

Return to Sport After Hip Arthroscopy: Aggregate Recommendations From High-volume Hip Arthroscopy Centers

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abstract

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Hip arthroscopy is a minimally invasive surgical technique often performed in athletes who want an expeditious return to sport. To the authors' knowledge, no studies in the literature provide a time frame or criteria for return to sport after hip arthroscopy. The purpose of this study was to develop an aggregate recommendation for return to sport after hip arthroscopy based on data assimilated from high-volume hip arthroscopy centers. Twenty-seven orthopedic surgeons from high-volume hip arthroscopy centers completed a survey regarding return to sport after hip arthroscopy. The questionnaire asked surgeons to give a time frame for return to sport and to choose meaningful criteria that an athlete must meet prior to return to sport. Surgeons were asked to categorize various common sports as high, medium, or low risk with regard to the hip. The aggregate results were used to create standardized recommendations for time, criteria, and risk for return to competitive sports. Regarding time frame for return to sport, 70% of surgeons recommended 12 to 20 weeks. In addressing criteria for return to sport, 85% of surgeons recommended that patients need to be able to reproduce all motions involved in their sport without pain. A majority of surgeons recommended criteria of pain-free running, jumping, lateral agility drills, and single-leg squats. Finally, surgeons categorized sports requiring the most movement and impact of the hip joint (football, basketball, wrestling, and martial arts) as high-risk sports. Sports with less impact on the hip, such as golf, were ranked as low risk.

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Hip arthroscopy is a minimally invasive surgical technique intended to shorten recovery time.¹⁻³ It is known that return to competitive sport is paramount for any athlete.⁴⁻⁶ The ability for a physician to accurately determine the earliest time for an athlete to return to sport without endangering the healing process after hip arthroscopy is crucial for the integrity of the procedure and the goal of the athlete returning to competitive sport.^{5,7} Multiple studies related to return to sport and anterior cruciate ligament (ACL) reconstruction outline criteria and time lines for return to sport.⁸⁻¹⁰ A previous study used surgeon preferences collected through a survey regarding return to sport after shoulder arthroplasty.¹¹ To the current authors' knowledge, no study exists related to recommendations for return to sport after hip arthroscopy. The purpose of this study was to develop an aggregate recommendation for return to sport after hip arthroscopy based on responses assimilated from a survey conducted in high-volume hip arthroscopy centers across America.

MATERIALS AND METHODS

A survey composed of 3 questions regarding hip arthroscopy and return to sport was distributed to 27 orthopedic surgeons from high-volume hip arthroscopy centers. High volume is defined as more than 50 hip arthroscopy case experiences. The questionnaire asked surgeons to provide recommendations regarding (1) the time frame recommended for return to sport after hip arthroscopy; (2) the criteria an athlete must meet prior to return to sport; and (3) categorization of common sports as high, medium, or low risk.

The response rate to the survey was 100%. The aggregate results were used to create standardized recommendations for time, criteria, and risk for return to competitive sport.

RESULTS

Twenty-seven orthopedic surgeons who had a case experience of 50 to 5000

hip arthroscopies completed the survey. Responses regarding time frame for return to sport varied from 6 to 24 weeks (Table 1). The method for creating Table 1 from the assimilated data required establishing sets of ranges based on the raw data. Sets of ranges of time were selected to give aggregate recommendations. Several responses in the survey were a concrete number of weeks, as opposed to a range of weeks. For example, when a surgeon responded in the survey with a concrete recommendation of 12 weeks, that recommendation was set as a minimum to be included in the sets of ranges. Therefore, the recommendation of 12 weeks alone was included in the 12 to 16 weeks range, as opposed to being included in the 6 to 12 weeks range. Based on the answers provided in the survey, the most selected range of weeks recommended for return to sport was 12 to 16 weeks (37% of surgeons surveyed). Thirty-three percent of surgeons recommended 16 to 20 weeks for return to competitive sport. Aggregate recommendations by 70% of surgeons suggested 12 to 20 weeks before return to competitive sport.

Multiple criteria selections were provided, and those surveyed had the option to circle all that applied (Table 2). In addressing criteria for return to sport, 85% of surgeons recommended that patients

Table 1

Recommendation of Weeks for Return to Sport	
No. of Weeks	No. (%) of Surgeons
6-12	2 (7.5)
12-16	10 (37)
16-20	9 (33)
20-24	4 (15)
No response	2 (7.5)

need to be able to reproduce all motions involved in their sport without pain. A majority of surgeons recommended criteria of pain-free running, jumping, lateral agility drills, and single-leg squats. Eleven percent to 19% of surgeons recommended the same criteria regardless of pain. This makes the presence of pain the prime variable during movement criteria. One of the 10 criteria options did not require performing a movement; rather, it was a subjective observation of minimal cartilage damage seen by the surgeon at the time of hip arthroscopy. Only 1 of 27 surgeons included this criteria in the aggregate recommendations for return to sport.

