

High Rate of Full Duty Return to Work After Hip Arthroscopy for Femoroacetabular Impingement Syndrome in Workers Who Are Not on Workers' Compensation

Matthew R. Cohn,* MD, Daniel M. Wichman,* BS, Alexander C. Newhouse,* BS, Nabil Mehta,* MD, Michael C. Fu,[†] MD, Jorge Chahla,* MD, PhD, and Shane J. Nho,*[‡] MD, MS
Investigation performed at Rush University Medical Center, Chicago, Illinois, USA

Background: Femoroacetabular impingement syndrome (FAIS) is an increasingly common diagnosis among working-age adults. Hip arthroscopy provides reliable improvements in pain and may allow patients to return to physical activities. No study to date has evaluated return to work (RTW) among a general population of adults after arthroscopic surgery for FAIS.

Purpose: To evaluate (1) patients' rate of RTW, (2) time required to RTW, and (3) factors correlated with time required to RTW after arthroscopic surgery for symptomatic FAIS.

Study Design: Case series; Level of evidence, 4.

Methods: Consecutive patients aged 25 to 59 years who underwent arthroscopic surgery for FAIS between June 2018 and December 2018 were reviewed. Workers' compensation cases and patients with <1-year follow-up were excluded. The following were collected at a minimum of 1 year postoperatively: demographics, employment characteristics, Hip Outcome Score (HOS; Activities of Daily Living and Sports Specific subscales), modified Harris Hip Score, 12-Item International Hip Outcome Tool (iHOT-12), visual analog scale for pain, and RTW characteristics. Work physical activity level was classified as sedentary, light, moderate, heavy, or very heavy per established criteria.

Results: A total of 97 patients were selected through inclusion and exclusion criteria. RTW surveys were collected for 79 (81.4%), and 61 were employed preoperatively. Time worked per week was 42.8 ± 12.5 hours (mean \pm SD). Patients' work level was most commonly classified as sedentary (42.6%), followed by moderate (24.6%). All 61 (100%) patients returned to work at a mean 7.3 weeks (range, <1-88 weeks) postoperatively. Sixty patients (95.2%) returned to full duty. Time required to full duty RTW was strongly correlated with expected time off from work ($r = 0.900$; $P < .0001$) and moderately correlated with work classification ($r = 0.640$; $P = .0001$). All patients had significant pre- to postoperative improvements in the HOS-Activities of Daily Living (64.8 ± 15.3 to 87.1 ± 12.2 ; $P < .001$), HOS-Sports Specific (42.8 ± 18.8 to 76.7 ± 16.5 ; $P < .001$), iHOT-12 (31.3 ± 18.8 to 69.3 ± 21.1 ; $P < .001$), modified Harris Hip Score (61.8 ± 12.1 to 80.3 ± 14.1 ; $P < .001$), and visual analog scale for pain (5.19 ± 2.11 to 2.40 ± 1.96 ; $P < .001$).

Conclusion: Patients undergoing arthroscopic treatment for FAIS demonstrated a high rate of RTW at a mean of <2 months postoperatively. A patient's expected time off from work and the level of physical demands required for work were highly associated with time required to RTW. These results are valuable for orthopaedic surgeons, patients, and employers when establishing a timeline for expected RTW after surgery.

Keywords: femoroacetabular impingement syndrome; FAIS; hip arthroscopy; return to work

Work disability represents a significant personal, financial, and public health burden.^{5,7} Particularly in a service-based economy, efficient return to work (RTW) is important to avoid productivity losses from missed days as well as negative effects on career opportunities and

personal finances.^{6,7,19} Femoroacetabular impingement syndrome (FAIS) most commonly affects working-age adults.⁹ However, RTW after hip arthroscopy has not been robustly described, and previous reports were largely limited to workers' compensation populations.^{22,43} Identifying factors that influence RTW in a non-workers' compensation population is important to understand the socioeconomic effect of FAIS, set preoperative expectations, and assess postoperative outcomes.

For many patients, returning to work is an important factor when considering operative management.³¹ RTW

has proven to be a major determinant of a patient's satisfaction with the treatment after lower extremity injuries and is more associated with satisfaction than a number of demographic, injury, and treatment factors.³⁸ Patients' ability to return to employment is multifactorial and may be influenced by functional recovery, the physical demands of the job, and motivation, among other factors. While a high rate of return to physical activities after hip arthroscopy has been reported in a number of previous studies,^{14,17,18,23,30,37,46} RTW is less clear. In a small cohort of patients who underwent hip arthroscopy for FAIS, Zimmerer et al⁴⁸ showed that those with less physically demanding jobs returned the fastest, although the sample was limited to patients aged <30 years and the proportion of patients with workers' compensation claims was not described.

The purpose of this investigation was to evaluate the (1) rate of RTW, (2) the time required to RTW, and (3) the factors correlated with RTW after arthroscopic surgery for FAIS. We hypothesized that patients would have a high rate of RTW and that work type, weekly hours worked, and expected time off from work would correlate with time needed before RTW. Being able to predict timing of RTW and identify prognostic variables in the non-workers' compensation population would help orthopaedic surgeons counsel patients preoperatively and employers in assessing realistic recovery expectations.

