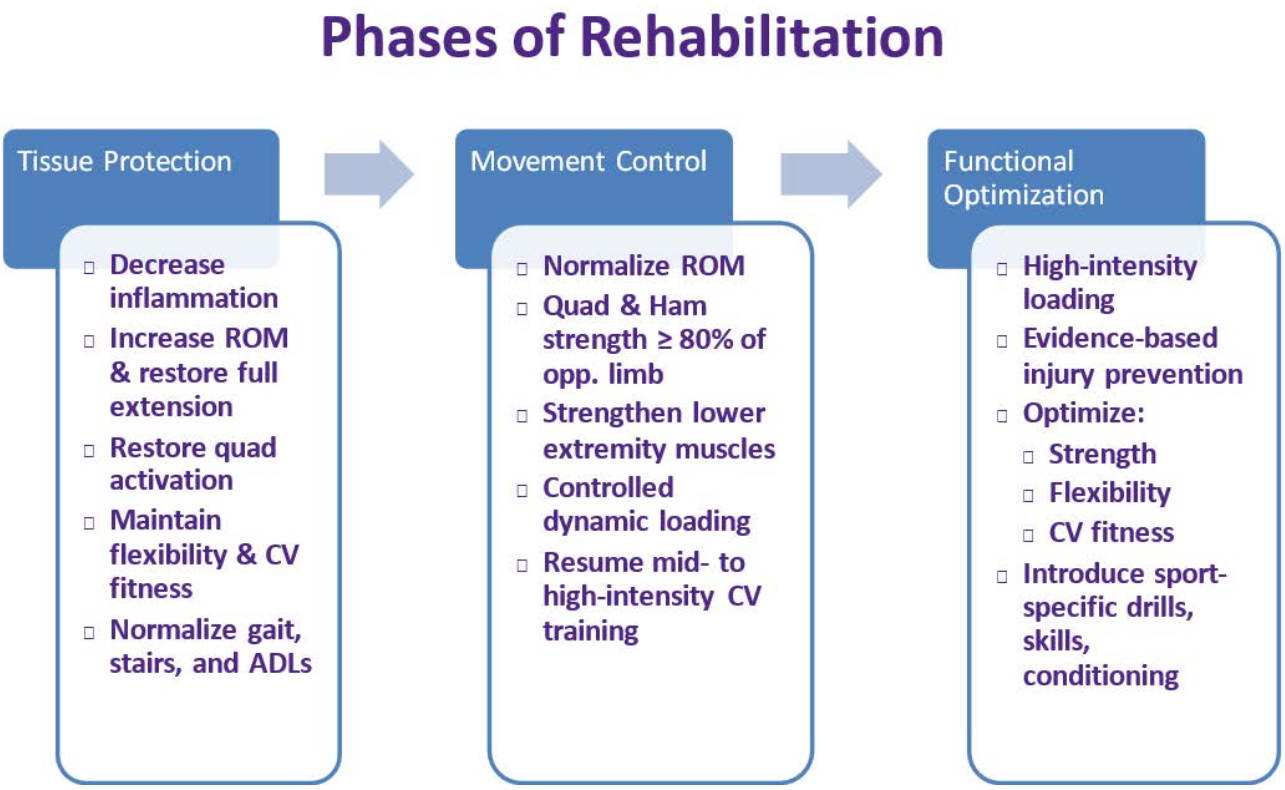
STABILITY

Stability II: Standardized Rehabilitation Protocol

The span of the rehabilitation protocol is 12 months, and it includes three criterion-based phases.



1. Tissue Protection Phase

The rehabilitation focuses on general range of motion, control of swelling, quadriceps activation, and a return to basic activities of daily living and lasts anywhere for 4 to 8 weeks after surgery.

The suggested progressions in this phase are as follows:

- Patient education regarding:
    - Progressive increases in activity pending meeting criteria
    - Weight-bearing status and gently re-introducing loading to the knee;

    - Changes to rehab guidelines with concurrent pathologies (e.g. patellofemoral pain, meniscal repair, etc.)
- Decrease inflammation
    - Pain should be well controlled (e.g. no more than 4/10)
    - Swelling should be a 1+ or less on the sweep test prior to weight bearing exercise
- Increase range of motion & restore full extension* with the following goals:
    - Neutral Extension (0^o) to 90^o flexion by 2 weeks post-op
    - Hyperextension equal to the opposite limb to 120^o flexion by 4 weeks post-op
    - Full motion compared to the non-involved limb by 6 weeks post-op
- Quadriceps activation with the following goals:
    - Isolated quadriceps activation that produces a superior patellar glide by week 1 post-op
    - Straight leg raise with no quadriceps lag by 2 weeks post-op
- Maintain flexibility of hamstrings, calves
- Maintain cardiovascular fitness
    - Consider use of the upper body ergometer (arm bike)
    - Consider hydrotherapy when the incisions and portals have healed, and scabs have fallen off (~4 weeks)
- Normalize proprioception, balance, and neuromuscular control to normalize gait patterns, stair negotiation, and activities of daily living
    - Instruct in proper gait patterns with assistive devices
    - Progress to walking without assistive devices when the patient:
        - Has less than a 3^o quadriceps lag
        - Can stand on the surgical limb for 10 seconds with good balance
        - Can walk with a normal gait pattern including direction changes
    - Normal transitions from sitting to standing and standing to sitting (e.g. no weight shift away from the surgical leg)
    - Normal reciprocal stair ascent and descent

2. Motor Control Phase

This phase promotes strength, neuromuscular, and cardiovascular re-training to prepare the patient to return to impact activities and lasts until at least 16 weeks after surgery. The goals and treatment progression during this phase are:

- Range of Motion
    - Maintain full and pain free knee range of motion
    - Ensure normal hip joint motion (extension, rotation) and ankle joint motion
    - Address limitations in quadriceps, hamstrings, gastrocnemius flexibility
- Quadriceps and Hamstrings strength equal to 80% of the opposite limb
    - Perform electromechanical dynamometry or 1-Repetition Maximum (RM) testing at 12 weeks post-surgery.
    - Address documented strength deficits with non-weight bearing isotonic exercises
        - Heavy resistance from 45^{o}-95°
        - Light resistance from 90^{o} to 0^{o}
    - Isokinetic quadriceps strengthening should be performed from 90^{o} to 45^{o} at high and low velocity

      **<u>*only if*</u>: ROM is full, no swelling, adequate muscle control, and no meniscal or patellofemoral pathology

- Continue strengthening gluteal muscle groups, specifically through full range of motion
- Motor Control Phase ends when the patient meets all criteria to begin jogging:
    - Quadriceps Index of 80% or greater as measured with an electromechanical dynamometer or 1-RM knee extension test.
    - Able to walk 15 minutes at a fast pace without aberrant movements (limp), pain or swelling
    - Normal walking gait pattern has been achieved

3. Functional Optimization Phase

In the Functional Optimization Phase dynamic activities like running, jumping, agility training, and sport-specific training are introduced. The Functional Optimization Phase is the key to returning athletes to sport while minimizing the risk of injury. Athletes may be cleared to return to practice around 7 to 12 months after surgery, with full clearance as early as 9 months. The suggested progression during this phase is:

- Progressively return the athlete to normal dynamic loading patterns with good control to minimize injury risk.
- Implement evidence-based injury prevention techniques to reduce risk of second ACLR.
- Ensure optimal lower extremity strength and flexibility to promote return to full activity.
- Incorporate total body training to resume normal activity.
- Practice sport-specific conditioning, drills, and movements in a safe environment.
- Prepare the athlete to transition to training with coach, trainer, etc.