Journal of Athletic Training 2022;57(5):494–501
doi: 10.4085/1062-6050-0709.20

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Acute and Subacute Changes in Dynamic Postural Control After Hip Arthroscopy and Postoperative Rehabilitation

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Context: Hip pain is associated with impairments in postural control and balance. The Star Excursion Balance Test (SEBT) is a reliable and valid method for measuring dynamic postural control.

Objective: To examine changes in dynamic postural control after hip arthroscopy and subsequent rehabilitation from baseline to 3 and 6 months postsurgery.

Design: Case series.

Setting: Physiotherapy department.

Patients or Other Participants: Sixty-seven individuals (47 men, 20 women; age = 31 ± 8 years, height = 1.78 ± 0.09 m, mass = 83 ± 15 kg) scheduled for hip arthroscopy to address chondrolabral conditions were matched with 67 healthy individuals serving as controls (47 men, 20 women; age = 31 ± 8 years, height = 1.77 ± 0.09 m, mass = 80 ± 16 kg). The hip arthroscopy group underwent postoperative rehabilitation including SEBT training.

Main Outcome Measure(s): The SEBT reach normalized to limb length was collected before surgery (baseline) and at 3 and 6 months after arthroscopy and compared with that of the healthy matched control group. Repeated-measures analysis of variance was used to evaluate whether SEBT reach differed among the 3 time points, and *t* tests were used to evaluate between-limbs and between-groups differences.

Results: The SEBT reach in the hip arthroscopy group at baseline was less than that of the control group in all directions (P values < .001). At 3 months after arthroscopy, SEBT reach increased in the posteromedial (PM; P = .007), posterolateral (PL; P < .001), and anterolateral (AL; P < .001) directions from baseline. At 6 months after arthroscopy, all directions of reach had increased (P values < .001) from baseline. The anteromedial (mean difference [MD] = –2.9%, P = .02), PM (MD = –5.2%, P = .002), and AL (MD = –2.5%, P = .04) reach distances remained shorter at 6 months after surgery in the hip arthroscopy group than in the control group. No difference existed between the control and hip arthroscopy groups for reach in the PL direction (MD = –3.6%; P = .06).

Conclusions: Dynamic balance control in the hip arthroscopy group at baseline was poorer than in a matched control group as measured using the SEBT. At 3 months after hip arthroscopy, we observed improvements in dynamic balance in the PM, PL, and AL SEBT directions. By 6 months after arthroscopy, all directions of SEBT reach had improved, but only the PL reach improved to the level of healthy control individuals.

Key Words: dynamic balance, lower extremity, rehabilitation, Star Excursion Balance Test

Key Points

- Preoperative dynamic balance control was poorer in the hip arthroscopy group than in a matched control group as measured using the Star Excursion Balance Test (SEBT).
- Dynamic balance in the posteromedial, posterolateral, and anterolateral SEBT reach directions improved at 3 months after hip arthroscopy to address chondrolabral injuries.
- Dynamic balance improved in all directions of the SEBT reach by 6 months after arthroscopy but only improved to the level of the healthy control group for posterolateral reach.
- Whether the SEBT changes resulted from postoperative rehabilitation or from surgical intervention is unclear.
- Surgeons and clinicians can use these findings to provide rehabilitation guidance to individuals after hip arthroscopy to address chondrolabral conditions.

Hip arthroscopy is a procedure undertaken to address hip pain driven by coexistent intra-articular conditions including the altered bony morphology associated with femoroacetabular impingement syndrome (FAI), labral tears, and chondral defects.[1–3] The aims of arthroscopy include reduction of pain and improvements in hip function, allowing return to sport, and decelerating the degenerative process.[1] People undergoing hip arthroscopy are often young and physically active,[1,3,4] and a common surgical finding is joint surface chondropathy,[5] which is an early marker of osteoarthritis (OA), a condition known to interfere with daily activities, cause pain, and globally affect the lifestyle of patients.[6]

Evidence indicates that dynamic single-legged balance is affected in individuals undergoing arthroscopy for hip and groin pain[4] and that balance deficits remain in individuals