The Figure summarizes the return to sport risk findings from the survey. Sports

Table 2

Recommendations of Criteria for Return to Sport From 27 High-volume Hip Arthroscopy Centers	
Criterion	No. (%) of Centers
Able to perform single-leg squat	5 (19)
Able to perform lateral agility drills	5 (19)
Able to perform single-leg squat without pain	15 (56)
Able to perform lateral agility drills without pain	19 (70)
Able to run without pain	19 (70)
Able to jump without pain	16 (59)
Able to reproduce all motions involved in the sport without pain	23 (85)
Minimal cartilage damage seen at arthroscopy	1 (4)

requiring the most movement and impact of the hip joint, such as football, basketball, wrestling, kickboxing, and striking martial arts, are ranked as high risk (Table 3). Sports with less movement about the hip, such as golf, fell into the low-risk category. Ninety-six percent of high-volume centers ranked kickboxing and striking martial arts as high-risk sports for return to sport. Golf, at 4%, was the lowest-ranking high-risk sport for return to sport and the highest-ranking low-risk sport at 52%.

DISCUSSION

The summation of data collected from a survey of orthopedic surgeons from high-volume hip arthroscopy centers provides aggregate recommendations of 12 to 20 weeks as the time frame before return to competitive sport. During the 12 to 20 weeks before return to competitive sport, the athlete must undergo a full rehabilitation protocol, including range of motion exercises, muscle strengthening, and stability training.^{4,7} It is imperative for the athlete to strictly adhere to the rehabilitation protocol to remain in the recommended time frame for return to sport. If the patient delays rehabilitation, the return to competitive sport may be delayed.

Guidelines and protocol for rehabilitation after hip arthroscopy can vary between institutions.^{4,12,13} Variations in rehabilitation can be determined by the procedures involved with hip arthroscopy, such as labral repair, femoroplasty, acetabuloplasty, microfracture, and iliopsoas tenotomy.^{5,14} Regarding microfracture and procedures involving the labrum, such as repair vs debridement vs reconstruction, the aggregate recommendations provided in the current study remain the same. However, the protocol for rehabilitation after microfracture involves the longest amount of time within the 12 to 20 weeks guideline for return to sport.

Return to sport and recovery can be different in athletes vs an active population depending on the goals of the outcome and

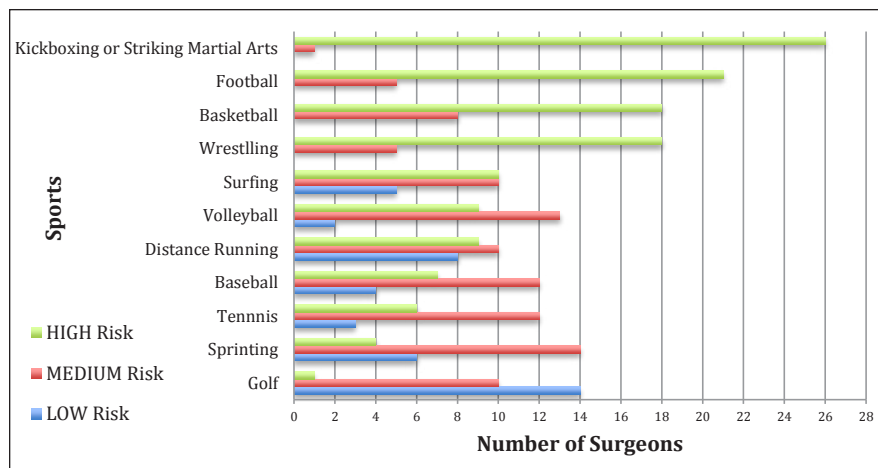


Figure: Recommendations for sport risk levels.

Table 3

High-, Medium-, and Low-risk Sports for Return to Sport			
Sport	No. of Surgeons		
	High-risk	Medium-risk	Low-risk
Kickboxing or striking martial arts	26	1	0
Football	21	5	0
Basketball	18	8	0
Wrestling	18	5	0
Surfing	10	10	5
Volleyball	9	13	2
Distance running	9	10	8
Baseball	7	12	4
Tennis	6	12	3
Sprinting	4	14	6
Golf	1	10	14

level of competitive athletics.^{6,14} The goal of surgery is to reduce pain and increase functionality. Surgeons can make recommendations for which activities to which the noncompetitive active patient can return to maintain the outcomes. In addition to surgical goals, the competitive athlete’s aim is to return to sport at the same level of play. This scenario creates a different set of recommendations by the surgeon and goals for the competitive athlete.

