Effect of Achilles Tendon Rupture on Player Performance and Longevity in National Basketball Association Players

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Background: National Basketball Association (NBA) players who return to sport (RTS) after Achilles tendon rupture have been reported to have poor outcomes.

Purpose: To evaluate the effect of Achilles tendon ruptures on player performance and career longevity in NBA athletes.

Study Design: Cohort study; Level of evidence, 3.

Methods: NBA players who sustained Achilles tendon ruptures between 1970 and 2019 were identified using publicly available resources and were matched 1:1 to a healthy control group by age, position, height, and body mass index. Demographic characteristics, player utilization (games and minutes), and performance efficiency rating (PER) were documented for all athletes. The season of Achilles tendon rupture was set as the index year, and statistical analysis compared postindex versus preindex data both acutely and in the long term. Percentages relative to preoperative values were calculated to compare the injured and control groups in a standardized fashion.

Results: Of 47 players, 34 (72.3%) with Achilles tendon ruptures returned to play at the NBA level after surgical intervention. A total of 7 players were excluded from the study. No differences were found in demographic characteristics or PER (2 years before injury) between the remaining 27 players and matched controls. The injured players had significantly shorter careers compared with control players (3.1 ± 2.3 vs 5.8 ± 3.5 seasons, respectively; $P < .05$). Injured players demonstrated significant declines in games per season (GPS), minutes per game (MPG), and PER at 1 year and 3 years after RTS compared with preindex baseline ($P < .05$). Injured players, compared with control players, had reduced relative percentages of games started (GS) (50% vs 125%, respectively), MPG (83% vs 103%), and PER (80% vs 96%) at 1 year after return ($P < .05$), but reductions at extended 3-year follow-up were seen only in GPS (71% vs 91%) and GS (39% vs 99%) ($P < .05$).

Conclusion: Our study found that 72.3% of NBA players returned to play after Achilles tendon repair, but they had shorter careers compared with uninjured controls. Players returning from Achilles tendon repairs had decreased game utilization and performance at all time points relative to their individual preindex baseline. However, for the injured players when compared with controls, game utilization but not performance was found to be decreased at 3-year follow-up.

Keywords: Basketball; NBA; Achilles tendon rupture; performance; Achilles tendon; general sports trauma

Traditionally, for professional athletes, Achilles tendon ruptures have been career ending, with up to 30% of athletes unable to return to play.[19] National Basketball Association (NBA) players in particular use explosive accelerations, sudden stops, and changes in direction, placing increased stress on the tendo-Achilles complex.[8,18] Accordingly, the return to sport (RTS) rate in NBA players after Achilles repair has been reported as low as 61%.[1,19] Historically, NBA players who RTS after Achilles tendon repair demonstrate worse performance outcomes relative to those who return from all other orthopaedic surgical procedures.[13,19]

The standard of care for the treatment of Achilles tendon rupture is controversial, because acceptable functional outcomes have been demonstrated with both nonoperative and operative treatment.[20] However, there is value in surgical repair for professional athletes because it provides faster RTS, greater strength, and reduced rerupture rates compared with nonoperative management.[2,3,11,17] Successful RTS may not necessarily translate to a successful outcome for professional athletes, who rely on their performance for future contracts and earning potential.[16] Trofa et al[19]

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suggested that professional athletes do not return to their preindex level of sport after Achilles tendon rupture; using relative percentage analysis, those investigators reported a decrease in both game participation and total number of games played per season, and worse performance statistics overall in all athletes. Another evaluation which included 11 NBA athletes who returned to sport after an Achilles tear between 1988 and 2011, demonstrated average reductions in performance compared with baseline and compared with controls during the first 2 seasons after surgery; but the authors did not analyze relative percentage analysis.[1] Minhas et al[13] evaluated utilization of 348 NBA players after RTS from various orthopaedic procedures and found that compared with all other procedures, Achilles tendon repair demonstrated the greatest decline in playing time (17.1 fewer games played per season, and fewer postoperative seasons). These studies indicate that NBA players have shorter careers and reduced contribution to their teams after Achilles tendon repair.[16]

Prior investigations have determined the short-term impact on utilization and performance after Achilles tendon repair in small cohorts of NBA players. The purpose of this study was to evaluate the effect of Achilles tendon ruptures on player performance and career longevity in NBA athletes. We hypothesized that upon RTS, NBA athletes would have reduced utilization and performance compared with their preindex baseline. Additionally, we hypothesized that these reductions in utilization and performance would be greater than the natural decline of healthy matched control athletes.

