injury time

PRISHA KHAKHARIA DISCUSSES THE IMPORTANCE OF FUNCTIONAL REHABILITATION FOLLOWING KNEE INJURY

Injuries affecting the knee joint can cause considerable disability and time off sport. They are common in all sports that require twisting movements and sudden changes in direction.

It is important to understand the role of the different ligaments and menisci in the knee joint in order to understand better the mechanisms of injury which will lead to form an appropriate rehabilitation programme.

The knee injury of greatest concern to the athlete is the tear of the anterior cruciate ligament (ACL). The ACL is a tough fibrous structure that attaches the shin bone (tibia) to the thigh bone (femur). This ligament helps to stabilise the knee by preventing excessive forward movement of the tibia on the femur.

clinical features

Most ACL tears occur when the athlete is landing from a jump or when running, suddenly side-stepping or changing direction by decelerating. Occasionally, a tear will occur as a result of another player falling across the knee. It is often surprising to patients how a relatively simple movement can result in a torn ACL. At the time of the injury, the athlete may report hearing a "pop" and that it feels like the knee was being stretched apart. Most complete tears of the ACL are extremely painful, especially in the first few minutes after injury. Athletes are initially unable to continue their activity. Tear of the ACL is usually accompanied by the development of a haemarthrosis. This may be visible as a large tense swelling of the knee joint within a few hours of the injury.

Examination of the knee is also very typical. There is often a loss of full extension of the knee and an inability of the athlete to weight-bear on the injured leg. Manual testing may reveal excessive forward movement of the tibia on the femur.

Once the athlete is diagnosed with an ACL injury, they may undergo surgery to reconstruct the torn ligament, or rehabilitate the knee without surgery.

functional rehabilitation after acl reconstruction

Management principles have changed dramatically in recent years, resulting in greatly accelerated rehabilitation after ACL reconstruction. The traditional principle of complete immobilisation has been replaced with protected immobilisation with a resultant dramatic decrease in stiffness and increase in range of motion of the knee joint. This has allowed earlier commencement of a strengthening programme and a rapid progression to functional exercises. Hence, the average time for rehabilitation after ACL reconstruction to return to sport has been reduced from 12 months to six to nine months.

Rehabilitation must commence from the time of injury, not from the time of surgery, which may be days or weeks later. The pre-operative management aims to control swelling and restore full range of movement and adequate strength. Walking, swimming and the use of a bike is incorporated during this phase.

The progression of the post-operative programme depends on the patient's determination, level of swelling and pain, and the progression of healing of the reconstructed ligament. The second phase of the rehabilitation phase is to control swelling, regain full knee extension, improve quadriceps strength, hamstring length and increase proprioceptive input. Normal walking pattern can be achieved in this phase. Phase 3 aims to achieve full range of movement of the knee, strength of the quadriceps and hamstring muscles, a full squat and the athlete may be able to return to straight line jogging and running. Some athletes progress rapidly in the post-operative phase, but full functional rehabilitation of the ACL may not occur until 6-12 months post-operatively.

Functional testing should be used to help assess readiness to return to sport. Functional tests include agility tests, the standing vertical jump and the "Heidon" hop. The patient performs the heidon hop by jumping as far as possible using the uninjured leg, landing on the injured leg. Athletes with good function are able to land still. Those with functional disability step further or take another small hop. Another way of testing function is by incorporating sport-specific drills in the rehabilitation programme; for example, running forwards, sideways, backwards, sprinting, jumping, hopping, changing directions and then kicking.

Phase 4 of the rehabilitation programme includes high-level sport-specific strengthening as required and return to sport, progressing from restricted training to unrestricted training, and finally to match play.

The therapist must be careful on the progression of the rehabilitation exercises and on the timetable for returning the athlete to their particular sport. An accelerated rehabilitation programme under a controlled environment allows the athlete to return to sport sooner without increasing the risk of complications. *fp*

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