

symptom state (PASS) threshold were compared with one-way analysis of covariance (adjusted for sex, age, time to surgery, and cartilage/meniscus injury at ACLR) or chi-square tests ( $\alpha=0.05$ ).

**Results** Eighty-three (83%) and 1477 (53%) patients attended the 10-year follow-up. Patients who received progressive preoperative and postoperative rehabilitation had superior outcomes for KOOS pain, symptoms, activities of daily living, sports and recreation compared with usual care ( $p<.001$ ), with the largest difference in sports and recreation ( $13\pm 6$  points). A greater proportion also exceeded the PASS-threshold compared to patients who received usual care (53–97% versus 38–83%,  $p\leq.003$ ).

**Conclusion** Ten years after ACLR, patients who received progressive preoperative and postoperative rehabilitation had better knee function and symptoms, and a greater proportion achieved acceptable symptoms compared to patients who underwent usual care.

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#### PRONOUNCED QUADRICEPS WEAKNESS WITH QUADRICEPS TENDON GRAFT COMPARED TO PATELLAR OR HAMSTRINGS TENDON GRAFT FOR ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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**Introduction** Impaired quadriceps muscle function following ACL reconstruction (ACLR) is associated with worse clinical outcomes and risk of re-injury. Yet, we know very little about quadriceps muscle function in patients reconstructed with quadriceps tendons (QT), a graft with increasing popularity worldwide. The purpose of this study was to describe and compare isokinetic quadriceps strength in patients undergoing ACLR with QT, hamstrings tendon (HT) or patellar tendon (BPTB) autograft.

**Materials and Methods** In this cross-sectional study we included QT-patients ( $n=104$ ) and matched them to BPTB ( $n=104$ ) and HT-patients ( $n=104$ ) according to age, gender, and associated meniscus surgeries (Mean time from ACLR [SD]: 7 months [1]). Data were collected through clinical follow up routines and the Swedish ACL registry. Isokinetic strength was measured at 90°/seconds and expressed through leg symmetry index (LSI). Group differences were assessed by analysis of variance with post-hoc pair wise comparison.

**Results** QT patients had significantly lower peak knee extension torque than BPTB- (Mean LSI difference [95%CI]: -6,9% [-11,2 to -2,7],  $p = <0.01$ ) and HT-patients (Mean LSI difference [95%CI]: -17,4% [-21,7 to -13,2],  $p = <0.01$ ). None of the graft groups reached a mean LSI in peak knee extension torque of  $>90\%$  [Mean LSI [95%CI]: QT = 67,5% [64.8–70.1]; BPTB = 74,4% [72–76.9)]; HT = 84,9% [82.4–87.4].

**Conclusion** Seven months following ACLR, patients operated with QT-grafts present with significantly worse isokinetic quadriceps strength than patients operated with BPTB- and

HT grafts. None of the three groups reached an LSI of  $>90\%$  in quadriceps strength.

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#### USING BIOMECHANICS TO ASSESS THE COUNTERMOVEMENT JUMP AS A TOOL TO MEASURE MALE AND FEMALE ADOLESCENTS WITH ACL INJURY

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**Introduction** Adolescent anterior cruciate ligament (ACL) injuries have increased substantially over the last two decades and some 25% will experience a re-injury following surgery, with injury rates highest among females. As such, improved return to activity metrics are imperative. Vertical jump performance is a one commonly used tool, however performance standards and the role of the injured or non-injured limb in achieving jump height is unknown for adolescent males and females. As such, the purpose of this study was to (1) assess performance in ACL injured and uninjured adolescents, and (2) assess limb contributions to this performance.

**Materials and Methods** Thirty-one ACL injured and thirty-eight control female adolescents, and fifteen ACL injured and twenty-five control male adolescents performed a counter-movement jump (CMJ) task while whole body 3D kinematics were recorded. Maximum jump height and the maximum sagittal hip, knee, and ankle velocities were calculated. Females and males were analysed separately, while contrasts were made between limbs and injury status.

**Results** Jump height was 13% lower in the ACLi compared to CON, while the ACLi contralateral limb also produced greater hip, knee and ankle angular velocities compared to their injured limb in females. No difference was found in jump height between ACLi and CON, however the contralateral limb of the ACLi males had greater hip and knee extension angular velocities. Neither male nor female controls had inter-limb differences.

**Conclusion** ACLi adolescents shielded the injured limb to achieve similar jump performance. This leads to asymmetrical joint loading and may explain injury risk.

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#### #READYTOPLAY: INJURY AND ILLNESS SURVEILLANCE IN WOMEN'S PREMIER LEAGUE FOOTBALL IN NORWAY – A 2-YEAR PROSPECTIVE COHORT STUDY

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**Introduction** Previous epidemiological studies in women's football have used methods inappropriate to capture overuse injuries and illnesses. The aim of this study was to describe