A Comparison of Clinical Outcome Between Athletes and Nonathletes Undergoing Hip Arthroscopy for Femoroacetabular Impingement

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Objective: To compare the clinical outcome of arthroscopic surgery for femoroacetabular impingement (FAI) between athlete and nonathlete patients.

Design: Retrospective case-control study. Level of Evidence III.

Patients and Methods: Seventy-four patients who underwent arthroscopic FAI correction from March 2009 to April 2012 were enrolled in this study. The patients were divided into 2 groups, according to their sports participation (47 in the athlete group and 27 in the nonathlete group).

Main Outcome Measures: We reviewed clinical and radiographic data for all patients, up to a minimum of 2 years after surgery. We used analysis of covariance to compare the mean patient reported outcome scores including modified Harris hip score (MHHS) and the nonarthritits hip score (NAHS) preoperatively, at 6, 12, and 24 months after surgery.

Results: The mean age at the time of surgery in the athlete group was significantly lower than that in the nonathlete group. Although there was no significant difference in preoperative MHHS and NAHS, the mean NAHS at 6, 12, and 24 months postoperatively and the mean MHHS at 24 months postoperatively in athletes were significantly higher than that in nonathletes (P < 0.05).

Conclusions: Although arthroscopic FAI correction and labral preservation surgery is generally beneficial, it appears to provide a better clinical outcome in athletes than in nonathletes.

Key Words: hip arthroscopy, femoroacetabular impingement, return to sports, athlete

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INTRODUCTION

Femoroacetabular impingement (FAI) is a relatively common source of hip pain in both athletes and in the general population, but the cam deformity is more prevalent in athletes.1,2 A cam deformity at the proximal femur is associated with vigorous sports activity, especially in skeletally developing active patients.3-5

Hip arthroscopy is an evolving tool for diagnosing and treating hip pathologies. The aim of this surgical intervention, when treating FAI, is to correct bone abnormalities that result in impingement and to correct any associated intra-articular pathologies, including labral tearing and cartilage delamination.6,7 An equally favorable clinical outcome is expected from treating a nonathlete FAI population. One comparative study, describing the differences in clinical outcomes between athletes and nonathletes, suggested that arthroscopic management of FAI is equally effective in both populations.12 However, since FAI is more prevalent in athletes than in nonathletes and because FAI was now thought to be comparably prevalent in Japan; a better understanding of the clinical outcomes from arthroscopic treatment for FAI in the Japanese athlete versus the nonathlete was of increasing importance. Thus, we decided to compare clinical characteristics, preoperative radiographic parameters, and clinical outcomes between athletes and nonathletes who underwent arthroscopic surgery for FAI. Our results were surprising.

PATIENTS AND METHODS

The local institutional review board approved the study, and all study subjects provided informed consent. We retrospectively reviewed the records of all 187 hips from patients who underwent arthroscopic FAI correction by a single surgeon (senior author S.U.) from March 2009 to April 2012.

Seventy-four patients who met the inclusion criteria for FAI underwent arthroscopy.13 We based our inclusion criteria for symptomatic patients with FAI (age 15-50 yrs) on physical examination and radiographs: hip pain for more than 3 months, restricted hip range of motion (flexion <105
degrees and/or restricted internal rotation in flexion <20 degrees), a positive impingement test. Radiographic evidence of a cam deformity (alpha angle >55 degrees or head–neck offset >8 mm) on at least one radiographic view or computed tomography (CT) or magnetic resonance imaging (MRI).14,15 A pincer deformity, which is the presence of a crossover sign with a lateral center edge (CE) angle that is >25 degrees, coxa profunda, or posterior wall sign, prominence of the ischial spine sign if they had a protrusion on a pelvic anterior–posterior (AP) view.16,17

We excluded 113 patients from the study. Thirty-five patients had developmental dysplasia of the hip (lateral center edge angle <25 degrees). Seven patients had capsular laxity (patients with general joint laxity and normal bony structure of the hips as determined by the CE and alpha angle based on X-ray, CT, and MRI). Five patients had undergone a previous hip surgery. Seven patients had synovial osteochondromatosis. Fourteen patients were older than 50 years. Three patients had pelvic trauma. Fifteen patients had osteoarthritis (Tönnis grades 2 and 3). In addition, of 187 patients, 27 discontinued follow-up during the study period (Figure 1).

