Evolution of the anteroposterior laxity by GnRB at 6, 9 and 12 months post-surgical anterior cruciate ligament reconstruction

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Objective This study aimed to analyze the evolution of the tibiofemoral anterior laxity during the return to sport after anterior cruciate ligament reconstruction.

Patients and methods Twenty patients (11 women, 9 men) with mean age of 22.4 ± 5.1 years, operated for ACL reconstruction by a hamstring technique, competitors in a pivot-contact sport, were enrolled between September 2014 and March 2016. They were evaluated at 6 (n = 20), 9 (n = 13) and 12 (n = 13) months postoperatively by laximetry to 250 N using laximètre GnRB® (GenouROB, Laval, France). The differential between laxity uninjured side and operated side in mm, and the difference in slope of the curve laxity according to the force applied between the two sides percentage, on each testing time, were selected. The average values at each time were compared using a t-test of Student.

Results The average differential laxity increases insignificantly by 1.4 ± 1 mm to 1.7 ± 1.3 mm between 6 and 9 months postoperatively (P = 0.17) and significantly decreased to 0.95 ± 0.5 mm at 12 months postoperatively (P = 0.02). The slope difference increased from 9% to 15% between 6 and 9 months after surgery (P = 0.05). Between 6 and 12 months postoperatively, the difference in slope (9% and 11%, respectively) was not significant (P = 0.1). Residual laxity was significantly greater in women at 6 months postoperatively, 1.9 mm vs. 0.9 mm (P = 0.002); this difference was no longer significant at 9 and 12 months postoperatively.

Discussion/Conclusion Our study reported a significant change in the anterior-posterior laxity between 9 and 12 months postoperatively. These results suggest that the laxity is not only the result of isometric positioning of the transplant but probably also of the transplant ligamentisation phenomena by collagen remodeling to mechanical stress, but also the local muscle condition or exposure to hormonal factors. These results, which show a normalization of laximetry to 12 months postoperatively, make us cautious when a premature return to sport without satisfactory joint control. So, it seems that in sports recovery decision, the analysis of the ligament laxity is a relevant parameter to use.

Keywords Knee ligamentoplasty; GnRB; Return to sport

Disclosure of interest The authors declare that they have no competing interest.

http://dx.doi.org/10.1016/j.rehab.2016.07.045

How to evaluate precisely return to sport after anterior cruciate ligament tear with operative or conservative treatment on patients with moderate sport level?

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Objective Several ways exist to assess return to sport (RTS) after anterior cruciate ligament tear (ACL): main sport or anterior level, pivoting contact sports or competition. Performing a relevant evaluation is difficult especially for moderate level patients. Our objective was to evaluate the reliability of these different outcomes after ACLT; then to assess the concordance between each other.

Patients and methods Fifty-eight patients with moderate sport level were included (mean age 33.6 ± 12.4 years; 38 men vs. 20 women; 69% of operated, at 17.1 ± 5.3 months; Tegner before injury at 6.3 ± 1.9 vs. 4.9 ± 1.7 after RTS). Return to sport was declarative patients answering yes/no to main sport, previous level, pivoting contact sport, competition. A global level of RTS was measured as the variation of Tegner score and weekly hours of practice before/after ACLT (Tegner score × weekly hours of practice).

Results Fifty-one percent of patients returned to main sport, 28% to anterior level (of whom 56% to anterior level of main sport), 31% to same global activity level, 19% to competition, 43% to pivoting contact sport. “Tegner.hour score” has decreased by 16.3 ± 33.6 after RTS. There was a strong discordance between declarative RTS and return to similar global activity level with Kappa coefficient respectively of 0.19, 0.17, 0.05 and 0.29 for main sport, previous level, pivoting contact sport, competition.

Discussion/Conclusion We confirmed low RTS rates with a clear discordance between different outcomes of RTS. Considering the global activity volume calculated with Tegner score (Tegner.hour) is an interesting alternative scale to evaluate RTS for moderate sport level patients.

Keywords Anterior cruciate ligament; Return to sport; Tegner

Disclosure of interest The authors declare that they have no competing interest.

http://dx.doi.org/10.1016/j.rehab.2016.07.046

Functional tests can they help in the decision to return to sports after anterior cruciate ligament? Example with Hop tests

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Objective After anterior cruciate ligament (ACL) tear, the ACL reconstruction (ACLR) is the standard treatment to return to pivots/contacts sports. The goal of rehabilitation programs is to guide the functional recovery and the safe return to sport without additional knee injury or other injuries. Functional tests, like Hop tests and their side-to-side difference index (limb symmetry index [LSI]), are commonly used following ACLR to help return to sport decision making. However, the most commonly used criterion to return to sport is the postoperative time: return to light activities (RtIA) at 3 or 4 month mark and return to sport with contacts and side-cuttings (RtS) between 6 and 9 month mark.

