- Decreased risk of complications like wound dehiscence and arthrofibrosis as inflammation, due to over-use, is minimized
- Psychological benefits from rest and reduced pressure to perform
- Improved long-term functional outcomes

(15,9,2)

What is Early Rehabilitation?

- Definition: Immediate post-operative focus on physical therapy and mobilization in first 4 weeks post-op
- ERAS (Enhanced Recovery After Surgery) or Fast-Track first described in 1997[15, 6,]

What is Early Rehabilitation?

Key Components:

- - Start physical therapy within POD 0 <24 hours post-surgery
- - Active range of motion (ROM) and strength exercises – early Loading
- - Early Progressive resistive Exercises and weight-bearing activities based on performance
- (4,9,11,15)

Advantages of Early Rehabilitation

- Decreased need for Opioid pain management
- Faster **early** recovery of ROM and muscle strength
- Earlier return to daily activities
- Reduced post-op complications of thrombosis and embolism
- Improved long-term functional outcomes
- Reduced risk of joint stiffness and adhesions
- (5,9,15,16)

Quiet Knee Risks and Challenges

- Potential for stiffness and limited ROM.
- Arthrofibrosis associated with TKR
- Prolonged recovery time as progression toward function is moderated

Early Rehab Risks and Challenges

- Risk of overexertion leading to swelling or delayed wound healing.
- Increased initial discomfort during therapy
- Reactive inflammation and potential arthrofibrosis

Patient-Centered Considerations

- Factors Influencing Clinical Decision Making:
  - Pre-surgery mobility and fitness level
  - Pain tolerance and psychological readiness[5]
  - **Kinesiophobia**[17]
  - Age and overall health
  - Access to rehabilitation services

Combined Approach

- Balancing **rest** and **controlled movement** for optimal outcomes.
- Incorporating elements of both strategies based on **patient needs** and **surgeon recommendations** and flexibility in the timeline.
- Strong patient education along with consistent and receptive communication by the medical and rehabilitation team

Conclusion

- No one-size-fits-all solution: recovery plans should be personalized.

- Early rehabilitation generally offers faster functional recovery, but the quiet knee may be preferable for patients prone to inflammation or complications.

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Thank you!

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