We divided the remaining 74 cases included in this study into 2 groups, according to sports participation. We defined athletically active patients as those playing at least 1 organized sport or activity at school or in the community. The nonathlete group had 27 patients who did not participate in any sports activity. The athlete group had 47 patients, who participated in various types of sports activity. There were 8 patients in soccer; 5 patients in golf; 4 patients each in rugby and baseball (8 patients in total); 2 patients each in dance, American football, badminton, cycling, ski, and track and field (12 patients in total); and 1 patient each in volleyball, diving, skate, handball, judo, kendo, taekwondo, softball, swimming, yoga, marathon, ballet, and rhythmic gymnastics (14 patients in total).

Clinical Characteristics and Radiographic Assessment

We assessed the patients’ gender and mean age at the time of surgery. At the time of surgery, 32 (68.1%) of athletes were males patients and 15 (31.9%) were female patients; 11 (40.7%) of the nonathletes were males patients and 16 (59.3%) were female patients. Male patients were more prevalent in the athlete group than in the nonathlete group (P = 0.03). The mean age at the time of surgery in the athlete group was significantly lower than that in the nonathlete group (Table 1). Athletes were 28.3 ± 11.4 years old with a range of 13 to 49 years, whereas nonathletes were 39.7 ± 6.6 years old with a range of 29 to 49 years (P = 0.001).

We assessed the radiographs of all patients, using a picture archiving and communication system, to determine which radiographic parameters were predictors for a worsened clinical outcome. The senior author (S.U.) did all the radiographic assessments. We determined the CE angle and the Tönnis angle on a pelvic AP view, and the alpha angle on cross-table lateral view or modified Dunn view.18,19 We used the CE angle to define the lateral coverage of the acetabulum.20 We used the Tönnis angle as a measure of acetabular inclination.21 We used the Sharp angle as a measure of cam-type impingement.15 We used the highest alpha angle among an AP view, a lateral radiographic view, and a frog-leg lateral view of the operative hip.13,23

Examiners

The interobserver and intraobserver reproducibility of these radiographic parameters were investigated in all blinded patients. For intraobserver reliability, 1 hip surgeon (S.U.) measured each radiograph 3 times, with an interval of at least 1 week between measurements. For interobserver reliability, 2 hip surgeons with 6 to 12 years’ experience (H.U. and A.H.) performed the radiographic review independently and was blinded to the clinical data and details of radiology reports, and measured each radiograph (Table 2). Interclass correlation coefficients and the corresponding 95% confidence intervals were calculated to quantify interobserver and intraobserver reliability for continuous variables. The weighted kappa value was used to determine a broken Shenton line. Based on the standards for the k

![FIGURE 1. Flow chart showing the recruitment of patients with FAI for this study.](#)
TABLE 1. Univariate Analysis Comparing Patient Demographics in Athlete and Nonathlete Groups