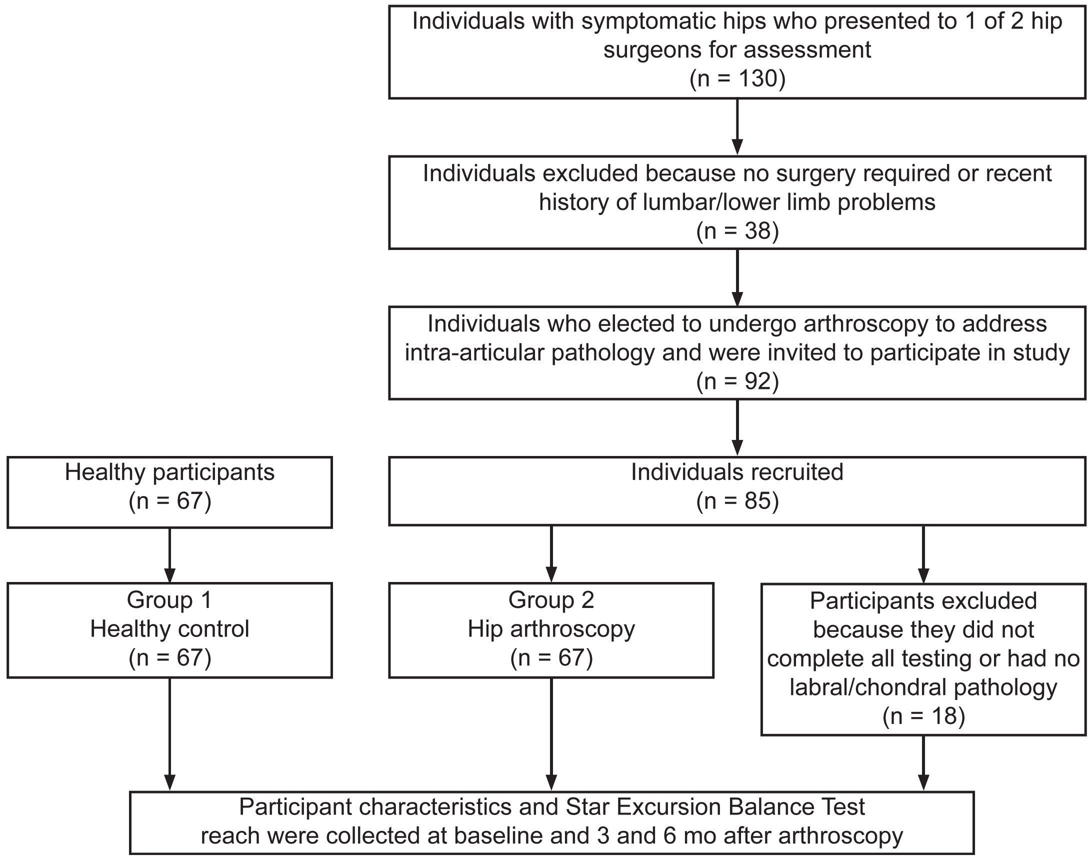

Figure 1. Selection of participants.

who have previously undergone arthroscopy for hip chondroplasty.[7] Dynamic balance deficits in patients with lower extremity conditions can be quickly and reliably identified using the Star Excursion Balance Test (SEBT), which requires maintenance of balance at the limits of stability.[8] The SEBT is considered a highly representative dynamic balance test for physically active people and is responsive to training programs in healthy participants and individuals with lower extremity conditions, including hip pain,[4] who have not fully rehabilitated or normalized their dynamic balance after injury.[8] Greater reach distances on the SEBT are associated with greater dynamic postural control of the stance limb.[9] Shorter reaching distances indicate deficits in dynamic postural control that are typically associated with a combination of mechanical or sensory motor system constraints.[10] A greater understanding of how balance is affected in this population may contribute to the development of more effective postoperative interventions to improve the physical activity and quality of life of affected individuals.

The primary aim of our study was to assess the acute and subacute changes in dynamic postural control from baseline to 3 and 6 months postsurgery in a series of patients undergoing hip arthroscopy to address chondrolabral injuries. The secondary aim was to compare the baseline and 6-month SEBT reach outcomes in the hip arthroscopy group to those of a healthy matched control group. The study outcomes can be used to establish optimal time points for implementing targeted exercise strategies during rehabilitation, help guide return to sport and training criteria, and determine longer-term health outcomes in this population. Our hypothesis was that dynamic balance control deficits would remain at 6 months after hip arthroscopy.

