

## SAME BUT DIFFERENT: ISOKINETIC REHABILITATION AFTER ACL RECONSTRUCTION



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### Introduction

Anterior Cruciate Ligament (ACL) rupture is a common injury among sportsmen, especially in high risk sports like football, alpine skiing, rugby and so on resulting most of the time from non-contact situations (2). Whereas recreational sportsmen often are treated conservatively, professional athletes undergo a surgery. On average 81% of injured athletes return to any sport after a reconstruction, 65% return to their pre-injury level and 55% return to competitive sport level (1). To reach the two main goals of injured athletes, returning to sport as quick as possible and at a higher level than pre-injury, there is a strong need for an individually designed rehabilitation program. The case report of two professional football players underlines the importance of individual rehabilitation.

### Case reports

Two midfielders, both 21 years old, player A with a body height of 1.76 m and body weight of 75 kg, player B with a body height of 1.87 m and body weight of 76 kg ruptured their ACL, bot by non-contact; player A in a training situation and player B in a match situation. They underwent the same surgery technique (patellar tendon graft) from the same surgeon and ran through the same rehabilitation scheme, which was strictly pre-defines by the surgeon. For both players, the first isokinetic training on the Biodex System 4 Pro (New York, USA) was preformed three months post-op. The passive-assistive Isokinetic mode at 60°/s was performed, 15 repetitions and 5 sets. Range of movement was limited from 90 to 20 degrees. After 24 weeks post-op an completely active isokinetic test at 60, 180 and 240°/s with full range of motion was performed to permit high intensive athletic training and team training sessions. While the shape of the torque/time curve of the extensors in the visual output is completely unobtrusive in player B, player A showed an explicit altered shape of the torque/time curve of the knee extensors, suggesting an altered muscular activation. Consequently, player A did two training sessions per week until 24 week post-operative on the isokinetic dynamometer to improve the shape of the torque/time curve and the quality of movement. Player B was already allowed to attend the athletic training units from their own rehabilitations coaches twelve weeks post-op. After 24 weeks, player A improved his torque/time curve satisfactorily, so he also was allowed to take part in knee specific athletic training sessions in the football club. The isokinetic training and testing offered beside a complete documentation a very good opportunity to monitor the quality of movement. It was possible to protect the two players from training overloads and re-injuries so far.

### Conclusion

Even if athletes receive the same injuries and run through the same rehabilitation scheme (surgery technique, surgeon, rehabilitation program) muscular differences on functional level might be present. **This condition can be detected and monitored by functional assessments like Isokinetic training and testing.** These assessments protect professional and recreational athletes from training overloads and minimize the risk of re-injuries.

### References

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