The aim of this study was to analyse the functional recovery after ACLR using the standard hops LSI scores and compare these scores with usual timeline of RtIA and RtS.

Patients and methods Thirty-one patients with ACLR (19 males) with a mean age of 23 ± 7 years. Functional recovery was evaluated during rehabilitation and return to sports phases (from 3 to 12 months postoperatively), with 2 straight one-legged Hop tests for distance (Single and Triple Hop tests). The LSI was calculated for each test. A non-linear regression was calculated to obtain predictive values of 3, 4, 6 and 9 months postoperatively.

Results At 3 months, Hop tests LSI was nearly 80%, with great variability [interquartile range (IQR): 75%–95%]. At 4 months, Hop tests LSI was just under 85% but with important variability (IQR: 78%–94%); At 6 months, Hop tests LSI was about 90%, and over 90% at 9 months. From 6 postoperatively, the variability decreased (IQR: 94%–99%).

Discussion/Conclusion Comparing our results with the usual timeline of RtIA, we can say that the timeline of 3 months postoperatively is a little too short to RtIA. At 4 months postoperatively, the functional recovery can allow a safely RtIA. At 6 months postoperatively, the LSI is greater than 90%, allowing RtS. Given the great variability between patients before 6 months postoperatively, this functional assessment could be used in association with clinical and isokinetic evaluations to individualize the decision to return to sport.

Keywords Anterior cruciate ligament reconstruction; Return to sport; Hop tests

Disclosure of interest The authors declare that they have no competing interest.

http://dx.doi.org/10.1016/j.rehab.2016.07.047

C00294
Aerobic metabolism response in paraspinal muscles of chronic low back pain patients and judo athletes during an isokinetic trunk extension exercise

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Objective Low back pain is a pathology associated to a trunk extensors muscles weakness. Studies suggested that it could be associated with an inadequacy between oxygen demand and oxygen utilization by paraspinal muscles (Kell and Bhambhani, 2006). In contrast to chronic low back pain (CLBP) patients, judo athletes are characterized by a great trunk extensors muscles endurance, due to their intensive solicitation within sport practice. Our purpose was to compare aerobic metabolism in those muscles of CLBP patients with judo athletes.

Patients and methods Ten judokas and 11 CLBP completed a submaximal isokinetic trunk extension exercise at 60°/s (70% of the maximal total work performed in Continuous Passive Motion mode during one repetition) during 5 min. The flexion at 30°/s was passive. Oxygenation and muscular blood volume (BVm) were evaluated by using near infrared spectroscopy. Oxygen consumption (VO2) was measured by using metabolic gaz analyser. Total work performed during exercise (TT) was measured by the dynamometer.

Results TT and VO2 were lower in CLBP (P < 0.05), whereas the ratio VO2/TT was greater in CLBP (P < 0.05). BVm decreased significantly only for CLBP during exercise (P < 0.05). Muscular des-oxygenation increased significantly only for the judokas group (P < 0.05).

Discussion/Conclusion This study brings out the weakness of paraspinal muscle in CLBP, and the diminution of the motor

C00293
Epidemiological study on injuries and risk factors for injuries in the amateur golfer French high-level

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Objective The objective of this study was to determine the incidence, characteristics and risk factors of injuries to French golfers high-level.

Material and methods It was a national retrospective study by mailing a questionnaire to all the French Golf licensed under ten handicap. The questionnaire collected information on the characteristics of the player, practicing golf, equipment and the occurrence or not of an injury during the season 2015. A descriptive analysis and a comparison between the injured and uninjured golfers were made, followed by univariate and multivariate analysis to investigate potential risk factors.

Results A total of 1382 golfers returned a full questionnaire and were therefore included in the study. We found 712 injuries (52%) and an incidence of 1.99 injuries per 1000 hours of playing golf. The most frequent injuries were at: lumbar spine (21.2%), the dominant shoulder (7.8%) and the thoracic spine (7.4%). An analysis was also performed by gender who did not find differences in the occurrence of an injury between women and men. The injury number 1 in men was located at the lumbar spine (23.1%) and among women in the dominant shoulder (11%) and lumbar spine (11%). We noted a recurrence in 37% of injuries in women and 44.8% in men. The injury dragged her into 53% of cases in men and 56.1% in women judgment of golf and in 9.4% of men and 8.7% of women work stoppage. Protective factors highlighted were the absence of upper limb overuse or wearing heavy workload, lack of monitoring by a golf professional (P = 0.026). Contributing factors were a number of months per year high set (P = 0.0127) and recent use of clubs (P = 0.0034).

Discussion/Conclusion Golf is a provider of injuries with a high-level of golfer two injuries in a season. Prevention must be the heart of the management of golfer taking into account the protective factors and risk factors.

Keywords Sports injury prevention; Epidemiology; Golf

Disclosure of interest The authors declare that they have no competing interest.

http://dx.doi.org/10.1016/j.rehab.2016.07.048