METHODS

Participants

A total of 130 individuals with hip pain were assessed by 2 hip surgeons (not authors of the study) between December 2014 and September 2017. The flow of participant recruitment is outlined in Figure 1. Briefly, of 130 patients who underwent assessment for hip and groin pain, 92 fulfilled the inclusion criteria and were invited to participate in the study. Patients were considered for inclusion if they were scheduled for arthroscopy; had no recent history (within 3 months of the study) of lumbar, knee, ankle, or foot problems; and had no vestibular or neurologic concerns. A total of 85 patients responded to an invitation to participate in the study. Eighteen were excluded because they did not complete all physical testing ($n = 16$) or had no chondrolabral condition discovered during surgery ($n = 2$). Other exclusion criteria were the inability to walk unassisted and the inability to read or speak English. The 67 patients (47 men, 20 women; age $= 31 \pm 8$ years) in the final cohort had labral injury, chondropathy, or both identified at arthroscopy (Outerbridge Grade I, softening and swelling of the articular cartilage[11]). Some participants had coexisting FAI and acetabular dysplasia that were also addressed at the time of surgery. Healthy individuals from the same workplace as those in the hip arthroscopy group were recruited and matched according to age, sex, height, and body mass.

Table 1. Participant Characteristics (n = 134)

Characteristics	Control Group (n = 67)	Hip Arthroscopy Group (n = 67)	Value	*P* Value
	Mean ± SD (Range)			
Age, y	31 ± 8 (18–51)	31 ± 8 (18–51)	0.29[a]	.77
Height, m	1.77 ± 0.09 (1.59–2.05)	1.78 ± 0.09 (1.57–2.01)	−0.55[a]	.59
Mass, kg	80 ± 16 (53–120)	83 ± 15 (51–127)	0.23[a]	.23
Body mass index	25.1 ± 3.5 (19.0–33.0)	25.9 ± 3.4 (19.8–35.1)	0.21[a]	.21
	No. (%)			
Sex			0.00[b]	>.99
Male	47 (70)	47 (70)		
Female	20 (30)	20 (30)		
Occupation			10.51[b]	<.001
Military	41 (61)	61 (91)		
Civilian	26 (39)	6 (9)		
	No.			
Symptomatic side			NA	NA
Right	NA	35		
Left	NA	32		
Dominant limb			NA	NA
Right	61	60		
Left	6	7		

Abbreviation: NA, not applicable.

[a] Independent *t* test was used for continuous variables.

[b] χ^2 test was used for categorical values.

Potential control-group participants were excluded if they had walking or postural abnormalities; experienced hip pain, low back pain, or other lower limb injuries in the 6 months before the study; or had undergone any previous hip surgery. *Limb dominance* was determined as the preferred leg for kicking a ball. The groups were not different in age, height, and mass, and neither group had been trained in the SEBT. The characteristics of participants are displayed in Table 1. Data from subsets of both the hip arthroscopy and control groups have been used in previous studies.[4,12] All patients provided written informed consent, and the study was approved by the Human Research Ethics Committees of the University of Queensland.

Procedures

Participants were tested at 3 time points: 32 ± 36 days before arthroscopy (baseline), 95 ± 8 days after arthroscopy (3 months), and 188 ± 16 days after arthroscopy (6 months). The control group was tested only once. All testing was conducted by an experienced physical therapist (M.F.) with 30 years of clinical experience. Intrarater reliability for the 4 directions of SEBT reach ranged from an intraclass correlation coefficient of 0.84 (95% CI = 0.58, 0.93) for the anterolateral (AL) direction to an intraclass correlation coefficient of 0.92 (95% CI = 0.77, 0.97) for the posteromedial (PM) direction when assessed 1 week apart with 10 healthy control individuals.

Primary Outcome Measures

The SEBT was explained to each participant using oral instruction and visual demonstration and was performed maintaining a single-legged stance (testing limb) while reaching with the other lower limb. Participants were given 4 practice trials in each direction to familiarize them with the test and reduce potential learning effects across the trials.[8] This study replicated the original protocol of 4 SEBT directions[13]: anteromedial (AM), PM, posterolateral (PL), and anterolateral (AL). Barefoot participants first performed the SEBT standing on the left limb, regardless of injury or limb dominance, starting with the AM direction and moving in a clockwise direction to complete PM, PL, and AL directions of reach in relation to the stance foot.[8] The SEBT was then performed standing on the right limb, moving in a counterclockwise direction through the same sequence of reach directions.