METHODS

Patient Selection

After institutional review board approval, a repository of hip arthroscopy cases from a fellowship-trained surgeon specializing in hip arthroscopy (S.J.N.) was retrospectively reviewed. Patients aged 25 to 59 years who underwent unilateral hip arthroscopy were selected consecutively from June 2018 through December 2018. All selected patients were indicated for surgery by the senior surgeon (S.J.N.) and demonstrated sufficient need for surgical intervention, including but not limited to the following: recalcitrant hip pain or mechanical symptoms, clinically positive impingement test, alpha angle >50° or lateral center-edge angle >40° on standard radiographs, labral tear evident on standard magnetic resonance imaging arthrogram, and lack of response to nonoperative management (ie, intra-articular

steroid injections, a rigorous course of physical therapy, and activity modification).

Study inclusion required patients to be at or past the 1-year follow-up period. Study exclusion criteria included revision surgery, bilateral hip arthroscopy, workers' compensation status, lack of available contact information for follow-up, and concomitant gluteus medius repair, proximal hamstring repair, or periacetabular osteotomy. Of 260 patients who underwent hip arthroscopy for FAIS during the study period, 97 satisfied inclusion and exclusion criteria and were sent a standardized RTW survey. An additional 18 patients were excluded after returning their RTW survey because they reported that they were not employed before their surgery. Figure 1 demonstrates the flowchart of patient selection and exclusion.

Work Physical Activity Level Classification

Each patient classified his or her work physical activity level according to criteria established by the US Department of Labor.⁴⁷ Classifications are briefly defined as follows:

Sedentary work: lifting no more than 10 lb and predominantly sitting

Light work: lifting no more than 20 lb and sitting most of the time, with some pushing and pulling of arm or leg controls

Medium work: lifting no more than 50 lb, with frequent lifting or carrying of objects weighing up to 25 lb

Heavy work: lifting no more than 100 lb at a time, with frequent lifting or carrying of objects weighing up to 50 lb

Very heavy work: lifting objects weighing >100 lb at a time, with frequent lifting or carrying of objects weighing ≥50 lb

Surgical Technique

The senior surgeon performed all surgical procedures with patients in a supine position on a traction table using 3 arthroscopic portals established under traction: anterolateral established under fluoroscopic guidance, modified anterior under direct visualization, and distal anterolateral accessory. A capsulotomy was then conducted connecting the modified anterior and anterolateral portals. Diagnostic arthroscopy was done to assess the articular cartilage (femoral and acetabular) and labral tissue. The following steps were then carried out when indicated. Acetabular rim trimming was

[‡]Address correspondence to Shane J. Nho, MD, MS, Department of Orthopedic Surgery, Rush University Medical Center, 1611 W Harrison St, Suite 300, Chicago, IL 60612, USA (email: shane.nho@rushortho.com).

*Section of Young Adult Hip Surgery, Division of Sports Medicine, Department of Orthopedic Surgery, Rush Medical College of Rush University, Rush University Medical Center, Chicago, Illinois, USA.

[†]Department of Sports Medicine, Hospital for Special Surgery, New York, New York, USA.

Submitted April 30, 2020; accepted October 5, 2020.

One or more of the authors has declared the following potential conflict of interest or source of funding: J.C. has received education support from Arthrex and Smith & Nephew; consulting fees from DePuy Synthes, Conmed Linvatec, and Smith & Nephew; and hospitality payments from Medical Device Business Services, Midwest Associates, and Stryker. S.J.N. has received research support from Allosource, Arthrex, Athletico, DJO, Linvatec, Miomed, Smith & Nephew, and Stryker; education support from Elite Orthopedics; consulting fees from Ossur, Pivot Medical, and Stryker; royalties from Ossur and Springer; and hospitality payments from Stryker. M.R.C. has received hospitality payments from Medical Device Business Services. M.C.F. has received grants from Acumed and Arthrex and hospitality payments from Encore and Stryker. AOSSM checks author disclosures against the Open Payments Database (OPD). AOSSM has not conducted an independent investigation on the OPD and disclaims any liability or responsibility relating thereto.