METHODS

We performed a retrospective review of Achilles tendon ruptures sustained by all NBA players between 1970 and 2019. Players who sustained an Achilles tendon injury were identified through publicly available resources, such as player profiles, news reports available through internet searches, injury reports, team websites, and NBA.com, using methods validated by previously published investigations.[4-7,12,14] All documented reports on Achilles tendon injury were verified by at least 2 sources to confirm Achilles tendon rupture and repair. Using the above sources, we cross-referenced the dates of injury with game statistics in order to verify a gap in game participation from the date of injury until the date of RTS. Players were further investigated to acquire information on their utilization and performance data for the remainder of their career after RTS. Inclusion criteria included all NBA players with a history of Achilles tendon injury. Players were excluded if their injury was not sustained while in the NBA, if they participated in leagues outside of the NBA after RTS (ie, played in other leagues without available NBA statistics), or if they had a history of lower extremity surgery on either leg before their Achilles tendon tear (ie, anterior cruciate ligament, quadriceps tendon), because their data could not be attributed strictly to a history of Achilles tendon repair. Lastly, players who injured their Achilles tendon in the 2018-2019 season and had not had the opportunity to RTS for a full season were not included in RTS analysis.

We set the season of Achilles tendon rupture as the index year while collecting data for the years before injury (years –1, –2, and –3) and after RTS (years 1, 2, and 3). A cohort of healthy control participants was matched by age, years of experience, position played, height, and body mass index. Greater priority was given to matching by age rather than years of experience, because NBA players may enter the professional league after as little as 1 year of college (19 years old), as many as 4 years of college (22 years old), or even additional years in developmental leagues or overseas. Therefore, matching by age provides the best match by taking into account total years of basketball experience, rather than solely years of NBA experience. Additionally, baseline performance metrics were not used to match players; however, analysis of preindex player efficiency rating (PER) 2 seasons before injury was evaluated, similar to Amin et al.[1] The index year for control players was determined by aligning their career with the respective player who had Achilles tendon tear so that their age and seasons of experience were similar at the index year and injury year, respectively. Control players were excluded if there were any documented lower extremity surgeries during their NBA career.

Demographic variables such as age, seasons of experience, height, weight, and position played were collected using player profile pages. Time to return to play was calculated using the first professional game played after Achilles tendon rupture. Utilization metrics included seasons played, games per season (GPS), games started (GS), and minutes per game (MPG). Performance data collected included PER, points per game, field goal percentage, effective field goal percentage, rebounds per game, assists per game, steals per game, and blocks per game. The effective field goal percentage is an available statistic that accounts for weighted differences between 2-point and 3-point field goals. PER is a standardized performance measure ([*points*

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+ rebounds + assists + steals + blocks + turnovers + free throws made + field goals made – field goals attempted – free throws attempted] ÷ *games played*) specific to NBA players, which has been used as a primary outcome measure in prior studies evaluating NBA players after Achilles tendon repair.[1,19]

Utilization and performance variables were compiled for players' entire careers before and after the index season. Trends of variable outcomes from 3 years before to 3 years after the index season were compared between groups. For an adequate representation of utilization volume and long-term performance, weighted adjusted means were cumulatively aggregated for 3 years postindex and 3 years preindex and were compared pre versus post within each group as well as post versus post between groups. For an analysis of each outcome variable relative to baseline, relative percentages were created, similar to a prior study.[19] Relative percentages for 1 year (post/pre) represent the percentage of utilization or performance during the first year postindex relative to the first year preindex. Likewise, relative percentages for 3 years (post/pre) represent the weighted averages of the first 3 seasons postindex as a percentage relative to 3 years preindex. A relative percentage of 1.00 indicates equivalent utilization or performance compared with preindex baseline, whereas >1.00 or <1.00 indicates greater than or less than baseline, respectively, during the postindex time period. This analysis enables standardization of utilization and performance variables postindex relative to individual baseline to allow more accurate comparison of relative changes between both groups.

