

The injured anterior cruciate ligament

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Studies were performed to evaluate neuromuscular function after injury of the anterior cruciate ligament (ACL), the effect of a rehabilitation program, knee laxity measurements before and after surgery as well as radiographic measurements of the femoral condyles with a prognostic implication.

Some chronic symptomatic patients with a muscle strength reduction of less than 10% had substantial functional disability. A reduction of activity was not enough for relief of instability symptoms. An impaired balance both when standing on the injured and on the uninjured limb, as compared to a control group, was found. After rehabilitation, standing balance normalized within 3 months on the uninjured side but it improved more slowly on the injured side. Muscular strength normalized after 3 months and measurements of strength alone were not sufficient to measure a restored limb function. Improved function and increased activity without instability symptoms were found after rehabilitation in most patients. There was no deterioration at a 3 year follow-up. Patients with persistent instability symptoms despite a neuromuscular rehabilitation program, had an increased radiographic displacement during weight-bearing, as compared to asymptomatic patients with the same passive laxity.

The sagittal geometrical shape of the femoral condyles varied and patients with severe symptoms after a primary non-operative treatment had a more spherical shape of their condyles.

Manual tests correlated to instrumented measurements of sagittal knee laxity. External devices recorded larger displacements than did roentgen stereophotogrammetric analysis in stable knees due to soft tissue deformation. In a consecutive series with a free autologous bone-tendon-bone graft, the laxity was reduced with a definite end-point and the maximum migration of the bony ends of the graft was 0.7 mm one year after the reconstruction, indicating a sufficient fixation and graft function.

Conclusion: The patient with chronic instability symptoms after an injury to the anterior cruciate ligament has a reduction in mechanical support of the knee and a disturbance in neuromuscular function of the extremity. In the evaluation and treatment of these patients a dual view should be practised. Non-surgical and surgical methods should be regarded more as supplements than alternatives.