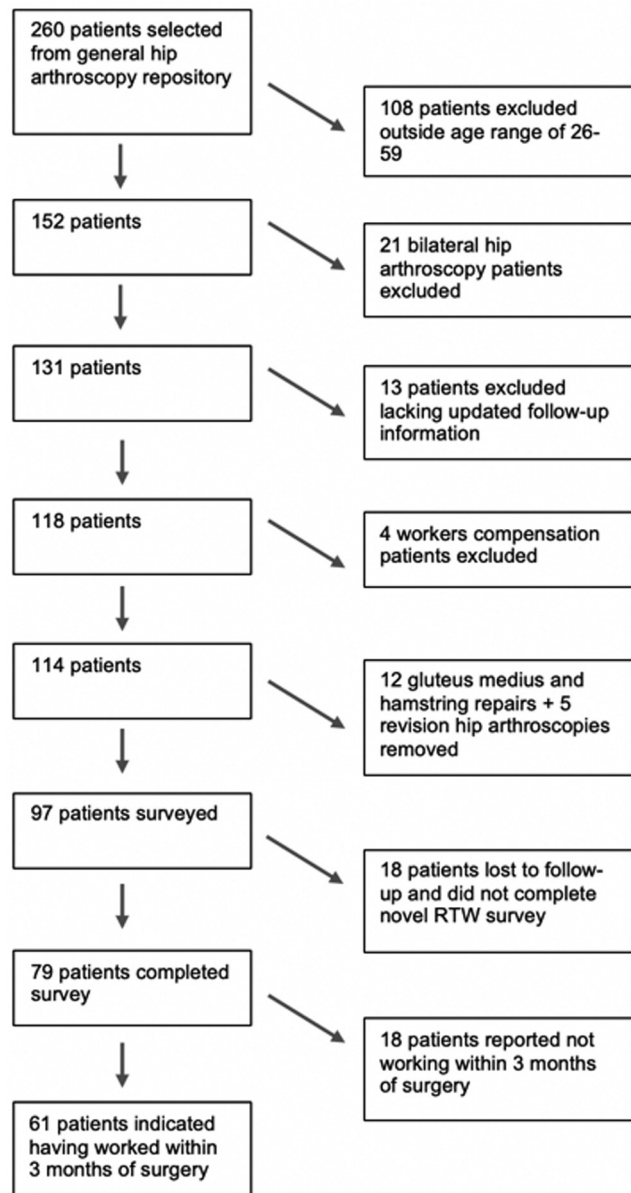


Figure 1. Patient selection criteria flowchart. RTW, return to work.

performed with a 5.5-mm arthroscopic bur to correct any acetabular overcoverage. Labral tears were repaired using 2 to 4 polyetheretherketone suture anchors (1.4 mm; Stryker Corporation) and then tied. A T-capsulotomy was conducted to expose cam deformities, and femoral osteochondroplasty was subsequently done with an arthroscopic bur using radiographic guidance to restore normal head-neck offset. Finally, sutures were used to close the vertical portion of the T-capsulotomy, and when appropriate, a suture lasso was used to plicate the surrounding joint capsule. Intraoperative surveys were filled out at the time of surgery for all patients. This included post- and intraoperative diagnoses and description of intra-articular space, including an assessment of cartilage, labrum, and femoral head.

Rehabilitation Protocol and RTW Rehabilitation Milestones

Patients began postoperative rehabilitation immediately after surgery and were instructed to limit flat-foot weight-bearing to 20 lb with crutch assistance for 2 to 4 weeks. Patients were instructed to limit range of motion from 0° to 90° of flexion, neutral to 30° of external rotation at 90° of flexion, and 20° while prone. A fitted hip orthotic brace was used for 4 weeks postoperatively. During this time frame, patients were instructed to avoid lifting the surgical leg and sitting for >30 minutes at a time to avoid pain and stiffness. Physical therapy continued twice per week within 3 months of surgery and was limited to once per week from the 12- to 24-week postoperative period. Physical therapy included soft tissue mobilization, stretching, and range of motion with goals of symmetric range of motion by the 6- to 8-week postoperative period. Patients were instructed to discontinue use of crutches after 4 weeks and were allowed to progress to bear weight as tolerated. No open kinetic chain hip flexor activation was performed before the 6- to 8-week follow-up period but was then introduced.

Return to Work

To RTW, patients were required to achieve certain milestones based on their levels of work and completed individualized work-hardening programs before being released for work. This program consists of physical tasks such as lifting, pushing, pulling, stairs, and ladders. Patients in moderate to heavy work were required to perform moderate to heavy functional activities with limited pain. Patients with sedentary or light duty jobs were permitted to RTW if pain was controlled, narcotic pain medications were discontinued, and they felt that they were able to complete their work duties safely while maintaining the aforementioned postoperative restrictions.

Patient-Reported Outcome and RTW Evaluation

Patients were given hip-specific patient-reported outcome (PRO) surveys, including the Hip Outcome Score (Activities of Daily Living and Sports Specific subscales), modified Harris Hip Score, 12-Item International Hip Outcome Tool (iHOT-12), and visual analog scale for pain.^{2,24-26,42} The Hip Outcome Score, modified Harris Hip Score, and iHOT-12 were measured on a 0-100 continuous scale whereas the visual analog scale for pain was measured on 0-10 continuous scale. Demographics were recorded for each patient in addition to PRO scores, including body mass index, age, sex, and laterality.

RTW was assessed using a standard patient survey.²⁸ Patients were first asked whether they were involved in paid employment within the 3-month period before surgery. If patients responded “yes,” they were instructed to submit the remainder of the survey. The survey questions are referenced in the Appendix (available in the online

version of this article). Patients' expected time required to RTW was collected in this survey.

Radiographic Analysis

Plain radiographs were obtained at baseline (initial preoperative visit) and at 2-week postoperative follow-up. All patients underwent standard anteroposterior, false-profile, and Dunn lateral radiographs. Alpha angles³⁵ were measured on Dunn lateral views, and lateral center-edge angles⁴⁵ were measured on anteroposterior views. The joint space width was measured on a standard anteroposterior view at apical, lateral, and medial aspects of the femoral head.