Participants were instructed to reach as far along the 4 directions as possible, touch the farthest point on the line as lightly as possible (Figure 2), and then return to standing in the grid center. They were allowed to rest and recover for 5 seconds between reaches. The tester recorded the reach distance by placing a mark on the touchdown point. The farthest reach distance of 3 successful attempts was recorded. A trial was discarded if the participant (1) lifted the stance foot from the center of the grid or did not touch the line with the reach foot, (2) lost balance, or (3) did not maintain the arms crossed on the chest. If the trial was deemed unsuccessful, it was repeated until a successful trial was performed. Given that absolute reach distance was associated with limb length, the reach distance was normalized for between-groups comparison by expressing the reach distance as a percentage of each participant's limb length (reach distance [in centimeters] divided by limb length [in meters]).[8] The method used was described by Freke et al.[4]

Surgical Procedures

During arthroscopy, the labrum was inspected, and labral tears and chondrolabral separations were debrided and partially detached. Depending on the findings, a full acetabular rim trimming or only a smoothing or leveling

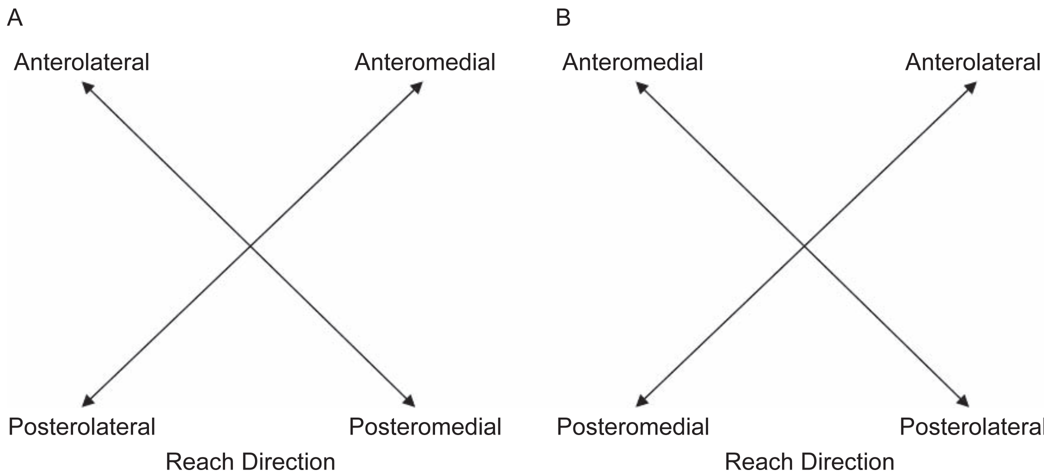

Figure 2. Reach directions of Star Excursion Balance Test. A, Standing on left limb. B, Standing on right limb.

of the acetabular rim was performed. Depending on the size of the labral lesion, 1 to 6 suture anchors were used to reattach the labrum. Chondral defects were debrided and left in a stable status combined with microfracture if indicated. Cam morphology was treated with osteoplasty. The participants were discharged either later the same afternoon or the next day. All participants were issued crutches to be used as necessary, depending on pain. Postoperative rehabilitation was supervised by clinicians chosen by the patients after basic postoperative instructions were provided to them before leaving the hospital. All participants were given a standardized rehabilitation protocol based on the rehabilitation progression model described by Stalzer et al[14] that extended from after arthroscopy to the 6-month testing period. The protocol consisted of images of relevant exercise options, including a timeline for progression and introduction of the SEBT as a form of exercise at 9 weeks postsurgery. Determining adherence to rehabilitation was not possible because the participants attended a number of different locations for rehabilitation.

Statistical Analysis

Data from all 134 participants were included in the statistical analyses. All statistical analyses were performed using R (R Foundation for Statistical Computing) with the *ez* package. Baseline characteristics of participants were described as mean, SD, minimum, and maximum and were compared between groups using the independent *t* test for continuous and the χ^2 test for categorical variables. The data were checked for normality of distribution using Q–Q plots. The mean of each outcome along with its corresponding SD at each testing time point was estimated.