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Athlete</th>
<th>Nonathlete</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>28.3 ± 11.4</td>
<td>39.7 ± 6.6</td>
<td>0.00</td>
</tr>
<tr>
<td>Sex, male/female</td>
<td>32/15</td>
<td>11/16</td>
<td>0.03</td>
</tr>
<tr>
<td>Body mass index</td>
<td>22.1 ± 2.8</td>
<td>22.3 ± 2.7</td>
<td>0.89</td>
</tr>
<tr>
<td>Center edge angle, degrees</td>
<td>33.3 ± 5.8</td>
<td>32.8 ± 5.5</td>
<td>0.88</td>
</tr>
<tr>
<td>Sharp angle, degrees</td>
<td>40.5 ± 4.2</td>
<td>38.7 ± 2.9</td>
<td>0.06</td>
</tr>
<tr>
<td>Tönnis angle, degrees</td>
<td>4.9 ± 3.1</td>
<td>4.5 ± 4.2</td>
<td>0.61</td>
</tr>
<tr>
<td>Alpha angle, degrees</td>
<td>61.2 ± 12.9</td>
<td>62.5 ± 13.2</td>
<td>0.67</td>
</tr>
<tr>
<td>Preoperative NAHS</td>
<td>50.8 ± 14.1</td>
<td>43.9 ± 11.3</td>
<td>0.02</td>
</tr>
<tr>
<td>Postoperative 6 mo NAHS</td>
<td>72.4 ± 8.0</td>
<td>61.1 ± 9.5</td>
<td>0.000</td>
</tr>
<tr>
<td>1 yr NAHS</td>
<td>75.1 ± 6.4</td>
<td>65.0 ± 11.5</td>
<td>0.000</td>
</tr>
<tr>
<td>2 yrs NAHS</td>
<td>75.8 ± 6.4</td>
<td>64.6 ± 14.2</td>
<td>0.000</td>
</tr>
<tr>
<td>Preoperative MHHS</td>
<td>70.2 ± 13.1</td>
<td>65.5 ± 14.7</td>
<td>0.17</td>
</tr>
<tr>
<td>Postoperative 6 mo MHHS</td>
<td>92.3 ± 10.5</td>
<td>84.7 ± 14.1</td>
<td>0.01</td>
</tr>
<tr>
<td>1 yr MHHS</td>
<td>96.0 ± 6.1</td>
<td>90.1 ± 11.7</td>
<td>0.01</td>
</tr>
<tr>
<td>2 yrs MHHS</td>
<td>95.4 ± 7.7</td>
<td>88.2 ± 12.3</td>
<td>0.00</td>
</tr>
<tr>
<td>Revision rate (%)</td>
<td>6.4</td>
<td>14.8</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Data are presented as mean (range) or number.

Surgical Techniques

The hip arthroscopy was performed by a single surgeon (senior author ##), with the patients in the modified supine position on a traction table under general and epidural anesthesia. Diagnostic evaluation was performed arthroscopically, by single surgeon discussing with 2 assistants.

We evaluated labral tearing and any associated pathologies, including cartilage delamination and ligamentum teres.

We exposed the rim using an elevator angulated at 10 degrees and a radiofrequency probe, ensuring not to separate the labral–chondral junction. We trimmed the rim using a motorized round burr. Then, we fixed the detached labrum with 2.4-mm suture anchors (Bioraptor; Smith & Nephew).

If a labrum was not repairable because it was severely degenerated, we performed a labral reconstruction using an autologous iliotibial band harvested from the ipsilateral side.25

After the central compartment procedures were complete, we evaluated the peripheral compartment for the presence of a cam lesion. If necessary, we performed cam osteochondroplasty using a motorized round burr (Smith & Nephew).

Lastly, capsular closure was performed.26 27

Arthroscopic Evaluation

At the time of surgery, we visually evaluated the cartilage condition of the acetabular rim lesion according to the Multicenter Arthroscopy Hip Outcome Research Network (MAHORN) classification of acetabular rim articular cartilage lesions.28

We visually assessed the type of pathology and the condition of the labrum. We recorded the presence of chondral lesions on the acetabulum or the femoral head. Briefly, we evaluated the condition of the femoral head according to the International Cartilage Research Society (ICRS) classification system.29

Clinical Outcome Variables

We followed up with patient visits at 6, 12, and 24 months after surgery. The length of follow-up included the time from the date of hip arthroscopy to the date of the last follow-up or reoperation. We obtained the average clinical and radiographic follow-up for all patients at a minimum of 2 years after surgery (the average was 37.9 ± 12 SD months; range 24-63 months).

We obtained data, such as hip scores, during office visits with the operating surgeon. Office visits also provided an opportunity to determine whether the patient needed to undergo a subsequent arthroscopy, osteotomy, or THA on their surgical hip.

We evaluated hip functions using the modified Harris hip score (MHHS)30 and the nonarthritis hip score (NAHS)31 preoperatively, at 6 months, at 12 months, and at 24 months after surgery. We performed repeat radiographic imaging at 1 and 2 years postoperatively.

We typically allowed athletes to return to full competitive activity between 12 and 16 weeks after the operation. Return to competitive sports depended on whether there was pain free recovery of muscle function and strength, which we determined by retrospective chart review and personal follow-up communication with the athletes.