Statistical Analysis

All statistical analyses were completed using SPSS Statistics (Version 25.0; IBM). For continuous data, means and standard deviations were presented. For categorical data, frequencies with percentages were presented. For continuous variables, the Shapiro-Wilk test of normality was applied to determine whether data were normally distributed, and appropriate parametric or nonparametric tests were then conducted. The Levene statistic determined the homogeneity of variances. Independent-samples *t* tests or Mann-Whitney *U* tests were used to compare continuous variables between 2 groups. Analysis of variance or Kruskal-Wallis tests were used to compare continuous variables among ≥ 3 groups. Finally, RTW was assessed using Spearman correlations between categorical variables and Pearson correlations between continuous variables. The *r* coefficients demonstrate relationships between variables. For all analyses, $P < .05$ was considered significant.

RESULTS

Sample Characteristics

A total of 97 patients who satisfied inclusion and exclusion criteria were retrospectively identified from a general hip arthroscopy repository. These patients were sent a prospective RTW survey, which 79 (81.4%) completed. An additional 18 patients were excluded from this cohort because they were not employed before surgery. Patient characteristics included in the analysis are presented in Table 1.

Radiographic Outcomes

All patients demonstrated normalization of alpha angle and lateral center-edge angle at postoperative follow-up, while their joint space width did not differ significantly between pre- and postoperative assessment. Further radiographic analysis is reported in Table 2.

Surgical Intervention

All patients exhibited clinical and/or radiographic indication of FAIS with concomitant labral tear. Surgical procedures included labral repair or reconstruction, acetabular

TABLE 1
Patient Information (N = 61)

	Mean \pm SD or No. (%)
Age at date of surgery, y	35.0 \pm 6.8
Female	42 (68.9)
Body mass index	25.9 \pm 5.4
Left hips	31 (50.8)

TABLE 2
Radiographic Measurements for Patients With FAIS^a

	Preoperative	Postoperative	P Value
Angle			
Alpha	56.2 \pm 9.0	37.3 \pm 4.0	<.0001 ^b
Lateral center edge	30.2 \pm 6.2	29.1 \pm 5.3	.0064 ^b
Tönnis grade	8.3 \pm 4.8	7.5 \pm 4.4	.0260 ^b
Joint space width			
Medial	4.5 \pm 0.7	4.5 \pm 0.7	.4586
Apical	4.6 \pm 0.7	4.5 \pm 0.8	.1608
Lateral	4.4 \pm 0.8	4.4 \pm 0.8	.3870
Average	4.5 \pm 0.6	4.5 \pm 0.6	.2638

^aValues are presented as mean \pm SD. FAIS, femoroacetabular impingement syndrome.

^bStatistically significant at $P < .05$.

rim trimming, femoral osteochondroplasty, capsular repair or reconstruction, trochanteric bursectomy, and/or excision of heterotopic ossification. There were no intra- or postoperative complications in this cohort. All procedures were performed arthroscopically and under general anesthesia. The procedures performed are listed in Table 3.

Clinical and PRO Measures

Patients demonstrated significant improvements in all PRO measures and reduction in pain at minimum 1-year follow-up as compared with preoperative assessment ($P < .0001$ for all) (Table 4). There were no differences in 1-year PRO measures when compared by work classification (Table 5). Patients who were excluded from the cohort because they were unemployed preoperatively did not show statistically significant differences from the included patients on any PRO measures.

Return to Work

Of the 18 patients excluded from analysis for unemployment in the 3 months before surgery, 9 (50%) did not work for personal decisions, 2 (11.1%) did not work because of hip pain, and 7 (38.9%) did not provide a reason for unemployment. The distribution of patient work classification is reported in Table 6.

Of 61 working patients, the mean \pm SD time worked per week before surgery was 42.8 \pm 12.5 hours. The median number of hours worked per week was 40 (range, 15-80). The percentage of patients reporting RTW postoperatively

TABLE 3
Arthroscopic Hip Procedures Performed

	Patients, No. (%)
Labral repair	61 (100)
Acetabular rim trimming	61 (100)
Femoral osteochondroplasty	61 (100)
Trochanteric bursectomy	3 (4.9)
Excision of heterotopic ossification	2 (3.3)
Capsular repair	59 (96.7)
Capsular reconstruction	2 (3.3)

was 100%, which occurred at a mean 7.3 ± 11.5 weeks and a median 4 weeks. Range of time for RTW was <1 to 88 weeks. A total of 21 patients (33.3%) initially returned to lighter duty, 10 (15.9%) to fewer hours, and 30 (47.6%) to usual hours and duties. A total of 58 patients (95.2%) were able to return to full duty work postoperatively at a mean 8.9 ± 13.0 weeks and a median 6 weeks (range, <1-88 weeks). Of the 3 patients unable to return to full duty, 1 could not because of residual hip pain.

The time required to RTW by work classification is presented in Table 6. Correlations between patients' work classification and their time to RTW are presented in Table 7.

DISCUSSION

The primary findings of this study were as follows: (1) patients who underwent arthroscopic treatment of FAIS demonstrated a high rate of RTW at full duty; (2) mean time to RTW was 7.3 weeks; and (3) patient expectations and level of physical activity required for work were correlated with time required for RTW, while number of hours worked per week was not.