Hip Arthroscopy Group Comparisons. A 2-way repeated-measures analysis of variance (ANOVA; time and limb) was conducted to evaluate whether the 4 directions of SEBT reach differed among the 3 time points (baseline and 3 and 6 months after arthroscopy) with the α level set at .05. We decided a priori that if interactions between time and limb were detected ($P < .05$), separate Bonferroni-adjusted paired *t* tests ($P < .017$) would be calculated between limbs at each time point and within limbs across each time point to detect where the differences occurred. When we found no interaction effect ($P > .05$) but did identify a main effect of time ($P < .05$), we used separate, Bonferroni-adjusted ($P < .017$), 2-way repeated-measures ANOVAs (time and limb) comparing the SEBT reach at each time point (baseline versus 3 months after arthroscopy, baseline versus 6 months after arthroscopy, and 3 versus 6 months after arthroscopy) to determine when the changes over time occurred. This was conducted as a 2-way repeated-measures ANOVA to account for the contralateral limb while maintaining sufficient power to detect changes over time. When we observed a main effect of limb ($P < .05$), we reported estimated marginal means and 95% CIs to demonstrate the overall size of the main effect.

Hip Arthroscopy Versus Control Group. Our secondary aim was to determine if the SEBT performance of the hip arthroscopy group differed from the performance of a "normal, asymptomatic" population at baseline and at 6 months after arthroscopy. Given that a previous study[15] revealed no side-to-side strength differences in normal populations, we compared the nondominant limb of the control group with the surgical limb of the hip arthroscopy group at baseline and 6 months postsurgery. Between-groups comparisons were conducted using independent *t* tests with an α level of .05.

RESULTS

Prevalence of Intra-Articular Findings Diagnosed During Hip Arthroscopy

All participants in the hip arthroscopy group (n = 67) had labral pathology requiring surgical intervention (debridement or repair): 85% (n = 57) had acetabular chondropathy, and 39% (n = 26) had femoral head chondropathy. Large labral tears requiring $\geq$3 sutures were noted in 46% (n = 31) of the participants. Sixty percent (n = 40) underwent osteoplasty for cam-type FAI. The prevalence of surgical findings and breakdown by sex of participants have been previously reported.[12]

The SEBT Reach

Normalized SEBT reach values (% limb length) in the hip arthroscopy and control groups are reported in Figure 3.