Statistical Analysis

All continuous data are reported as mean ± SD, whereas categorical data are reported as counts and column percentages. For continuous variables, univariate 2-group comparisons were performed using independent 2-sample *t* tests if the variable was normally distributed; Wilcoxon rank-sum tests were performed if the variable was nonnormally distributed. For categorical variables, univariate 2-group comparisons were performed using chi-square tests when expected cell counts were >5 and Fisher exact tests when expected cell counts were <5. Comparisons between preindex and postindex data were performed using paired *t* tests if the variable was normally distributed and Wilcoxon signed-rank tests if the variable was nonnormally distributed, with differences being calculated as postindex minus preindex. Pearson correlation coefficient tests were used to determine the association of time to RTS with demographic characteristics.

For analysis of variables over time, a repeated-measures analysis of variance was performed and included effects for time, group, and the interaction between time and group. Significant findings for the repeated measures were then analyzed post hoc using pairwise comparisons. A Tukey-Kramer *P* value correction was used to adjust for multiple comparisons. Statistical significance was set at $P < .05$. All analyses were performed using SAS Version 9.4 (SAS Institute Inc).

RESULTS

Achilles Tendon Tears and RTS

A total of 53 NBA players with a history of Achilles tendon tear were identified. Of these, 6 players sustained their injury in 2018-2019 and remained on an active NBA roster but had yet to RTS at the time of data analysis. Of the remaining 47 players, 34 returned to NBA participation, yielding an RTS rate of 34 of 47 (72.3%). Among the 27 players meeting inclusion criteria, mean time to RTS was 11.23 ± 4.07 months.

Demographic Characteristics

A total of 7 players were excluded owing to concomitant injuries, playing in alternative leagues, or sustaining an injury before NBA participation. Therefore, 27 NBA players who sustained an Achilles tendon rupture during their NBA career and had a successful RTS were included for analysis. Of the 13 NBA players who did not RTS, 1 player was excluded because of inadequate documentation with available resources. Table 1 contains the demographic comparison between NBA players who did not RTS from Achilles tendon injury and those who did. No statistical difference was found in demographic characteristics between the 2 groups. Performance at 2 seasons preindex was significantly lower among players who did not RTS versus those who did return (12.05 ± 2.73 vs 16.86 ± 5.35, respectively; $P = .01$).

Table 1 also contains the demographic comparison between the 27 NBA players who had a successful RTS and the healthy matched control players. Similarly, no difference in demographic characteristics existed between the 2 groups. A significant difference was noted in years of NBA experience before the index season (7.22 ± 4.21 vs 8.13 ± 4.40; $P = .004$) between the injured and control players, respectively; however, mean age was identical in both cohorts ($P \geq .999$), consistent with our prioritizing age as described above.

Return to Sport

After Achilles tendon repair, NBA players' average RTS time was 11.23 ± 4.07 months, with 85.2% of players returning the season after injury. Subsequently, players with Achilles tendon repairs, compared with the control group, played in significantly fewer seasons (3.13 ± 2.32 vs 5.84 ± 3.46, respectively) and played fewer GPS (42.33 ± 19.97 vs 56.56 ± 17.53) ($P < .05$) (Table 2). Table 3 demonstrates correlations between the time to RTS and demographic and injury characteristics. Athletes who returned more quickly were older (age, $r = –0.41$; $P = .04$) and had greater playing experience before the index season (seasons preindex, $r = –0.39$; $P < .05$). No other demographic factors significantly correlated with time to RTS. The amount of time to RTS did not significantly correlate with subsequent career longevity (seasons postindex, $r = –0.12$; $P = .56$).

TABLE 1
Demographic Characteristics of NBA Players Sustaining Achilles Tendon Tears vs Matched Controls[a]

