The objectives of this study were to investigate the impact of quadriceps femoris (QF) muscle strength asymmetry at the time of return to sport on self-reported function and functional performance of individuals following anterior cruciate ligament (ACL) reconstruction.

Fifty-five individuals who were cleared for return to sport following primary ACL (ACLR group) and 35 uninjured individuals in a control group participated in the study. QF strength (maximum voluntary isometric contraction) was assessed, and the quadriceps index (QI) was calculated [(involved strength/uninvolved strength) × 100%). The ACLR group was further subdivided into 2 groups, based on the QI results: high-quadriceps (QI of 90% or greater) and low-quadriceps (QI of less than 85%). The International Knee Documentation Committee Subjective Knee Evaluation Form score and hop tests were also used to evaluate performance.

The individuals in the ACLR group in general were weaker, reported worse function, and performed worse on hop tests compared to those in the control group (P<.05). The low-quadriceps group demonstrated worse performance on the hop tests compared to the high-quadriceps group and the control group (P≤.016). Hop test performance did not differ between the high-quadriceps and control groups (P≥.14). QF strength predicted performance on the hop tests beyond graft type, presence of meniscus injury, knee pain, and knee symptoms.

At the time of return to sport, individuals post-ACLR who had weaker QF (QI of less than 85%) demonstrated decreased function, whereas those with minimal QF strength deficits (QI of 90% or greater) demonstrated functional performance similar to uninjured individuals.

The Authors suggest that QI testing may be a useful adjunct in evaluating athletes’ preparedness for return to sport.
Electromechanical Delay of the Vastus Medialis Obliquus and Vastus Lateralis in Individuals With Patellofemoral Pain Syndrome
Han-Yu Chen, Chia-Chen Chien, Shyi-Kuen Wu, Jiann-Jong Liau, Mei-Hwa Jan

The objectives of this study were to examine electromechanical delay (EMD) of the vastus medialis obliquus (VMO) and the vastus lateralis (VL) in individuals with patellofemoral pain syndrome (PFPS). EMD is a mechanical property of muscles related to protective reflex and sports performance. The time duration of the EMD can be shortened with strength training and, conversely, can be lengthened secondary to immobilization or injury.

Twenty-six individuals with PFPS and 26 healthy volunteers were studied. The VMO and VL were electrically stimulated to evoke muscle twitches. Ultrasound was used to assess patellar movement elicited by the muscle twitch. The time from the onset of electrical stimulation to the onset of patellar movement was measured as the EMD.

Analysis indicated that the EMD of the VMO was longer and the EMD of the VL was shorter in the PFPS group. Therefore, in the individuals with PFPS, the EMD of the VMO was significantly longer than that of the VL, which was not the case for those in the control group.

The Authors suggest that mechanical properties of the VMO and VL may be altered in patients with PFPS, which may lend itself to an avenue for rehabilitation and training of injured athletes.

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