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Original article

Return to sport activities after hip arthroscopy

TEODOR Dragoș Florin[1], MELENCO Ionel[1], PETCU Damian[1], POPA Cristian[1]

Abstract

Aim. To determine if there exist enough evidence in the literature, to support an effective high-level return in performance sport after hip resurfacing artroscopy/athroplasty (THA), and what is the rates of return. At the same time we purpose to establish recommendations for rehabilitation program.

Study design: Systematic review

Methods: The search terms "hip arthroscopy," "return to play," and 10 related terms were searched in PubMed, Scopus, and Web of Science, yielding 32 articles. After screening, 13 articles was included who treat rehabilitation protocols, and conditional criteria measures were assessed with previously established criteria.

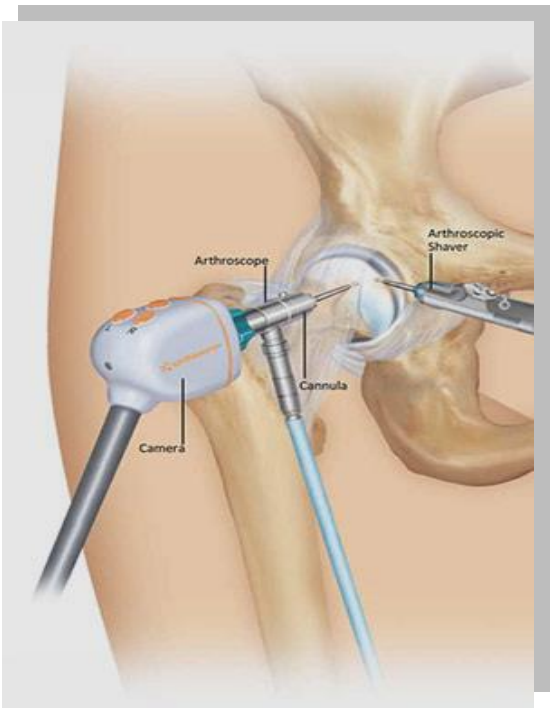
Conclusions.

Psychological factors seem to play an important role in the athlete's return to sports activity participation and performance.

The studies show that 12-18 weeks of rehabilitatio is necessary for patients to return to competitive sport.

In the rehabilitation process to sport activities it is important to prevent the risk of osteoarthritis.

Keywords: hip arthroscopy, return to sports, rehabilitation, athlete.



https://www.bostonorthoandspine.com/hip-arthroscopy/

1. Introduction

Hip arthroscopy is a laborious surgery, the result of which depends on a number of factors: preoperative preparation, preoperative recovery, the surgeon's ability, the patient's general condition, patient compliance and the strictness with which the postoperative rehabilitation and recovery program.

Multiple studies showed that hip and groin pain is a common finding among athletes of all levels and may be a result of femoroacetabular impingement (FAI), associated articular cartilage lesions, or soft tissue injuries (Perets et al., 2018)

Hip resurfacing is a common procedure in orthopedic surgery necessary in hip joint osteoarthritis (OA) and is considered an alteranative to traditional hip arthroplasty. This surgery procedure is now the gold standard method to control the pain of advanced stage hip osteoarthritis and give patients a greater quality of life and return to sports activity. After surgery and rehabilitation more patients start the sport with lower impact activities such as cycling, swimming, golf or fitness. A complex and careful rehabilitation, organized systematically and gradually can help the athlete to return to performance sports activity.

It is thought that by following the restrictions set by the physician while performing early circumduction, using the minimal criteria to advance through each subsequent phase, and allowing patients to perform functional sport progressions throughout the rehabilitation athletes will be able to return to sport smoothly and effectively (Wahoff et al., 2011).

The results of a study show that the excellent joint stability after RH (big head effect) could be one of the main factors favoring a high activity level compared to conventional THA, by limiting the episodes of dislocation and increasing the suction effect between the joint components (Lavigne et al. 2008).

It is umpredictable to assume the long-term effect of

[1]Faculty of Physical Education, Ovidius University of Constanta, No.124 Mamaia Avenue, Romania
Email: dragoșteodor@yahoo.com

hight impact sports activity on the stability of osteo-integrated implants.
Complications after THA may include tendinitis, range of motion difficulties, and prolonged complaints of paresthesia (Keelan et al. 2010).