				P Value	
	Achilles, No RTS (n = 12)	Achilles, RTS (n = 27)	Control (n = 27)	RTS vs No RTS	Control vs Achilles Tear
Age, y	29.5 ± 3.48	28.22 ± 4.13	28.22 ± 4.13	.34	≥.999
Height, cm	195.25 ± 8.70	200.57 ± 9.62	201.15 ± 9.63	.11	.25
Weight, kg	94.92 ± 16.76	103.00 ± 16.16	102.22 ± 14.28	.18	.10
Body mass index, kg/m^2	24.68 ± 2.14	25.45 ± 2.19	25.22 ± 1.85	.33	.11
Years of experience	6.67 ± 3.57	7.22 ± 4.21	8.13 ± 4.40	≥.999	**.004**
Player efficiency rating 2 y preindex	12.05 ± 2.73	16.86 ± 5.35	15.42 ± 3.82	**.01**	.31
Time of injury					
Preseason		7 (26)	—		
1-20 games		7 (26)	—		
21-40 games		3 (11)	—		
41-60 games		5 (19)	—		
61-82+ games		5 (19)	—		
Position					.79
Point guard		5 (19)	4 (15)		
Shooting guard		5 (19)	8 (30)		
Small forward		6 (22)	3 (11)		
Power forward		5 (19)	6 (22)		
Center		6 (22)	6 (22)		

[a]Data are presented as mean ± SD or n (%). Bolded *P* values indicate statistically significant between-group differences ($P < .05$). Dashes indicate not applicable. NBA, National Basketball Association; RTS, return to sport.

TABLE 2
Career Characteristics of Study and Control Groups[a]

	Achilles, RTS (n = 27)	Control (n = 27)	*P* Value
Months to RTS	11.23 ± 4.07	—	
RTS in season after injury, n (%)	23 (85.2)	—	
Seasons after injury	3.13 ± 2.32	5.84 ± 3.46	<**.001**
Career games per season			
Preindex	70.10 ± 16.97	64.71 ± 10.96	.13
Postindex	42.33 ± 19.97	56.56 ± 17.53	**.006**
Career minutes per game			
Preindex	28.74 ± 8.65	27.32 ± 8.40	.52
Postindex	21.55 ± 5.97	23.67 ± 6.61	.24

[a]Data are presented as mean ± SD unless otherwise noted. Bolded *P* values indicate statistically significant between-group differences ($P < .05$). Dashes indicate not applicable. RTS, return to sport.

TABLE 3
Correlation of NBA Player Characteristics With Time to Return to Sport[a]

	r	*P* Value
Seasons postindex	–0.12	.56
Age	–0.41	**.04**
Height	–0.18	.39
Weight	–0.05	.79
Body mass index	0.08	.71
Position	–0.14	.48
Mechanism of injury	0.3	.14
Seasons preindex	–0.39	<**.05**
Quarter of injury	–0.35	.08

[a]Bolded *P* values indicate statistical significance ($P < .05$). The Pearson correlation coefficient is presented as *r* value. *P* value: Prob > |*r*| under H0: Rho = 0. NBA, National Basketball Association.

Game Utilization and Performance: Pre-Post Player Comparisons

The weighted averages of utilization and performance variables are illustrated for 1 year before and 1 year after the index season (Table 4) and for the 3-year spans before and after the index season (Table 5). At 1 year after compared with 1 year before the index season, players with Achilles tendon repairs demonstrated significant reductions in GPS (43.12 ± 3.87 vs 63.32 ± 3.54, respectively), GS (21.44 ± 5.89 vs 49.37 ± 5.38), MPG (22.08 ± 1.59 vs 29.82 ± 1.45), and PER (13.01 ± 0.79 vs 16.91 ± 0.71) ($P < .01$ for all) (Table 4). These players continued to have significant reductions 3 years after the index season, compared with 3 years before the index season, in GPS (44.5 ± 22.0 vs 64.2 ± 15.1, respectively), GS (21.3 ± 22.2 vs 50.4 ± 25.9), MPG (21.5 ± 6.8 vs 29.7 ± 8.5), and PER (12.9 ± 3.8 vs 17.1 ± 4.6) ($P < .001$ for all) (Table 5).

Control players were not found to have significant reductions in game utilization or performance upon comparison of 1 year before and 1 year after the index season. However,

TABLE 4
Game Utilization and Performance at 1 Year Before and After Index Season[a]

Variable	Achilles, RTS (n = 27)	Control (n = 27)
Games per season		
1 y pre	63.32 ± 3.54	68.21 ± 3.66
1 y post	43.12 ± 3.87	65.35 ± 3.54
P value	**.001**	.944
Games started		
1 y pre	49.37 ± 5.38	46.86 ± 5.57
1 y post	21.44 ± 5.89	41.83 ± 5.38
P value	**.004**	.916
Minutes per game		
1 y pre	29.82 ± 1.45	28.06 ± 1.50
1 y post	22.08 ± 1.59	26.52 ± 1.45
P value	**.003**	.882
Player efficiency rating		
1 y pre	16.91 ± 0.71	15.11 ± 0.73
1 y post	13.01 ± 0.79	13.73 ± 0.71
P value	**.002**	.528

[a]Data are reported as adjusted mean ± SE. Bolded *P* values indicate statistically significant between-group differences ($P < .05$). Post, after the index season; Pre, before the index season; RTS, return to sport.