Statistical Analysis

We performed χ² test and Mann–Whitney U test to compare parameters and clinical scores between both 2 groups. We performed analysis of covariance (ANCOVA) for clinical scores with age and gender adjustment. We compared radiographic measurements, including the CE angle, the Tönnis angle and the alpha angle using the Mann–Whitney U test. We presented these values as mean and ranges. We performed statistical analyses using the SPSS (version 13; SPSS Inc, Chicago, Illinois) software package. We considered a P-value of 0.05 or less as statistically significant.

RESULTS

There were no significant differences in the preoperative radiographic parameters between both 2 groups. The preoperative CE angle was 33.3 ± 5.8 degrees (range 25-48) in athletes versus 32.8 ± 5.5 degrees (range 25-47) in nonathletes (P = 0.88). The preoperative α angle was 61.2 ± 12.9
degrees (range 30-88) in athletes versus 62.5 ± 13.2 degrees (range 36-95) in nonathletes (P = 0.67). The preoperative Sharp angle was 40.5 ± 4.2 degrees (range 32-61) in athletes versus 38.7 ± 2.9 degrees (range 31-45) in nonathletes (P = 0.06). The preoperative Tönnis angle was 4.9 ± 3.1 degrees (range -5-13) in athletes versus 4.5 ± 4.2 degrees (range -8-12) in nonathletes (P = 0.61).

Arthroscopic Findings

All patients, in both 2 groups, had acetabular labral tearing. There was no significant difference in the rate of complete labral tearing between the 2 groups (athlete vs nonathlete; 19.1% vs 22.2% P = 1.0) (Table 3).

We determined the condition of ligamentum tearing (LT). The rate of complete and partial tearing of ligamentum teres in the athlete group (8.6%) was significantly lower than that in the nonathlete group (29.6%) (P = 0.02) (Table 3).

During surgery, we evaluated the condition of the cartilage at the femoral head, using the ICRS and MAHORN classification systems. There was no significant difference of the prevalence of cartilage delamination between both 2 groups (Table 4).

Clinical Outcome Scores Variables

We utilized ANCOVA analysis to adjust age and gender differences between both two groups. There was no significant difference in preoperative MHHS and NAHS (athlete vs non-athlete, MHHS: 70.1 range 65.6-75.5 vs 65.8 range 59.7-72.0, P = 0.299; NAHS: 50.4 range 46.4-54.6 vs 44.6 range 38.5-50.6, P = 0.144) (Figures 2, 3).

The mean MHHS in athletes at 24 months were significantly higher than that in nonathlete (athlete vs non-athlete 95.7% range 92.3-98.6 vs 88.1 range 83.8-92.3 P = 0.012). At 6 months, 12 months and 24 months after surgery, the mean NAHS in the athlete group was significantly higher than that in nonathlete group. (athlete vs nonathlete at 6 months 71.0 range 68.4-73.6 vs 63.6 range 60.6-67.2, P = 0.003, at 12 months 73.9 range 71.2-76.5 vs 67.2 range 63.4-70.9, P = 0.008, at 24 months (Table 5) 75.3 range 72.2-78.5 vs 65.6 range 61.1-70.0 P = 0.002).

Three of 47 athletes (6.4%) with FAI and 4 of 27 nonathletes (14.8%) with FAI required subsequent surgery due to persistent hip pain. There were no significant differences in reoperation rate between both 2 groups (P = 0.25). Finally, 45 of athletes (95.7%) were able to return to sports activity.

DISCUSSION

We investigated radiographic parameters and clinical outcomes following hip arthroscopic rim trimming, labral preservation, cam osteochondroplasty and capsular closure in patients with FAI. We compared our results in athletes with those of nonathletes. Our study revealed 2 major findings. First, arthroscopic FAI correction with labral preservation and capsular closure provided favorable clinical outcomes in both groups. Second, our results revealed that the athlete group was benefited more from the treatment than the nonathlete group.

While there was no significant difference in preoperative MHHS and NAHS, the mean MHHS in athletes at 24 months were significantly higher than that in nonathlete. At 6 months, 12 months and 24 months after surgery, the mean NAHS in the athlete group was significantly higher than that in nonathlete group.

