

WHO to target to prevent post-traumatic osteoarthritis



- ‡ People with single and multi-structure injuries (particularly Anterior Cruciate ligament tears, meniscal tears, intraarticular tibiofemoral fractures, and patellar dislocations with concomitant chondral lesions)
- ‡ Prioritise people with symptoms and/or functional deficits persisting beyond usual recovery times, or with a subsequent injury

WHAT and WHEN to target to prevent post-traumatic osteoarthritis



- ‡ Promote knee health through education, self-management, mitigating known modifiable risk factors for re-injury and non-traumatic OA, and person-centred goals
- ‡ Start these efforts as soon as possible after injury and continue across the lifespan

WHAT TO DO after an Anterior Cruciate ligament (ACL) tear



- ‡ 1st ACL tear treatment includes education and exercise-therapy-based rehabilitation. Delay the decision to undergo ACL reconstruction (ACLR) until there is a quiet knee. The ACLR decision should be made by the patient (informed by relevant stakeholders) if they cannot achieve their acceptable functional level despite sufficient muscle function



- ‡ ACL tear and ACLR rehabilitation incorporates patient preferences, is goal and/or criterion-based, and begins with supervised, then semi-supervised home (gym)-based rehabilitation to unsupervised home (gym) self-management



- ‡ Core components of ACL tear and ACLR exercise-based rehabilitation include:
 - Weight-bearing, mobility, open and closed kinetic chain resistance-based, neuromuscular control and plyometric lower-limb exercises (including neuromuscular electrical stimulation to improve quadriceps strength; return to work, sport or other physical activity preparation; techniques to promote exercise adherence and self-management of knee health; and cognitive behavioural techniques as appropriate
 - Adjunct treatments for quadriceps strength include blood-flow restriction training, and whole-body vibration



- ‡ ACL tear and ACLR Rehabilitation DOES NOT include continuous passive motion, or knee bracing
- ‡ Return to pivoting sport criteria after ACL tear or ACLR includes being ≥ 9 months post-ACL tear or ACLR and test battery pass

WHAT TO MONITOR after a traumatic knee injury



- ‡ Core clinical outcomes include: knee-related pain, symptoms other than pain, adverse events (e.g., subsequent injury, giving way), cognitive behavioural factors that influence learning and performance, physical function (e.g., self-reported function, functional performance and/or muscle function), quality of life (QOL), and overall physical activity and sport participation.
- ‡ Other important outcomes can include: body weight, health-related QOL, participation in social roles, responsibilities and relationships (e.g., occupation, care-giving community participation), and injury-related mental health (e.g., depression, anxiety)
- ‡ Diagnostic imaging is only indicated when results will inform treatment planning.

HOW TO MONITOR PATIENT-REPORTED OUTCOMES after a traumatic knee injury

Core clinical patient-reported outcomes to choose from to monitor MULTIPLE domains include:

- ‡ IKDC-SKF (composite score of knee-related symptoms, function and sports activities)
- ‡ KOOS (composite AND single domain scores of knee pain, other symptoms, function in daily living and sport/recreation, and QOL)
- ‡ WOMET (composite score of knee-related physical symptoms, sports/recreation/work/lifestyle, and emotions: meniscal only)

Other clinical patient-reported outcomes to choose from to monitor SINGLE domains include:



- ‡ Pain: Numerical Rating Scale or Visual Analogue Scale
- ‡ Knee-related QOL: ACL QOL Score
- ‡ Health-related QOL: Visual analogue scale, or SF-12
- ‡ Knee-related cognitive behaviour factors: ACL-RSI Scale, K-SES, or TSK-11
- ‡ Physical activity and sport participation: sport resumption and frequency
- ‡ Participation in social roles, responsibilities and relationships: occupation, caregiving and community
- ‡ Injury-related mental health: anxiety and depression

HOW TO MONITOR MUSCLE FUNCTION after a traumatic knee injury

Core clinical knee muscle function measures include: peak thigh muscle (knee extensor/flexor) strength.

Clinical measures of peak knee extensor/flexor strength include (as available):



- ‡ Computerized dynamometry (concentric isokinetic contraction at $\geq 60^\circ/s$)
- ‡ Hand-held dynamometry (isometric maximum effort)
- ‡ Weight machine (concentric isotonic 1RM knee extension or knee flexor curl)

Other important muscle function measures include: thigh muscle endurance and power, and trunk, hip, and leg muscle function

HOW TO MONITOR FUNCTIONAL PERFORMANCE after a traumatic knee injury



- ‡ Core clinical functional performance measures include: hopping
- ‡ Clinical measures to estimate hop performance include: a battery of forward (single, repeated), diagonal and/or vertical hop tests
- ‡ Core clinical hop tests include: Crossover hop (diagonal), Single hop (single-forward), Triple-hop and 6m timed hop (repeated-forward), and Vertical hop (vertical)
- ‡ Other important clinical measures of functional performance include: balance, agility or other tasks meaningful to the patient

HOW TO INTERPRET PATIENT-REPORTED, MUSCLE FUNCTION, AND FUNCTIONAL PERFORMANCE



- ‡ To interpret change and current state of an outcome, ask a patient if they have noticed a meaningful change, and if their current state is acceptable/satisfactory
- ‡ To better understand a patient's experience of an outcome, ask about individual patient reported outcome item responses
- ‡ Record the baseline and follow-up score, and direction of change (improvement or deterioration) in the outcome(s), if the patient felt the change was meaningful, and if they feel that their current state of that outcome is acceptable/satisfactory