Patients with FAIS are typically young and active individuals. A study of 1076 patients with FAIS showed that 40% were full-time students, 37% were employed full-time, and 14% were employed part-time.⁹ Indeed, in the current study of patients aged 25 to 59 years, 77% were employed within 3 months of surgery and worked a mean 43 hours per week. The current study showed high rates of RTW after surgery. All patients in the sample returned to work, and 95.2% were able to return to full duty at a mean 8.9 weeks. Given that patients experiencing FAIS

TABLE 4
Pre- and Postoperative
Patient-Reported Outcome Measures^a

	Preoperative	Postoperative	P Value ^b
HOS-ADL	64.8 ± 15.3	87.1 ± 12.2	<.0001
HOS-SS	42.8 ± 18.8	76.7 ± 16.5	<.0001
iHOT-12	31.3 ± 18.8	69.3 ± 21.1	<.0001
IHHS	61.8 ± 12.1	80.3 ± 14.1	<.0001
VAS pain (0-10)	5.19 ± 2.11	2.40 ± 1.96	<.0001

^aValues are presented as mean \pm SD. HOS-ADL, Hip Outcome Score—Activities of Daily Living subscale; HOS-SS, Hip Outcome Score—Sports Specific subscale; iHOT-12, 12-Item International Hip Outcome Tool; mHHS, modified Harris Hip Score; VAS, visual analog scale.

^bStatistically significant at $P < .01$.

are often early in their careers, a high rate of RTW at full duty has substantial economic and societal benefit in terms of work productivity.²⁷ When lost wages and decreased workplace activity in patients with FAIS are accounted for, the functional gains and higher potential for employment after hip arthroscopy produce approximately \$68,483 in 10-year total net societal savings per patient as reported by Mather et al.²⁷ These results are favorable when compared with total hip arthroplasty, in which a mean lifetime net societal savings was \$32,948.²⁰

The high rate of RTW is expected given the significant improvements in PRO measures of pain and function observed in the current study.^{16,33} Philippon et al³⁹ similarly reported 100% RTW in 66 patients undergoing hip arthroscopy for FAIS, although return to full duty, physical demands of job, and workers' compensation claims were not specified. The rate and timing of RTW in the current study are more positive than a previous study of RTW in a workers' compensation population undergoing hip arthroscopy from our institution.²² Lee et al²² reported that 69% of patients receiving workers' compensation were able to RTW at full duty at 1 year postoperatively. The remaining 31% were not able to RTW or required permanent restrictions. The differences in RTW between these samples is not surprising. Previous studies have demonstrated that patients receiving workers' compensation have inferior outcomes after surgery and have a lower

TABLE 5
One-Year Patient-Reported Outcome Measures by Work Classification^a

	Sedentary (n = 26)	Light (n = 9)	Moderate (n = 15)	Heavy (n = 9)	Very Heavy (n = 2)	P Value
HOS-ADL	88.52 ± 13.9	89 ± 5.1	83.9 ± 14.8	87.9 ± 8.8	75.7 ± 7.3	.303
HOS-SS	77.6 ± 17.4	72.4 ± 12.2	76.6 ± 20.6	82.5 ± 16.6	58.5 ± 7.6	.082
mHHS	79.7 ± 16.1	79.9 ± 11.3	79.6 ± 15.3	87.7 ± 9.7	74.8 ± 1.6	.401
iHOT-12	63.9 ± 26.3	56.6 ± 27.8	47.8 ± 30.3	72 ± 26.4	60.3 ± 5.7	.143
VAS pain (0-10)	2.54 ± 1.69	1.36 ± 1.14	3.02 ± 2.4	1.79 ± 1.61	3.66 ± 1.89	.204
Satisfaction	68.1 ± 36.4	71.3 ± 26.4	71.5 ± 27	75.7 ± 29.7	52.6 ± 60.2	.957

^aValues are presented as mean \pm SD. HOS-ADL, Hip Outcome Score—Activities of Daily Living subscale; HOS-SS, Hip Outcome Score—Sports Specific subscale; iHOT-12, 12-item International Hip Outcome Tool; mHHS, modified Harris Hip Score; VAS, visual analog scale.

TABLE 6
Return-to-Work Outcomes

	No. (%) or Mean \pm SD
Work classification breakdown	
Working patients	61 (100)
Sedentary	26 (42.6)
Light	9 (14.8)
Moderate	15 (24.6)
Heavy	9 (14.8)
Very heavy	2 (3.3)
Time worked per week, h	42.8 \pm 12.5
Time expected before return, wk	5.5 \pm 4.3
Returning to work successfully	61 (100)
Time to return to work, wk	7.3 \pm 11.5
Time to return to work by classification, wk	
Sedentary	3.56 \pm 2.29
Light	5.67 \pm 3.71
Moderate	8.97 \pm 7.07
Heavy	7.67 \pm 4.67
Very heavy	8.00 \pm 5.65
Returning to full duty	58 (95.2)
Time to full duty return to work	8.9 \pm 13.0
Level of initial return	
Lighter duties	21 (33.3)
Fewer hours	10 (15.9)
Usual hours and duties	30 (47.6)

likelihood of returning to work after a variety of arthroscopic procedures.^{4,13,29,40,43} Given that the majority of patients treated for FAIS are not involved in workers' compensation claims,⁸ the results from the current study are widely generalizable.