One comparative study, describing the differences in clinical outcomes between athletes and nonathletes, suggested that arthroscopic management of FAI is equally effective in both populations. 12 The athletic patient group initially fared much better at 6 weeks after surgery, however, after 6 months and 1 year, there were no significant differences in the MHHS and the NAHS between the 2 groups.12 Since there were no detectable differences, it was not necessary to delve further into clinical and radiographic characteristics such as the period from onset to surgery, body mass index, body weight, center edge (CE) angle, sharp angle, Tönnis angle, alpha angle, signs of crossover, and the cartilage condition in arthroscopic findings.

Our findings agree with several reports revealing favorable clinical outcomes after hip arthroscopy in treating

### Table 3. Comparison of Labrum Tear and Ligamentum Tear in Athlete and Non-athlete Groups

<table>
<thead>
<tr>
<th></th>
<th>Athlete, n (%)</th>
<th>Nonathlete, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labrum tear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>9 (19.1)</td>
<td>6 (22.2)</td>
</tr>
<tr>
<td>Partial</td>
<td>36 (76.6)</td>
<td>21 (77.8)</td>
</tr>
<tr>
<td>Degenerative</td>
<td>2 (4.3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Ligamentum tear</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td>2 (4.3)</td>
<td>4 (14.8)</td>
</tr>
<tr>
<td>Partial</td>
<td>2 (4.3)</td>
<td>4 (14.8)</td>
</tr>
<tr>
<td>Hypertrophic</td>
<td>1 (2.1)</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>Synovitis</td>
<td>6 (12.8)</td>
<td>6 (22.2)</td>
</tr>
<tr>
<td>Intact</td>
<td>36 (76.6)</td>
<td>11 (40.7)</td>
</tr>
</tbody>
</table>

Data are presented as number and percentage.

### Table 4. Arthroscopic Observations of Cartilage Damage at the Femoral Head and Cartilage Delamination at the Acetabular Rim Lesion

<table>
<thead>
<tr>
<th></th>
<th>Athlete, n (%)</th>
<th>Nonathlete, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICRS grade 0</td>
<td>3 (6.4)</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>I</td>
<td>40 (85.1)</td>
<td>24 (88.9)</td>
</tr>
<tr>
<td>II</td>
<td>3 (6.4)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>III</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>IV</td>
<td>1 (2.1)</td>
<td>1 (3.7)</td>
</tr>
<tr>
<td>MAHORN 0</td>
<td>10 (21.3)</td>
<td>4 (14.8)</td>
</tr>
<tr>
<td>1</td>
<td>17 (36.2)</td>
<td>9 (33.3)</td>
</tr>
<tr>
<td>2</td>
<td>9 (19.1)</td>
<td>7 (25.9)</td>
</tr>
<tr>
<td>3</td>
<td>8 (17.0)</td>
<td>4 (14.8)</td>
</tr>
<tr>
<td>4</td>
<td>1 (2.1)</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>5</td>
<td>2 (4.2)</td>
<td>1 (3.7)</td>
</tr>
</tbody>
</table>

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the athlete with FAI. Byrd et al did a 10-year follow-up clinical outcome study after hip arthroscopy in athletes. They found that the MHHS improved from 51 to 96, with 13 patients (87%) returning to their sport. Philippon et al studied the clinical outcome in professional athletes who underwent hip arthroscopy for FAI corrective surgery. They reported that 42 of 45 professional athletes returned to a high activity level at the time of follow-up.

Our study, however, also found that arthroscopic FAI correction and labral preservation surgery provided a better clinical outcome for athletes with FAI than nonathletes. At 24 months after surgery, both the MHHS and NAHS in the athlete group was significantly superior than in the nonathlete group.

This difference between athletes and nonathletes may have any one of several explanations. The athlete group had a greater number of male patients than the nonathlete group. The mean age at the time of surgery in the athlete group was significantly lower than that in nonathlete group. Recent systematic review study also demonstrated that the proportion of male patients in a total of athletes with FAI is 76%.

It has been well recognized that the frequency of FAI makers is generally higher in male patients than that in female patients. It is impossible to perform a matched paired controlled study that can help control for confounding variables in this study. Younger athletes are active and are generally more motivated to recover better which would result in more muscle strength surrounding the hip joint. The other possible reasons for better outcome with athletes are considerable of existence of trainer, compliance behavior for treatment, self driven management, and financially stability. There are several studies looking into age-related muscle loss.