TABLE 5
Game Utilization and Performance at 3 Years Before and After Index Season[a]

	Achilles, RTS (n = 27)	Control (n = 27)
Games per season		
3 y pre	64.2 ± 15.1	65.6 ± 15.6
3 y post	44.5 ± 22.0	60.1 ± 18.9
P value	<**.001**	**.047**
Games started		
3 y pre	50.4 ± 25.9	43.9 ± 27.3
3 y post	21.3 ± 22.2	33.6 ± 26.6
P value	<**.001**	**.038**
Minutes per game		
3 y pre	29.7 ± 8.5	27.4 ± 8.4
3 y post	21.5 ± 6.8	24.5 ± 7.7
P value	<**.001**	.054
Player efficiency rating		
3 y pre	17.1 ± 4.6	15.4 ± 2.9
3 y post	12.9 ± 3.8	13.1 ± 3.6
P value	<**.001**	**.002**

[a]Data are reported as adjusted mean ± SE. Bolded *P* values indicate statistically significant between-group differences ($P < .05$). Post, after the index season; Pre, before the index season; RTS, return to sport.

when we compared 3 years after and 3 years before the index season, control players demonstrated significant reductions in GPS (60.1 ± 18.9 vs 65.6 ± 15.6, respectively; $P = .047$), GS (33.6 ± 26.6 vs 43.9 ± 27.3; $P = .038$), and PER (13.1 ± 3.6 vs 15.4 ± 2.9; $P = .002$).

Relative Utilization and Performance: Percentage of Baseline Comparison (Injured Players vs Controls)

Figure 1 outlines the weighted relative percentages of utilization and performance variables. These values were calculated and compared between players who had Achilles tendon repair and controls in order to compare variations in utilization and performance in a standardized manner. These are calculated for acute (1 year postindex vs 1 year preindex) and extended (3 years postindex vs 3 years preindex) time periods.

When comparing utilization and performance percentages, we found that players returning from Achilles tendon repairs had a decrease in GS compared with controls (0.50 ± 0.73 vs 1.25 ± 2.00, respectively; $P = .003$), MPG (0.83 ± 0.47 vs 1.03 ± 0.4; $P = .007$), and PER (0.80 ± 0.24 vs 0.96 ± 0.19; $P = .011$) 1 year after return. When evaluating extended follow-up (3 years after return), we found that players with Achilles tendon repairs had a decrease in GPS compared with controls (0.71 ± 0.35 vs 0.91 ± 0.29, respectively; $P = .022$) and GS (0.39 ± 0.32 vs 0.99 ± 0.98; $P = .005$). No significant difference was found at extended follow-up in performance and MPG between players with Achilles tendon repairs and controls.

DISCUSSION

The present study compared NBA players who successfully returned to competitive professional basketball after Achilles tendon repair versus healthy, matched controls. Our study found a 72.3% RTS rate in players who sustained an Achilles tendon rupture, as well as shorter careers compared with matched controls. After RTS from Achilles tendon repair, NBA players experienced significant reductions in game utilization and performance relative to preindex baseline. This reduction was present in both acute and extended follow-up. When comparing players with Achilles tendon repairs versus matched controls, we found a decline in relative game utilization and performance at acute follow-up, with only game utilization differing with extended follow-up. Therefore, once the acute period after RTS from Achilles tendon repair is over, relative performance reductions parallel the natural decline experienced by control players. Team physicians and athletes alike must be mindful of outcomes after Achilles tendon repair and the effect on game utilization and performance thereafter.

