

Importance of quantitative return-to-field criteria

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Introduction

After an injury, rehabilitation programs aim at retrieving pain and limiting the risk of new injuries by restoring optimal physical shape (muscle balance, proprioception and neuromuscular control) and therefore allowing an efficient return to competition. However various factors may lead to a premature return to the field such as key competitions or the absence of available tests for quantitative measurements. Athletes and their staff may also have the idea that the return to “normal” training will lead to a gradual reduction of the remaining imbalances. Our goal aims at illustrating on a specific example that without a specific rehabilitation program imbalances do not disappear.

Methods

This study concerns a high level professional skier, who had sustained a ACL surgical reconstruction on one knee after a ski injury. When she was authorized by the medical staff to return to training and competition (t0), she performed several tests to quantify analytical and functional parameters including an isokinetic test (quadriceps and hamstring muscle groups), maximal height during a unipodal squat jump and maximal distance covered for a triple crossover hop test. Two months later (t1), the same tests were conducted. During these two months she followed her general training program, which focused on ski practice, and participated to competitions.

Results

The results are expressed as the difference of performance between both legs. The isokinetic deficit on the injured knee reached 20% at t0 and 25% at t1 for the quadriceps peak torque. The unipodal squat jump leads to differences of 24% and 25% at t0 and t1 respectively. We observed a distance difference of 23% at t0 and 22% at t1 for the hop test.

Discussion

Just before returning to normal training, we were able to identify large imbalances between both legs for isokinetic and functional performances. The injured leg was at least 20% weaker than the healthy side. These results show that even if the athlete was authorized to return to field by the medical staff, she had not yet fully recovered from her injury.

Two month of training focusing on skiing skills did not reduce the imbalances. All parameters still showed lingering deficits higher than 20%. These results show that one should not expect a non specific training program to reduce significantly imbalance after injury. The persistence of these differences could be a potential source for further injury (Kvist, 2004). This case study emphasized the need of quantitative return-to-field criteria that could be used by the medical staffs. We hypothesize that such criteria would limit early return to training and reduce injury risks.

Reference

Kvist J (2004). Sports Med, 34, 269-280.

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