Patients in the current study initially returned to work at a mean of 7.3 weeks and returned to full duty at a mean of 8.9 weeks. Key barriers to RTW are typically resolved at this point, such as weightbearing and range of motion restrictions, narcotic requirement, and pain. Many surgeons have recently advocated for an early transition to weightbearing as tolerated, which may contribute to early RTW rates.^{3,32} The rehabilitation protocol used by the treating surgeon involves progression to weightbearing as tolerated at 4 weeks and a goal of achieving full active range of motion symmetric to the contralateral hip by 6 to 8 weeks postoperatively.

Opioids are rarely required at 6 weeks postoperatively, and patients typically report substantial improvements in pain.^{12,21} Of note, this time frame of RTW may be based on a surgeon's rehabilitation protocol, which is variable among surgeons in terms of weightbearing, brace use, range of motion, and permission of return to activity.¹⁵ While a general timeline is useful in guiding recovery, progression to full activity should be individualized and milestone based in terms of surgical findings, procedures, patient characteristics, and activity goals.^{15,32}

The amount of time required to RTW in this study is comparable with that after a number of other hip and arthroscopic procedures. In a study of 790 patients aged <60 years who underwent total hip arthroplasty or hip resurfacing, 94% were able to return to their usual job at a mean 6.9 weeks.³⁶ Of note, 38 patients who experienced complications were excluded from this analysis, of which 66% were able to RTW.³⁶ The time required to RTW was

TABLE 7
Correlation Coefficients for RTW Parameters^a

	Weeks to RTW		Weeks to Full RTW	
	<i>r</i>	<i>P</i> Value	<i>r</i>	<i>P</i> Value
Work classification ^b	0.389	.002 ^c	0.640	.0001 ^c
Hours per week of preoperative work ^d	0.197	.1324	0.090	.5475
Time expected off ^d	0.880	<.0001 ^c	0.900	<.0001 ^c

^aRTW, return to work.

^bSpearman correlation.

^cStatistically significant at $P < .01$.

^dPearson correlation.

also comparable with that in a study on arthroscopic acromioplasty, in which a non-workers' compensation population returned to work at a mean 9.1 weeks.³⁴ A less favorable rate of RTW has been noted after total knee arthroplasty. One study demonstrated that a median recovery period of 8.9 weeks was needed before patients were able to RTW and that 28% of patients were unable to work at 3 months postoperatively.⁴⁴ Similarly, Collin et al¹¹ reported that 80% of patients returned to work at 6 months after arthroscopic rotator cuff repair.

In the current study, the physical demands of a job and the patients' expectations regarding recovery time needed to RTW were moderately correlated with their observed time to RTW. Patients with jobs that involve more physical exertion required a greater time for initial RTW and RTW at full duty. This trend has been seen in the context of several other populations and orthopaedic procedures.^{10,41,44} Zimmerer et al⁴⁸ reported RTW after hip arthroscopy on a sample of patients <30 years old and found that the average time of RTW was 5 weeks for jobs primarily involving sitting, 8 weeks for standing, and 24 weeks for physical activity. Clyde et al¹⁰ examined 177 patients receiving workers' compensation who underwent total hip or knee arthroplasty and found that 67% with manual labor jobs successfully returned to work as compared with 85% of nonmanual laborers. In contrast, in the current study, 100% of patients who classified their jobs as heavy or very heavy returned to work at full duty, although they tended to return at a later time than those with less physically demanding jobs. This implies that employers that can accommodate patients and offer less demanding roles temporarily may facilitate an earlier RTW. In addition, similar 1-year PRO measures were seen across all work classifications, indicating that more physically demanding jobs do not ultimately compromise patient outcomes.

Patients who expected to have a more rapid RTW were more likely to achieve an earlier RTW initially and at full duty. This underscores the importance of psychological factors that contribute to timing of RTW. In a prospective study of patients undergoing total knee arthroplasty, Styron et al⁴⁴ assessed family and social motivation, self-motivation, health motivation, and a personal sense of urgency to return to the job. Patients who identified as

having a sense of urgency to work within 1 month postoperatively required 53% less time to RTW, which was most strongly correlated with early RTW.⁴⁴ Although it is unclear from the current study and that by Styron et al what specifically contributes to sense of urgency and a patient's personal recovery expectations, it is likely an interaction of factors that may include personal motivation, commitment to one's job, financial reasons, and preoperative discussions with the physician and employer. As such, assessing a patient's expectations before surgery and providing preoperative counseling regarding RTW are important to establish a realistic timeline for recovery.

This study has several limitations. First, the retrospective design is subject to selection bias, and the question regarding preoperative expectations for RTW is subject to recall bias. However, its design is similar to numerous previous investigations on RTW after orthopaedic procedures, and the response rate of >80% is a strength of this study.^{1,4,22} Second, the study was performed at an urban academic center; therefore, the jobs of the patients in the sample may not reflect jobs in more rural settings. Third, several factors not evaluated in this study may influence RTW, including financial needs, social factors, health insurance coverage, and paid sick time permitted by the employer. Fourth, with 2 patients representing the very heavy work force, the results may not accurately represent this category of the working class, as it was underpowered. Last, this is a single-surgeon series, and all patients were guided by the same rehabilitation protocol. Therefore, these findings may not be generalizable to other practices if there are variations in rehabilitation and RTW preferences. Despite these limitations, these results are valuable for orthopaedic surgeons, patients, and employers when establishing a timeline for expected RTW after arthroscopic treatment of FAIS.