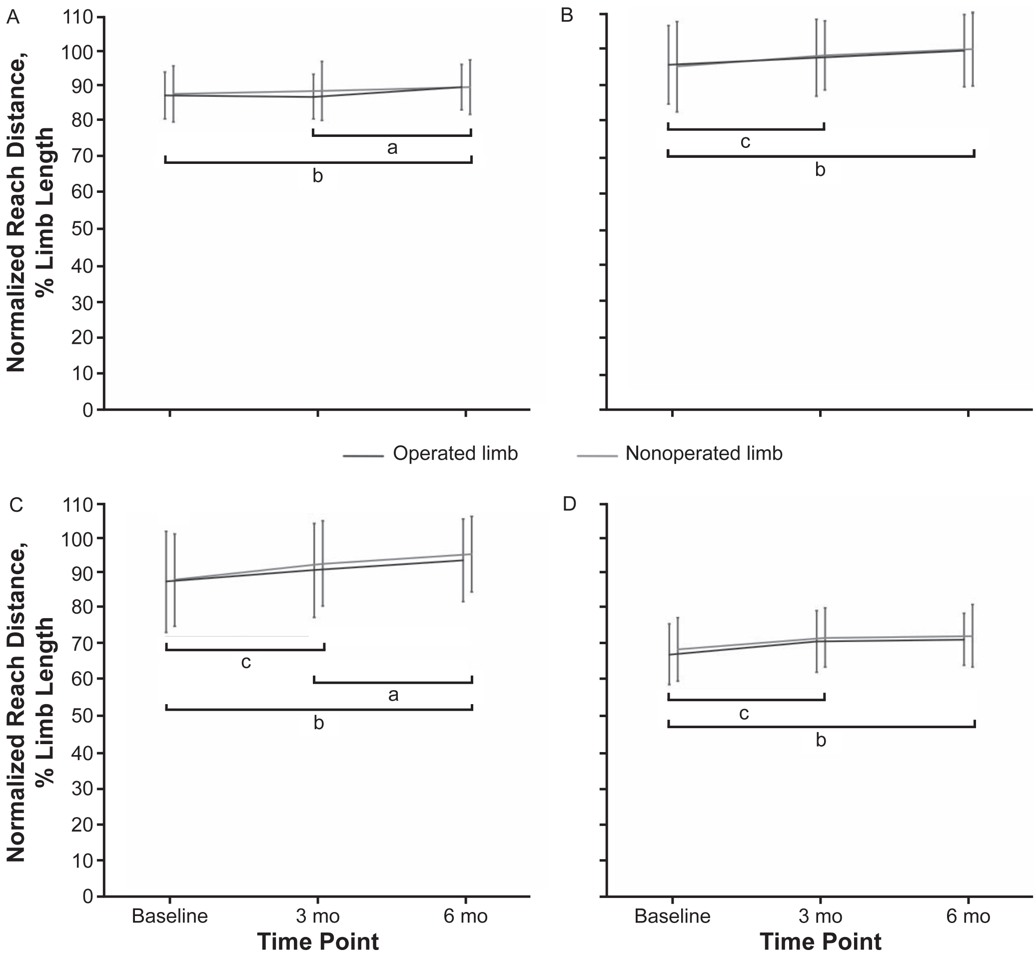

Figure 3. Results of post hoc analysis for the main effects of time for the A, anteromedial, B, posteromedial, C, posterolateral, and D, anterolateral reach directions of the Star Excursion Balance Test. Data are reported as mean ± SD. Bonferroni adjusted = .017. [a] 3 months versus 6 months ($P < .017$); [b] Preoperative versus 6 months ($P < .017$); [c] Preoperative versus 3 months ($P < .017$).

Hip Arthroscopy Group Comparisons. Results of the 2-way repeated-measures ANOVA are outlined in Table 2. We observed no interaction effects but found a main effect of time in all 4 SEBT reach directions (Table 2). Follow-up comparisons for the main effect of time demonstrated that SEBT reach increased in the PM, PL, and AL directions from baseline to 3 months after arthroscopy (PM: $F_{2,132} = 7.9$, $P = .007$; PL: $F_{2,132} = 16.7$, $P < .001$; AL: $F_{2,132} = 28.3$, $P < .001$) as well as the AM and PL directions from 3 months to 6 months (AM: $F_{2,132} = 7.6$, $P = .007$; PL: $F_{2,132} = 11.7$, $P = .001$; Figure 3). From baseline to 6 months after arthroscopy, increases occurred in all directions of SEBT reach (AM: $F_{2,132} = 15.9$, $P < .001$; PM: $F_{2,132} = 23.5$, $P < .001$; PL: $F_{2,132} = 52.0$, $P < .001$; AL: $F_{2,132} = 29.0$, $P < .001$; Figure 3). The only main effect of limb was in the PL direction (surgical limb: estimated marginal mean = 90.6 [95% CI = 87.8, 93.4]; nonsurgical limb: estimated marginal mean = 91.4 [95% CI = 88.8, 94.0]; Table 2).

Table 2. Results of the 2-Way Repeated-Measures Analysis of Variance

Star Excursion Balance Test Reach Direction	*F* Statistic	*df*	*P* Value	η^2
Anteromedial				
Limb	2.53	1, 66	.12	0.003
Time	5.65	2, 132	<.001[a]	0.017
Limb × time	2.31	2, 132	.10	0.003
Posteromedial				
Limb	0.14	1, 66	.71	<0.001
Time	12.09	2, 132	<.001[a]	0.027
Limb × time	0.64	2, 132	.53	<0.001
Posterolateral				
Limb	4.56	1, 66	.04[a]	0.003
Time	27.87	2, 132	<.001[a]	0.047
Limb × time	1.22	2, 132	.30	<0.001
Anterolateral				
Limb	3.63	1, 66	.06	0.004
Time	18.28	2, 132	<.001[a]	0.043
Limb × time	0.15	2, 132	.86	<0.001

[a] Indicates difference ($P < .05$).

Hip Arthroscopy Versus Control Group. At baseline, reach differences of 5% to 10% of limb length existed between the surgical limb of the hip arthroscopy group and the nondominant limb of the control group ($P < .001$). At 6 months after arthroscopy, differences remained between the surgical limb of the hip arthroscopy group and the nondominant limb of the control group in the AM ($P = .02$), PM ($P = .002$), and AL ($P = .04$; Figure 4) directions. Reach in the PL direction did not differ ($P = .06$) between the control group and the hip arthroscopy group at 6 months (Figure 4).