Game utilization and performance after Achilles tendon repairs in NBA players have been evaluated in prior studies. Amin et al[1] conducted a retrospective review of 11 players (of 18 total) from 1988 to 2011 in the NBA who returned to the sport after Achilles tendon repair. The authors found significant declines in MPG during the first season (mean decline, 5.11 vs –1.30; $P = .018$) and second season (mean decline, 4.42 vs –2.29; $P = .034$) after RTS. Amin et al also found that after return, NBA players had significant reductions in PER compared with baseline during the first season (4.57; 95% CI, 1.72-7.42; $P = .003$) and second season (4.38; 95% CI, 0.92-7.84; $P = .01$). Trofa and colleagues[19] compared relative percentage of baseline game utilization between players with Achilles tendon repairs and healthy

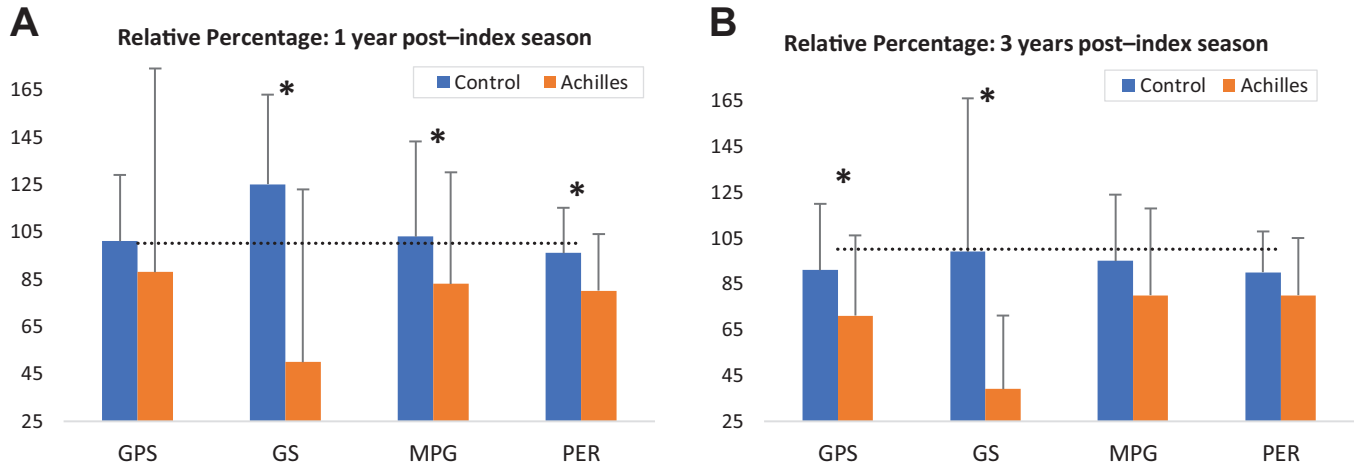

Figure 1. Relative percentage of utilization and performance (A) 1 season and (B) 3 seasons after return to sport from Achilles tendon repair. The preindex baseline is represented by the dotted horizontal line (100%) across all variables. Relative percentages below this line indicate that the postindex variable was less than baseline. *$P < .05$: significant differences between Achilles tendon repair and control groups. GPS, games per season; GS, games started; MPG, minutes per game; PER, player efficiency rating.

controls in a retrospective review of athletes from 4 major professional sports. Among this cohort, the investigators analyzed a subgroup of 17 NBA athletes who returned to sport after Achilles tendon repair and found that in the first and second postindex years, NBA athletes played reduced percentages of GPS (first year, 67.5%; second year, 68.5%) and MPG (first year, 52.8%; second year, 53.6%), respectively ($P < .001$ for all). Similarly, our study found a significant decline in GPS, MPG, and PER in players returning from Achilles tendon repair, both at acute and at extended follow-up compared with preindex ($P < .01$ for all). Additionally, our study evaluated changes in matched controls after an index season as a marker of natural career progression. Although no changes were found at acute follow-up after the index season, at extended follow-up the control players were also found to have a significant decline in GPS, GS, and PER ($P < .05$ for all). These findings suggest that players returning from Achilles tendon repairs can expect a decrease in game utilization and performance compared with their preindex averages. Likewise, the natural landscape of a healthy NBA player's career showed regression at extended follow-up. Whether the acute decline in performance seen in NBA players after Achilles tendon repair was attributable to deconditioning, loss of speed and quickness, the psychological impact of surgery, or the acclimation of an individual within a team game cannot be determined from the current study.