Return to sport

Although the use of this minimally invasive approach has increased in prevalence, no evidence-based return-to-play (RTP) criteria have been developed to ensure an athlete's preparedness for sporting activities (O'Connor et al., 2018). However, there are studies that show that return to sports activity after hip arthroscopy is possible.
Return-to-sport (RTS) rates in competitive athletes after unilateral procedures have been reported at 74% to 93% (Rosinsky et al., 2019). Current evidence finds a high overall rate of return to sport at 87-93% after arthroscopic hip surgery for femoroacetabular impingement syndrome (Ko SJ et al., 2020). We think that hip arthroscopy is a excellent choice for soccer players with hip pathology, to return at competitive level in the absence of underlying osteoarthritis. In a interesting study a total of 41 patients was follow-up a period of 47.4 months. The results show that the patients who returned to soccer, 19 (70.4%) were competing at the same level or a higher level compared with their highest level within 1 year of surgery (Ortiz-Declet V et al., 2020). Another study hwo included 189 athletes follow-up of 33.1 ± 16.3 months after surgery show that 108 athletes (57.1%) were playing preinjury sport at preinjury level, whereas the remaining 81 athletes (42.9%) failed to return to preinjury sport at preinjury level. Better self-reported hip and groin function was observed in athletes who were playing preinjury sport at preinjury level compared with athletes who were not. (Lasse et al., 2018).
Advanced rehabilitation techniques may be used in select patients returning to high-level activities (Mark et l., 2022).
Keelan et al. (2010) claim that the athletes can return to sport in 12-32 weeks, depending on the complexity of surgical procedure. In rare cases, an individual may return to activity earlier than the guidelines provided.

Rehabilitation phases

Although many rehabilitation protocols after hip arthroscopy have been described, there is still significant variability about duration, goals, restrictions, and techniques to apply by the physical therapy after the surgical procedure (Bistolfi et al., 2021)

Rehabilitation guidelines following hip arthroscopy have been presented in the literature with common themes consisting of initial protection, restoration of lumbo-pelvic stability, neuromuscular re-education, and return to sport training (Malloy et al., 2013).

The athletes rehabilitation after hip arthroscopy can be complex and requires a systematic approach to guarantee a successful return to activity.
A rehabilitation program must follow several basic principles:

- Consideration of soft tissue healing constraints,
- Control of swelling and pain to limit muscular inhibition and atrophy,
- Early ROM,
- Weightbearing limitations,
- Early initiation of muscle activity and neuromuscular control,
- Progressive strengthening and proprioceptive retraining,
- Cardiovascular training, and
- Sports specific training (Kevin et al.2019)

Colibazzi et al. (2020) recommend performing at least a short period of physiotherapy preoperatively with the following goals:

- Reducing pain;
- Stretching contracted musculature;
- Muscle strengthening (especially quadriceps and abductors);
- Cardiovascular training;
- Training in walking with crutches.

The usefulness of a rehabilitation therapy program before surgery is justified by:

- the process of muscle atrophy that occurs after immobilization;
- prevention of osteoporosis (favored by immobilization and advanced age);
- maintaining muscle tone and preventing muscle shortening;
- prevention of osteoarthritis;
- shortening the recovery time and for the recovery to become easier;
- return to sport activities.

Three relevant systematic reviews of hip arthroscopy rehabilitation was identified. They show that a *four-phase* rehabilitation program is commonly used.
Phase 1 (weeks 0-4) include: range of motion exercices, isometrics exercices, controlledpain and infection,
Phase 2 (weeks 4-8) include: full hip range of motion exercices, isometrics exercices, stationary bike with resistance
Phase 3 (weeks 8-12) include: full hip range of motion exercices, isometrics exercices, stationary bike with resistance, dynamic hip and individual stretching, proprioception.
Phase 4 (weeks + 12) include: full hip range of motion exercices, isometrics exercices, stationary bike with resistance, dynamic hip and individual stretching, proprioceptive exercices, plyometric program, sport/activity-specific movements.
The recommended criteria for progressing from Phase IV to unrestricted sports activity includes: hip flexion

strength >85% of the uninvolved side, full pain-free ROM, ability to perform sports specific drills at full speed, and successful completion of any sports related testing (Garrison 2007).

But the criteria for returning to sports activity are not yet established unanimously.

Return to running was a primary focus of three included articles, and recommendations were made for this specific activity (Kuhns et al., 2017). For example Chen et al. (2019) allowed return to run after three months of physical therapy and the patient's demonstrated good stability while performing 30 consecutive single leg squats. Kuhns et al. (2017) also paid special attention to return to running during phase IV of their rehabilitation Patients that successfully completed phases I-III can to running at 16 weeks on an anti-gravity treadmill and 20 weeks on a traditional treadmill (Mark et al., 2022). The authors of this study believe that it is important the patient demonstrates near normal strength prior to starting unloaded running in an antigravity treadmill and normal strength with proper gluteus recruitment prior to over-ground running.

Balance and proprioceptive deficits are frequently persistent after total joint replacement, limiting functionality and involving altered movement patterns and difficulties in walking and maintaining postural control among patients (Fernando ET AL., 2018).

The risck that can occur during phase IV involve a short recovery times and lack of rest days who leading to overuse. Another reason is progression to return to sport without the adequate mental coaching in the injured side could contribute to low performance or weakness or reduced neuromuscular control leading to re-injury.

Conclusions

Psychological factors seem to play an important role in the athlete's return to sports activity participation and performance.

The studies show that 12-18 weeks of rehabilitatio is necessary for patients to return to competitive sport.

In the rehabilitation process to sport activities it is important to prevent the risk of osteoarthritis.

Return to sport training should be progressive to prevent overload and require constant evaluation. To ensure longevity of function and prevention of re-injury, the athlete must be comply the recovery steps and not move on to the next one until the proposed objectives have been achieved

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