Direction of Reach	Test Time	Hip Arthroscopy Group Mean ± SD	Control Group Mean ± SD	*P* Value	Mean Difference (95% CI)
Anteromedial	Baseline	86.9 ± 6.5	92.1 ± 8.0	<.001	−5.2 (−7.7, −2.7)
	6 mo After Arthroscopy	89.2 ± 6.2	92.1 ± 8.0	.02	−2.9 (−5.3, −0.5)
Posteromedial	Baseline	95.9 ± 10.8	105.0 ± 8.6	<.001	−9.1 (−12.4, −5.7)
	6 mo After Arthroscopy	99.8 ± 10.0	105.0 ± 8.6	.002	−5.2 (−8.4, −2.0)
Posterolateral	Baseline	87.0 ± 13.9	96.5 ± 10.8	<.001	−9.5 (−13.7, −5.2)
	6 mo After Arthroscopy	92.9 ± 11.3	96.5 ± 10.8	.06	−3.6 (−7.4, 0.2)
Anterolateral	Baseline	67.0 ± 8.39	73.6 ± 6.9	<.001	−6.6 (−9.3, −4.0)
	6 mo After Arthroscopy	71.1 ± 7.18	73.6 ± 6.9	.04	−2.5 (−5.0, −0.1)

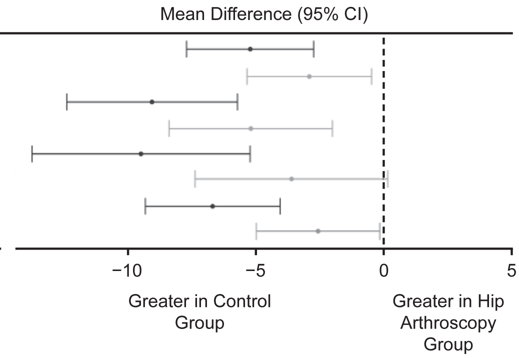

Figure 4. Forest plot showing the mean difference (% limb length) between stance on the surgical limb of the hip arthroscopy group and nondominant limb of the control group at baseline and 6 months after arthroscopy.

DISCUSSION

Dynamic balance control improved in the hip arthroscopy group from baseline to 3 months after arthroscopy in the PM, PL, and AL directions and in all 4 reach directions by 6 months; however, the hip arthroscopy group demonstrated less reach in all SEBT directions than the control group at both baseline and 6 months after arthroscopy, and only the PL reach direction improved enough at 6 months after arthroscopy to be comparable with that of the control group.

These results are consistent with those of researchers who suggested that dynamic postural balance was impaired bilaterally in patients with hip pain[4,7,16] or early-stage hip-joint degeneration[16,17] and reduced when compared with that in an asymptomatic population. In our study, dynamic balance improved in the PM, PL, and AL directions by 3 months after arthroscopy and in all directions by 6 months. Although arthroscopy addressed symptomatic intra-articular conditions, the cause of the balance changes may not be solely attributable to arthroscopy, as shortly afterward, participants began progressive rehabilitation to address strength, range-of-motion (ROM), and balance deficits. Hip-muscle strength was globally reduced in populations with hip pain,[12] and as previous investigators reported mild to moderate correlations between hip-extension strength[18] and hip external-rotation strength[19] in the posterior reach directions, improvements in muscle strength may have been partially responsible for the improved reach by 6 months.

Training programs containing aspects of dynamic balance and proprioception,[20,21] gluteal muscle strengthening,[22] and agility training[23] improved SEBT reach in healthy individuals and those with chronic ankle instability.[24] The SEBT was introduced to our participants as part of the rehabilitation program at 9 weeks after arthroscopy, allowing approximately 3 weeks of balance training before the first postoperative testing. By 6 months after arthroscopy, after 3 more months of progressive strength and balance training, SEBT reach on the surgical limb had improved by 3% in the AM direction, 4% in the PM direction, 7% in the PL direction, and 6% in the AL direction. In healthy populations, PM reach improvements of 5.5%[21] to 9%[23] and PL reach improvements of 5.8%[21] to 12%[23] have been reported after a program consisting of 18 exercise sessions over 6 weeks that promoted agility and strength. Improvements in AM reach of 3%[21] to 8%[25] and AL reach of 5.5%[21] have also been noted after 6-week programs containing strength, balance, and cardiovascular training.