Various studies have evaluated changes in athlete utilization and performance compared with matched controls after injury.[1,10,15,19] It is known that players experience a natural decline in performance with time. The comparison of matched controls enabled normalization of this natural variation when evaluating player RTS data. The prior study by Amin and colleagues[1] found a reduction in PER in players returning from Achilles tendon repairs compared with matched controls in the first postindex season (4.57 vs 1.14; $P = .038$) but not the second season (4.38 vs 1.05; $P = .081$). Trofa et al[19] did not compare relative percentages with those of healthy matched controls for NBA players alone but rather collectively analyzed athletes from all 4 major sports compared with healthy matched controls. Their collective analysis determined that by the second postindex season, relative percentages of GPS and MPG were similar between all Achilles and control athletes. Our study differed, as we compared relative percentages of an isolated group of NBA players with Achilles tendon ruptures versus matched controls both at acute and extended follow-up. Achilles players, when compared with controls, demonstrated significantly reduced relative percentages of GS (50% vs 125%, respectively), MPG (83% vs 103%), and PER (80% vs 96%) the year after RTS. However, when evaluating players at extended follow-up, compared with controls, we found significant differences in relative percentages in only GPS (71% vs 91%, respectively) and GS (39% vs 99%). Our findings indicate that game utilization is significantly reduced after Achilles tendon repair compared with controls. Multiple factors are likely involved in decreased utilization, including injury prevention protocols, increasing age, and acquisition of alternative players and team dynamics, which are out of the scope of the present study. Given the involvement of the tendo-Achilles complex during the dynamic maneuvers in basketball players, surgical repair of the Achilles tendon may contribute to the reduced performance demonstrated by these findings during the acute period. The fact that a difference in PER was found at acute and not extended

follow-up compared with controls is encouraging and suggests that player performance after Achilles tendon repair may eventually normalize to parallel the expected natural decline of control players. Despite achieving similar performance, Achilles players demonstrated less durability, as they continued to participate in fewer games.

The rate of RTS after Achilles tendon repairs has traditionally been low. Lemme et al[9] found that more than a third of NBA players (36.8%) never returned to play or started in fewer than 10 games for the remainder of their career. Amin et al[1] demonstrated that 7 of 18 (39%) players with Achilles tendon rupture never returned to NBA participation. Trofa et al[19] found a 68% RTS rate in their cohort of 17 NBA athletes. In the present cohort of NBA players, we found that 72.3% returned to NBA participation. Additionally, we found a more expedient RTS time in older and more experienced players. However, this may be largely influenced by the point during the course of a season when players were injured or had an opportunity to return to in-season play.

Limitations

Several limitations are inherent to the retrospective case-control design of this study. Although the methods of acquiring data were consistent with prior studies, availability of official medical records or a centralized NBA injury database was lacking, and therefore complete grading of injuries or identification of concomitant injuries or sequalae was not possible.[5,12,14] Additionally, injuries in our study encompass decades of NBA play, and treatment techniques and rehabilitation protocols have likely changed over this time. However, we studied this length of time to allow for an increased sample size in an area of study limited by a small number of players available for analysis. Changes in player utilization and performance could also be affected by extrinsic factors unrelated to the injury, such as coaching, opposing team matchup, and overall roster composition. Furthermore, injuries sustained by players before their professional careers may be significant confounding factors that could not be identified. The timing of injury in the course of a season or off-season may affect the timing of RTS, the effects of which could not be considered. Of note, there was a significant difference in years of experience before injury between players who had Achilles tendon repair and the control group, which is likely attributable to the stringent matching of controls by age and the fact that players may enter the NBA at varying ages depending on the length of their college careers. This study did not match controls according to preindex baseline PER; however, PER at 2 seasons before the index season was evaluated and demonstrated to be similar between Achilles tendon players and controls. Finally, there are a multitude of reasons why players may not RTS after an injury, and we were unable to determine whether inability to return was specifically due to their Achilles tendon injury.

CONCLUSION

Our study found that 72.3% of NBA players returned to play after Achilles tendon repairs, but they had shorter careers compared with uninjured controls. Players returning from Achilles tendon repairs had decreased game utilization and performance at all time points relative to their individual preindex baseline. However, when compared with controls, returning players had decreased game utilization but not decreased performance at 3-year follow-up.

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