CONCLUSION

Patients undergoing arthroscopic treatment for FAIS who were not receiving workers' compensation demonstrated a high rate of RTW at a mean <2 months postoperatively. A patient's expected time off from work and the level of physical demands required for work were associated with time required to RTW. These results are valuable for orthopaedic surgeons, patients, and employers when establishing a timeline for expected RTW after surgery.

REFERENCES

- Agarwalla A, Christian DR, Liu JN, et al. Return to work following high tibial osteotomy with concomitant osteochondral allograft transplantation. *Arthroscopy*. 2020;36(3):808-815.
- Aprato A, Jayasekera N, Villar RN. Does the modified Harris Hip Score reflect patient satisfaction after hip arthroscopy? *Am J Sports Med*. 2012;40(11):2557-2560.
- Avnieli IB, Vidra M, Factor S, et al. Postoperative weightbearing protocols after arthroscopic surgery for femoroacetabular impingement does not affect patient outcome: a comparative study with minimum 2-year follow-up. *Arthroscopy*. 2020;36(1):159-164.
- Bhatia S, Piasecki DP, Nho SJ, et al. Early return to work in workers' compensation patients after arthroscopic full-thickness rotator cuff repair. *Arthroscopy*. 2010;26(8):1027-1034.
- Brox JI, Storheim K, Grotle M, et al. Systematic review of back schools, brief education, and fear-avoidance training for chronic low back pain. *Spine J*. 2008;8(6):948-958.
- Campbell P, Wynne-Jones G, Muller S, Dunn KM. The influence of employment social support for risk and prognosis in nonspecific back pain: a systematic review and critical synthesis. *Int Arch Occup Environ Health*. 2013;86(2):119-137.
- Cancelliere C, Donovan J, Stockkendahl MJ, et al. Factors affecting return to work after injury or illness: best evidence synthesis of systematic reviews. *Chiropr Man Therap*. 2016;24(1):32.
- Chenard KE, Mai D, Begly JP, Ryan MK, Youm T. Does a traumatic etiology of hip pain influence hip arthroscopy outcomes? *Arthroscopy*. 2020;36(1):167-175.
- Clohisey JC, Baca G, Beaulé PE, et al. Descriptive epidemiology of femoroacetabular impingement: a North American cohort of patients undergoing surgery. *Am J Sports Med*. 2013;41(6):1348-1356.
- Clyde CT, Goyal N, Matar WY, et al. Workers' compensation patients after total joint arthroplasty: do they return to work? *J Arthroplasty*. 2013;28(6):883-887.
- Collin P, Abdullah A, Kherad O, et al. Prospective evaluation of clinical and radiologic factors predicting return to activity within 6 months after arthroscopic rotator cuff repair. *J Shoulder Elbow Surg*. 2015;24(3):439-445.
- Cunningham D, Lewis B, Hutyra C, et al. Prospective, observational study of opioid use after hip arthroscopy for femoroacetabular impingement syndrome. *Arthroscopy*. 2018;34(5):1488-1497.e1486.
- de Moraes VY, Godin K, Tamaoki MJ, et al. Workers' compensation status: does it affect orthopaedic surgery outcomes? A meta-analysis. *PLoS One*. 2012;7(12):e50251.
- Frank RM, Ukwuani G, Chahla J, et al. High rate of return to swimming after hip arthroscopy for femoroacetabular impingement. *Arthroscopy*. 2018;34(5):1471-1477.
- Grzybowski JS, Malloy P, Stegemann C, et al. Rehabilitation following hip arthroscopy—a systematic review. *Front Surg*. 2015;2:21.
- Gupta A, Redmond JM, Stake CE, Dunne KF, Domb BG. Does primary hip arthroscopy result in improved clinical outcomes? 2-year clinical follow-up on a mixed group of 738 consecutive primary hip arthroscopies performed at a high-volume referral center. *Am J Sports Med*. 2016;44(1):74-82.
- Ishoi L, Thorborg K, Kraemer O, Hölmich P. Return to sport and performance after hip arthroscopy for femoroacetabular impingement in 18- to 30-year-old athletes: a cross-sectional cohort study of 189 athletes. *Am J Sports Med*. 2018;46(11):2578-2587.
- Keating TC, Chahla J, Beck EC, et al. Return to pilates following hip arthroscopy for treatment of femoroacetabular impingement syndrome. *J Hip Preserv Surg*. 2019;6(4):339-345.
- Kent PM, Keating JL. Can we predict poor recovery from recent-onset nonspecific low back pain? A systematic review. *Man Ther*. 2008;13(1):12-28.
- Koenig L, Zhang Q, Austin MS, et al. Estimating the societal benefits of THA after accounting for work status and productivity: a Markov model approach. *Clin Orthop Relat Res*. 2016;474(12):2645-2654.
- Lee HH, Klika AK, Bershadsky B, Krebs VE, Barsoum WK. Factors affecting recovery after arthroscopic labral debridement of the hip. *Arthroscopy*. 2010;26(3):328-334.
- Lee S, Cvetanovich GL, Mascarenhas R, et al. Ability to return to work without restrictions in workers compensation patients undergoing hip arthroscopy. *J Hip Preserv Surg*. 2017;4(1):30-38.
- Levy DM, Kuhns BD, Frank RM, et al. High rate of return to running for athletes after hip arthroscopy for the treatment of femoroacetabular impingement and capsular plication. *Am J Sports Med*. 2017;45(1):127-134.
- Martin RL, Kelly BT, Philippon MJ. Evidence of validity for the Hip Outcome Score. *Arthroscopy*. 2006;22(12):1304-1311.
- Martin RL, Philippon MJ. Evidence of reliability and responsiveness for the Hip Outcome Score. *Arthroscopy*. 2008;24(6):676-682.

