KNEE OSTEOARTHRITIS (OA) NON-OPERATIVE GUIDELINES

The following Knee Osteoarthritis (OA) Non-Operative Guidelines were developed by HSS Rehabilitation and are categorized into four phases, dependent on patient presentation and symptom irritability. Classification and progression is both criteria-based and individualized, to be determined by the clinician. Phases and time frames are designed to give the clinician a general sense of progression. Linear progression through phases may not be indicated. The clinician should balance appropriate interventions for the optimization of functional activities, while considering symptom irritability and the resolution of impairments. Additionally, progression through the phases should be in alignment with patient goals.

FOLLOW PHYSICIAN MODIFICATIONS AS PRESCRIBED

KNEE OSTEOARTHRITIS (OA) NON-OPERATIVE GUIDELINES

Phase 1: High Irritability

PRECAUTIONS

- Avoid exercises and activities that increase pain or swelling; modify activities as necessary (prn)

ASSESSMENT

- Lower Extremity Functional Scale (LEFS)
- Knee injury and Osteoarthritis Outcome Survey Junior (KOOS JR)
- Fear Avoidance Beliefs Questionnaire (FABQ) Body Diagram
- Numeric Pain Rating Scale (NPRS)
- Joint Mobility:
    - Active Range of Motion (AROM)/ Passive Range of Motion (PROM)
    - Patella mobility
- Lower extremity (LE) flexibility
- Strength: manual muscle testing (MMT)
    - Proximal/distal to the knee (consider hand-held dynamometer, if available)
    - Quadriceps/hamstrings (as tolerated)
        - Quadriceps contraction
    - Core
- Edema (girth measurements)
- Gait and transfers
- Functional Assessment:
    - Single leg stance (SLS)
    - Timed up and go (TUG) (higher fall risk: ≥12 sec for 3m TUG)
        - See footnote #15 for normative values

TREATMENT RECOMMENDATIONS

- Patient education
    - Nature of the condition
        - Joint health (mobility, strength)
    - Activity modification to regulate pain
    - Self-management of pain and edema
    - Weight loss considerations, consider referral to nutrition
- Gait training: use of assistive device, as necessary
- Soft tissue mobilization

- Joint mobilizations:
    - patellar, proximal tibiofibular joint, tibiofemoral joint
- Range of motion (ROM): gentle knee PROM/active assisted range of motion (AAROM)/AROM without increasing irritability
- Flexibility: proximal and distal stretching
- Strengthening:
    - Knee musculature
    - Proximal and distal strengthening
- Aquatic therapy, if available
- Bracing or taping prn
- Modalities prn
- Bicycle to tolerance

CRITERIA FOR ADVANCEMENT

- Demonstrates tolerance for activity progression
- Independent with HEP for self-management of symptoms
- If symptoms fail to respond to interventions, consider referral back to referring provider
- Patient demonstrates understanding of self-regulation of triggering activities.

EMPHASIZE

- Patient understanding of condition
- Gait normalization
- Control of pain and edema
- Trending towards pain-free exercise and activities
- Decrease in irritability defined as decreased duration of symptoms (quicker recovery)

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Phase 2: Moderate Irritability

PRECAUTIONS

- Avoid exercises and activities that increase pain or swelling; progress activities prn
- Avoid reciprocal stair climbing with pain and compensations
- Gradually increase step count and discharge assistive device, if still in use
- Gradually increase activity level

ASSESSMENT

- LEFS
- KOOS JR
- FABQ
- NPRS
- Joint Mobility:
    - AROM/PROM
    - Patella mobility
- LE flexibility
- Strength: MMT
    - Proximal/distal to the knee (consider hand-held dynamometer, if available)
    - Quadriceps/hamstrings (as tolerated)
        - Quadriceps contraction
    - Core
- Edema (girth measurements)
- Gait and transfers
- Functional Assessment
    - Sit to stand test
    - Squat:
        - Movement strategy, alignment, depth, symmetry
    - Forward step up (FSU)/forward step down (FSD)
    - Timed up and go test (TUG)
- Balance

TREATMENT RECOMMENDATIONS

- Patient education
- Gait training, monitor step count
- Soft tissue mobilization
- Joint mobilizations:
    - patellar, proximal tibiofibular joint, tibiofemoral joint
- ROM: PROM/AAROM/AROM
- Flexibility
- Strengthening progression:
    - Progression of load/resistance
    - Double (DL) to single leg (SL)
- Functional training progression:
    - FSU/FSD
    - Sit to stand
    - Squat
- Balance training
- Consider Blood Flow Restriction (BFR), if better tolerated than progressing load/resistance
- Neuromuscular electrical stimulation (NMES) for quadriceps contraction, if needed
- Modalities to manage symptoms prn
- Cardiovascular training
    - Begin with low impact/low resistance activities