Greater improvements after arthroscopy and rehabilitation in the posterior SEBT reaches may have reflected the modifiable influences of hip strength and ROM, which provide for greater variability in these directions. In the anterior directions, the less modifiable influences of ankle dorsiflexion and knee-flexion ROM accounted for up to 28%[26] and 72%,[27] respectively, of the variance,. The influence of hip ROM has been estimated to contribute as little as 2.5% to 4% of reach variance in the anterior directions[27] despite AL reach across the body demanding the combined movements of hip flexion-adduction-internal rotation in the stance limb. Flexion-adduction-internal rotation is an examination test commonly used to replicate the mechanical abutment of the femoral head against the anterosuperior portion of the acetabulum, where chondrolabral lesions most commonly occur.[28] By contrast, in the posterior directions, hip-flexion ROM alone has been reported to contribute up to 88% of SEBT reach variance in the PM direction and 94% in the PL direction.[27] Given that hip arthroscopy and the subsequent rehabilitation aim to improve hip-muscle strength and joint ROM by addressing the negative influence of intra-articular injury, improvements are potentially more likely to be seen in the posterior directions of SEBT reach, where the influence of hip ROM is greatest.

By 6 months after arthroscopy, SEBT reach distance in the AM, PL, and AL directions remained reduced in the hip arthroscopy group when compared with the healthy control group, suggesting that caution should be applied at this time with regard to returning to sport or other dynamic balance activities. Although the progression of strength and balance loading during rehabilitation depended on the participants' performances, it was beyond the scope of our study to monitor compliance with the program, as the recruited individuals were supervised by a variety of clinicians. Reduced pain from the rehabilitation process could also be a mediating factor in SEBT performance, as hip-strength deficits have been identified in individuals with hip pain[12] and, when combined with joint stiffness and reduced proprioception, may result in increased postural sway and impaired standing stability.[16,29] Therefore, the influence of postoperative rehabilitation and pain on dynamic balance has not been established, and further research in this field is needed to optimize existing balance-training protocols.

More conservative recommendations have suggested waiting until 8 months after arthroscopy to return to high-level activity,[30] which would allow more time to improve hip proprioception and muscle strength. Regardless of the time elapsed after arthroscopy, using a tool such as the SEBT to identify any potential balance deficits that may remain in the surgical limb would better inform patients about their physical ability before returning to sport.

Our study had some limitations, including the potential for selection bias. A total of 91% of participants in the hip arthroscopy group were serving in the military, an occupation characterized by high levels of physical load, thus potentially limiting the external validity of these results. This employment may have influenced the engagement with rehabilitation and strength outcomes, as injured military personnel are closely monitored during rehabilitation. Measurement bias leading to misclassification or misdiagnosis according to other criteria was another possibility. For example, the diagnosis of chondral and labral lesions was based on the presence and degree of surgical repair. This decision relied on the clinical expertise of 2 surgeons and not on preoperative radiographic findings, as labral injuries are common in asymptomatic patients.[31] We combined the data from 2 surgeons, and it is possible that diagnosis at arthroscopy was not uniform, although 57 of 67 (85%) individuals were treated operatively by one of the surgeons. The SEBT reach of the control group was measured only once and might have displayed increases due to the training effect of practice if remeasured 6 months later.

CONCLUSIONS

Preoperative dynamic balance control in a hip arthroscopy group was poorer than that of a matched control group as measured using the SEBT. At 3 months after hip arthroscopy to address chondrolabral injury, dynamic balance had improved in the PM, PL, and AL SEBT reach directions. By 6 months after arthroscopy, we observed improvements in all directions of SEBT reach, but only PL reach had improved to the level of the healthy control group. Whether the SEBT changes we noted resulted from the postoperative rehabilitation or from the operative intervention remains unclear, as no comparative studies have been conducted to investigate nonoperative and operative treatment in participants with hip pain. These findings are of high clinical relevance for surgeons and clinicians providing rehabilitation guidance to individuals after hip arthroscopy to address chondrolabral conditions.

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