



*Musculoskeletal*

## Rehabilitation guideline after ACL reconstruction surgery

### What is the evidence based treatment for ACL rupture after surgery?

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Anterior cruciate ligament (ACL) injury is a common injury in athletes, and is mostly treated operatively with an ACL reconstruction (ACLR). Alarming, research shows that 35% of athletes after an ACLR do not return to preinjury sport level within 2 years. In addition, 3–22% of athletes rerupture their ACLR and 3–24% rupture the contralateral ACL in the first 5 years after ACLR. Thus, the rehabilitation after an ACLR seems to be more challenging than frequently assumed.

The goal of this evidence statement was to describe the rehabilitation after ACLR and to encourage uniformity in physical therapy treatment and use of measurements of functional performance.

A multidisciplinary working group and steering group was formed, consisting of 12 ACL experts with 8–37 years of experience in ACL rehabilitation (physical therapists, sports physician, orthopaedic surgeons and one trauma surgeon). An extensive systematic review was carried out, in which the working group monitored and assisted in the systematic review process and the steering group validated all steps made by the first author and the working group.

The conclusions about

- **modifiable factors** are, that a preoperative



extension deficit and quadriceps strength deficit has a negative consequence on the rehabilitation process.

- **effectiveness of physical therapy** is that, it remains still unclear whether there is a benefit of supervised rehabilitation compared to home-based rehabilitation or no rehabilitation at all and that there are no differences in terms of laxity, ROM, self-reported knee function, single-leg hop test for distance or isokinetic quadriceps strength after a 19-week programme, compared to a 32-week rehabilitation programme.

- **open vs. closed kinetic chain exercises** is that, both can be used to regain quadriceps strength and that OKC exercises can be performed from 4 weeks postoperative on.

- **strength and neuromuscular training** is that, eccentric quadriceps exercises are safe after 3 weeks ACLR and better than concentric training. Neuromuscular training should be added and that immediate weight bearing is safe and decreases pain.

- **Electrostimulation and electromyographic feedback** is that it might be more effective in combination with strength training and that electromyographic feedback might reduce shortterm pain

- **Cryotherapy** is that it can be used to reduce acute pain.

- **Measurements of functional performance** is that an extensive test battery should be used to assess the return to play ability.

- **Risk of reinjuries** is that, the risk of a contralateral ACL rupture is higher than the risk of graft rerupture and that altered neuromuscular function and biomechanics (e.g. dynamic knee valgus) are a risk factor for second a ACL injury.

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