The criteria for return to sport are partially determined by the sport to which the patient wants to return.¹⁵ The patient

must be able to perform several maneuvers without pain, including ones related to their particular sport. The ability to perform single-leg squats, lateral agility drills, running, and jumping with associated pain is not sufficient for meeting criteria for return to sport after hip arthroscopy. The presence of pain associated with particular maneuvers is a primary variable in determining whether the patient meets criteria for return to sport after hip arthroscopy. High-impact and range-of-motion sports are considered high risk for return to competitive sport.

Future studies may be needed to compare the outcomes of athletes who return to sport based on the authors' aggregate recommendations vs athletes who return to sport following time and criteria outside the parameters of the authors' recommendations. Some limitations of this study include (1) the small sample size of surgeons surveyed; (2) the effect of the variability of procedures within hip arthroscopy, such as labral repair or microfracture; (3) the short list of sports considered for level of risk; and (4) lack of postoperative long-term follow-up of athletes and nonathletes for re-evaluation. Despite these limitations, the data presented should provide general recommendations for patients after hip arthroscopy.

CONCLUSION

The aggregate recommendations from high-volume hip arthroscopy centers suggest that athletes can return to competitive sport 12 to 20 weeks after hip arthroscopy. Athletes should demonstrate the ability to perform pain-free running, jumping, lateral agility drills, and single-leg squats. Sports with high impact and

range of motion about the hip, such as football and martial arts, are considered high risk, whereas sports with low impact and low range of motion, such as golf, are considered low-risk sports for return to sport.

REFERENCES

1. Byrd JW. Hip arthroscopy in the athlete. *N Am J Sports Phys Ther.* 2007; 2(4):217-230.
2. Cooper AP, Basheer SZ, Maheshwari R, Regan L, Madan SS. Outcomes of hip arthroscopy: a prospective analysis and comparison between patients under 25 and over 25 years of age. *Br J Sports Med.* 2013; 47(4):234-238.
3. Cowie JG, Turnball GS, Ker AM, Breusch SJ. Return to work and sports after total hip replacement. *Arch Orthop Trauma Surg.* 2013; 133(5):695-700.
4. Edelstein J, Ranawat A, Enseki KR, Yun RJ, Draovitch P. Post-operative guidelines following hip arthroscopy. *Curr Rev Musculoskelet Med.* 2012; 5(1):15-23.
5. McDonald JE, Herzog MM, Philippon MJ. Return to play after hip arthroscopy with microfracture in elite athletes. *Arthroscopy.* 2013; 29(2):330-335.
6. Voight ML, Robinson K, Gill L, Griffin K. Postoperative rehabilitation guidelines for hip arthroscopy in an active population. *Sports Health.* 2010; 2(3):222-230.
7. Long JP. Rehabilitation and return to activity after sports injuries. *Prim Care.* 1984; 11(1):137-150.
8. Bizzini M, Hancock D, Impellizzeri F. Suggestions from the field for return to sports participation following anterior cruciate ligament reconstruction: soccer. *J Orthop Sports Phys Ther.* 2012; 42(4):304-312.
9. Versteegen M, Falsone S, Orr R, Smith S. Suggestions from the field for return to sports participation following anterior cruciate ligament reconstruction: American football. *J Orthop Sports Phys Ther.* 2012; 42(4):337-344.
10. Waters E. Suggestions from the field for return to sports participation following anterior cruciate ligament reconstruction: basketball. *J Orthop Sports Phys Ther.* 2012; 42(4):326-336.
11. Golant A, Christoforou D, Zuckerman JD, Kwon YW. Return to sports after shoulder arthroplasty: a survey of surgeons' preferences. *J Shoulder Elbow Surg.* 2012; 21(4):554-560.
12. Can F. Rehabilitation and return to sports in children [in Turkish]. *Acta Orthop Traumatol Turc.* 2004; 38(suppl 1):151-162.
13. Clover J, Wall J. Return-to-play criteria following sports injury. *Clin Sports Med.* 2010; 29(1):169-175.
14. Cheatham SW, Kolber MJ. Rehabilitation after hip arthroscopy and labral repair in a high school football athlete. *Int J Sports Phys Ther.* 2012; 7(2):173-184.
15. Grindem H, Eitzen I, Moksnes H, Snyder-Mackler L, Risberg MA. A pair-matched comparison of return to pivoting sports at 1 year in anterior cruciate ligament-injured patients after a nonoperative versus an operative treatment course. *Am J Sports Med.* 2012; 40(11):2509-2516.