Analysis of covariance was performed with age and gender adjustment to exclude the effect that was imposed on the groups by age and gender differences (Table 5).

Furthermore, we found that the rate of completely and partially torn ligamentum teres in the athlete group (8.6%) was significantly lower than in the nonathlete group (29.6%) (P = 0.02) (Table 2). There are several studies revealing that ligamentum teres injuries are associated with cartilage damage. Thus, our findings suggest that the higher rate of torn ligamentum teres in nonathletes may be a contributing factor to the inferior clinical outcome observed, although there were no significant differences of cartilage damage between both the groups. On the other hand, ligamentum teres tears may be a degenerative pathology and thus observed more in older patients, as described by Domb et al. In this study, the mean age in nonathlete groups were significantly older than that of athlete groups.

FIGURE 2. Clinical outcome scores MHHS without ANCOVA.
Limitations of This Study

There are several limitations in this study. We investigated relatively short-term clinical outcomes. It was unclear how long the players would continue to participate in their sports and whether the observed difference would persist in athletes who stopped their sports. A longer-term evaluation with larger number of patients should be necessary to determine whether the nonathlete group simply took longer to recover to the same level as the athlete group or whether a persistent difference would disappear when athletes become nonathletes.

TABLE 5. Patients-Reported Outcome Scores

<table>
<thead>
<tr>
<th>Mean (95% CI)</th>
<th>Pre-adjustment</th>
<th>Age Adjustment</th>
<th>Age and Gender Adjustment†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Athlete</td>
<td>Nonathlete</td>
<td>P</td>
</tr>
<tr>
<td>Preoperative NAHS</td>
<td>50.8 (46.6-55.0)</td>
<td>43.9 (39.2-48.6)</td>
<td>0.02*</td>
</tr>
<tr>
<td>Postoperative 6 mo NAHS</td>
<td>72.4 (70.0-74.8)</td>
<td>61.1 (57.3-64.9)</td>
<td>0.000*</td>
</tr>
<tr>
<td>1 yr NAHS</td>
<td>75.1 (73.2-77.0)</td>
<td>65.0 (60.2-69.7)</td>
<td>0.000*</td>
</tr>
<tr>
<td>2 yrs NAHS</td>
<td>75.8 (73.9-77.8)</td>
<td>64.6 (58.8-70.5)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Preoperative MHHS</td>
<td>70.2 (66.2-74.2)</td>
<td>65.5 (59.5-71.6)</td>
<td>0.17</td>
</tr>
<tr>
<td>Postoperative 6 mo MHHS</td>
<td>92.3 (89.1-95.5)</td>
<td>84.7 (79.0-90.3)</td>
<td>0.01*</td>
</tr>
<tr>
<td>1 yr MHHS</td>
<td>96.0 (94.1-97.9)</td>
<td>90.1 (85.4-94.9)</td>
<td>0.01*</td>
</tr>
<tr>
<td>2 yrs MHHS</td>
<td>95.4 (93.1-97.7)</td>
<td>88.2 (83.2-93.2)</td>
<td>0.00*</td>
</tr>
</tbody>
</table>

Values are presented as estimated marginal means (SD).
*Significant difference (P < 0.05).
†ANCOVA: values of NAHS and MHHS were adjusted for age and gender.
There was a distinct lack of blinding, randomization, and prospective analysis that could affect the outcomes of this study. In this study, we used only MHHS and NAHS as clinical outcome score. Although MHHS shows a significant ceiling effect limiting to reflect athletic performance, it is a validated instrument and useful in reflecting patient satisfaction. A more clinically relevant score instrument will be needed in the near future.

The dearth of other observers or comparison of multiple evaluations of the status of articular cartilage and ligamentum teres injuries is also a limitation. We could have 1 or 2 evaluations of the status of articular cartilage and ligamentum teres in the near future.

In terms of sports participation, we defined athletically active patients as those playing at least 1 organized sport or activity at school or in the community and the nonathlete group as those who did not participate in any sports activity. The information was obtained by physicians’ history taking and patient-reported questionnaire. Patients may participate into the other physical activity.

CONCLUSION
Arthroscopic FAI correction and labral preservation surgery generally provides a favorable clinical outcome in all patients, but athletes generally fare better than nonathletes.

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REFERENCES