26. Martin RL, Philippon MJ. Evidence of validity for the Hip Outcome Score in hip arthroscopy. *Arthroscopy*. 2007;23(8):822-826.
27. Mather RC III, Nho SJ, Federer A, et al. Effects of arthroscopy for femoroacetabular impingement syndrome on quality of life and economic outcomes. *Am J Sports Med*. 2018;46(5):1205-1213.
28. McGonagle L, Convery-Chan L, DeCruz P, et al. Factors influencing return to work after hip and knee arthroplasty. *J Orthop Traumatol*. 2019;20(1):9.
29. Misamore GW, Ziegler DW, Rushton JL 2nd. Repair of the rotator cuff: a comparison of results in two populations of patients. *J Bone Joint Surg Am*. 1995;77(9):1335-1339.
30. Momaya AM, Stavrinou D, McManus B, et al. Return to driving after hip arthroscopy. *Clin J Sport Med*. 2018;28(3):299-303.
31. Moran M, Khan A, Sochart DH, Andrew G. Evaluation of patient concerns before total knee and hip arthroplasty. *J Arthroplasty*. 2003;18(4):442-445.
32. Nho S, Rasio J. Editorial commentary: rehabilitation after hip arthroscopy—bear in mind the bearing of weight. *Arthroscopy*. 2020;36(1):165-166.
33. Nho SJ, Beck EC, Nwachukwu BU, et al. Survivorship and outcome of hip arthroscopy for femoroacetabular impingement syndrome performed with modern surgical techniques. *Am J Sports Med*. 2019;47(7):1662-1669.
34. Nicholson GP. Arthroscopic acromioplasty: a comparison between workers' compensation and non-workers' compensation populations. *J Bone Joint Surg Am*. 2003;85(4):682-689.
35. Notzli HP, Wyss TF, Stoecklin CH, et al. The contour of the femoral head-neck junction as a predictor for the risk of anterior impingement. *J Bone Joint Surg Br*. 2002;84(4):556-560.
36. Nunley RM, Ruh EL, Zhang Q, et al. Do patients return to work after hip arthroplasty surgery. *J Arthroplasty*. 2011;26(6)(suppl):92-98.e91-e93.
37. O'Connor M, Minkara AA, Westermann RW, Rosneck J, Lynch TS. Return to play after hip arthroscopy: a systematic review and meta-analysis. *Am J Sports Med*. 2018;46(11):2780-2788.
38. O'Toole RV, Castillo RC, Pollak AN, MacKenzie EJ, Bosse MJ. Determinants of patient satisfaction after severe lower-extremity injuries. *J Bone Joint Surg Am*. 2008;90(6):1206-1211.
39. Philippon MJ, Briggs KK, Yen YM, Kuppersmith DA. Outcomes following hip arthroscopy for femoroacetabular impingement with associated chondrolabral dysfunction: minimum two-year follow-up. *J Bone Joint Surg Br*. 2009;91(1):16-23.
40. Potter BK, Freedman BA, Andersen RC, et al. Correlation of Short Form-36 and disability status with outcomes of arthroscopic acetabular labral debridement. *Am J Sports Med*. 2005;33(6):864-870.
41. Seland K, Cherry N, Beach J. A study of factors influencing return to work after wrist or ankle fractures. *Am J Ind Med*. 2006;49(3):197-203.
42. Skendzel JG, Philippon MJ, Briggs KK, Goljan P. The effect of joint space on midterm outcomes after arthroscopic hip surgery for femoroacetabular impingement. *Am J Sports Med*. 2014;42(5):1127-1133.
43. Stake CE, Jackson TJ, Stone JC, Domb BG. Hip arthroscopy for labral tears in workers' compensation: a matched-pair controlled study. *Am J Sports Med*. 2013;41(10):2302-2307.
44. Styron JF, Barsoum WK, Smyth KA, Singer ME. Preoperative predictors of returning to work following primary total knee arthroplasty. *J Bone Joint Surg Am*. 2011;93(1):2-10.
45. Tannast M, Siebenrock KA, Anderson SE. Femoroacetabular impingement: radiographic diagnosis—what the radiologist should know. *AJR Am J Roentgenol*. 2007;188(6):1540-1552.
46. Ukwuani GC, Waterman BR, Nwachukwu BU, et al. Return to dance and predictors of outcome after hip arthroscopy for femoroacetabular impingement syndrome. *Arthroscopy*. 2019;35(4):1101-1108.e1103.
47. US Department of Labor. *Dictionary of Occupational Titles*. US Department of Labor; 2002.
48. Zimmerer A, Bock M, Hoffmann M, Miehke W, Sobau C. Return to work after arthroscopic surgery for femoroacetabular impingement in patients younger than 30 years. *Sports Orthop Traumatol*. 2018;34(1):31-37.