CRITERIA FOR ADVANCEMENT

- Tolerance of progressive resistance exercises
- Tolerance for community ambulation without increase in symptoms
- Good control of edema and pain with improved strength/functional measures

EMPHASIZE

- Improve motion, strength, flexibility and function while decreasing irritability

KNEE OSTEOARTHRITIS (OA) NON-OPERATIVE GUIDELINES

Phase 3: Low/No Irritability

PRECAUTIONS

- Monitor joint and pain response to increasing loads

ASSESSMENT

- LEFS
- KOOS JR
- FABQ
- NPRS
- Joint Mobility:
  - AROM/PROM
  - Patella mobility
- LE flexibility
- Strength: MMT
  - Proximal/distal to the knee (consider hand-held dynamometer, if available)
  - Quadriceps/hamstrings (as tolerated)
    - Quadriceps contraction
  - Core
- Edema (girth measurements)
- Gait and transfers
- Functional Assessment
  - Sit to stand test
  - Squat:
    - Movement strategy, alignment, depth, symmetry
    - Single leg squat if applicable
  - FSU/FSD
- Balance

TREATMENT RECOMMENDATIONS

- Patient education
- Gait training, monitor step count
- Soft tissue mobilization, joint mobilization, ROM prn
- Flexibility
- Strengthening progression:
  - Progression of load/resistance
  - Double (DL) to single leg (SL)

- Functional training progression:
    - FSU/FSD
    - Sit to stand
    - Squat
- Dynamic balance training and neuromuscular control
- Consider Blood Flow Restriction (BFR), if better tolerated than progressing load/resistance
- Neuromuscular electrical stimulation (NMES) for quadriceps contraction, if needed
- Modalities to manage symptoms prn
- Cardiovascular training:
    - Elliptical when patient can ascend a staircase reciprocally
    - Progression of spinning/cycling to include out of the seated positions
    - Initiate running progression when patient demonstrates eccentric quadriceps control with forward step down
- Collaborate with performance coach/personal trainer

CRITERIA FOR DISCHARGE OR ADVANCEMENT TO PHASE 4 (IF RETURNING TO SPORT)

- Hand Held Dynamometry:
    - >90% Limb Symmetry Index
- Achievement of functional goals
- Discharge with independent home exercise program (HEP) or progress to phase 4 if returning to sport

EMPHASIZE

- Restoration of symmetrical strength, ROM and functional movements

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Phase 4: Return to Sport (if applicable)

PRECAUTIONS

- Monitor joint and pain response to exposure to sport
- Monitor volume of training with progressive loading, allowing for recovery time

ASSESSMENT

- LEFS
- KOOS JR
- FABQ
- NPRS
- Joint Mobility:
    - AROM/PROM
    - Patella mobility
- LE flexibility
- Strength: MMT
    - Proximal/distal to the knee (consider hand-held dynamometer, if available)
    - Quadriceps/hamstrings (as tolerated)
        - Quadriceps contraction
    - Core
- Edema (girth measurements)
- Functional Assessment
    - Sit to stand test
    - Squat:
        - Movement strategy, alignment, depth, symmetry
        - Single leg squat if applicable
    - FSU/FSD
- Balance
- Functional Assessment
    - Squat:
        - Movement strategy, alignment, depth, symmetry
        - Single leg squat if applicable
    - Lunge
    - Forward step up / step down
    - Jumping/Hopping
    - Running/Jogging
    - Agility

TREATMENT RECOMMENDATIONS

- Modalities to manage symptoms as needed
- Sport-specific Strengthening:

- Dynamic balance training and neuromuscular control
- Sport-specific plyometric & agility training
- Sport-specific activities and movement patterns, e.g.:
    - For golf: hip and trunk rotation and single leg exercises/activities
    - For tennis: acceleration/deceleration activities
- Cardiovascular training
- Return to sport-specific interval training 2-3x/week
- Collaborate with performance coach/personal trainer

CRITERIA FOR RETURN TO SPORT

- Movement patterns, strength, flexibility, and motion to meet demands of sport

EMPHASIZE

- Sport-specific exercises and movement patterns
- Progressive return to sport
- Independent home exercise program

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