

Return to Play and Performance After Anterior Cruciate Ligament Reconstruction in National Football League Players

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Background: Considerable variability exists in return-to-play rates after anterior cruciate ligament (ACL) injury and reconstruction (ACLR) among National Football League (NFL) players of different positions.

Purpose/Hypothesis: The purpose of this study was to compare return-to-play and performance levels by position in NFL players after ACLR. It was hypothesized that (1) ACL injuries have significant effects on the careers of NFL players, including return to play and performance, and (2) players of certain positions that involve relatively less pivoting and cutting perform better after ACLR.

Study Design: Descriptive epidemiology study.

Methods: All NFL players who underwent ACLR between 2013 and 2018 were identified using the FantasyData injury database. Player characteristics, snap count, games played, games started, and performance metrics were collected for 3 years before and after injury using the Pro Football Reference database. Performance was measured using an approximate value (AV) algorithm to compare performance across positions and over time. Nonparametric tests were used to compare the pre- and postinjury data and the percentage change in performance between different positions.

Results: Overall, 312 NFL players were included in this study, and 174 (55.8%) returned to play. Of the eligible players, only 28.5% ($n = 59/207$) remained in the league 3 years postinjury. Within the first 3 years postinjury, players played in fewer games (8.7 vs 13.7; $P < .0001$), started in fewer games (3.0 vs 8.3; $P < .0001$), had lower AVs (1.5 vs 4.3; $P < .0001$), and had decreased snap counts (259.0 vs 619.0; $P < .0001$) compared with preinjury. Quarterbacks were most likely to return to play (92.9% vs 53.7%; $P = .0040$) and to return to performance (2% vs 50% decrease in AV; $P = .0165$) compared with the other positions. Running backs had the largest decrease in AV (90.5%), followed by defensive linemen (76.2%) and linebackers (62.5%).

Conclusion: The study findings indicated that NFL players are severely affected by ACL injury, with only 28.5% still active in the league 3 years after the injury. Running backs, defensive linemen, and linebackers performed the worst after injury. Quarterbacks were most likely to return to play and had superior postinjury performance compared with the other positions.

Keywords: ACL; football; lower extremity injury; NFL; return to play sports

Anterior cruciate ligament (ACL) injuries can be devastating to professional athletes, affecting career length, performance outcomes, yearly earnings, and mental health. Previous studies have shown that approximately one-third of National Football League (NFL) players did not return to play after an ACL tear.^{5,32} Another study found that NFL players with ACL injury earned \$2,070,521 less than salary-matched controls over the 4-year period after their injury. Psychological consequences of ACL injury include elevated fear of reinjury, which results in physical impairments, reduced self-reported function, and lower rates of return to play.^{6,20,27}

Although considerable variability exists with return to play after ACL reconstruction (ACLR) among NFL players of different positions,^{5,7,8,16,29,31} there are no previous studies comparing return to play and postinjury performance after ACLR across different positions in the NFL. Therefore, the purpose of this study was to compare return to play and performance levels after ACLR in NFL players of various positions. We hypothesized that players of different positions would have significantly different pre- and postinjury percentage changes in their approximate value (AV) performance scores.

METHODS

This cross-sectional study was exempt from requiring institutional review board review because the data were

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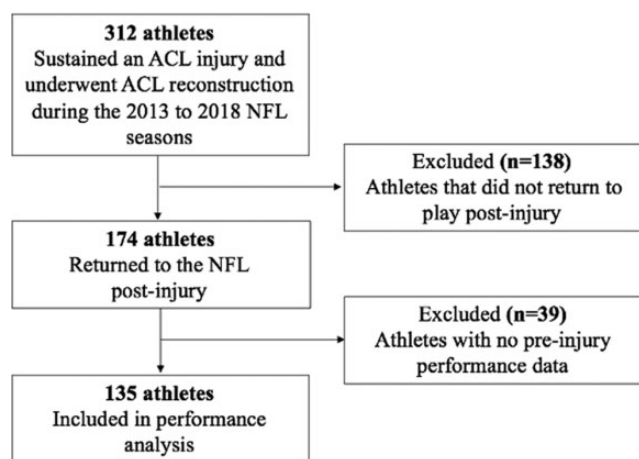


Figure 1. CONSORT (Consolidated Standards of Reporting Trials) flow diagram demonstrating final patient selection. ACL, anterior cruciate ligament; NFL, National Football League.

publicly available. NFL players with ACL injury were identified using a compiled injury database from FantasyData,¹⁸ an online platform offering sports research tools, fantasy statistics, and projections for the NFL and other professional sporting leagues. This database also provided information on player position and team at the time of the injury.

A total of 312 NFL players who sustained an ACL injury were found in the database search. Inclusion criteria were NFL players who underwent ACLR for an ACL injury between 2013 and 2018. Exclusion criteria for our performance analysis included first-year players lacking preinjury performance data ($n = 39$) or players who did not return to play in any capacity after undergoing an ACLR ($n = 138$) (Figure 1). Return to play was defined as playing in at least 1 snap in at least 1 regular season NFL game after ACL injury. No specific distinction was made for revision ACLR or multiligamentous injuries, and both were included in this study.

Information on player height and weight—found on the Pro Football Reference website¹⁰—was used to calculate body mass index (BMI). Information on draft year and round was also obtained from the Pro Football Reference website.¹⁰ Players were classified as one of the following positions: quarterback, running back, fullback, wide receiver, tight end, long snapper, offensive lineman, punter,

TABLE 1
Characteristics and Return to Play After ACLR in
NFL Players^a

	Returned to Play (n = 174)	Did Not Return to Play (n = 138)	P
Player characteristics			
Body mass index	30.94 ± 4.35	30.30 ± 4.20	.134
Time in the NFL, y	2.89 ± 2.92	2.99 ± 2.69	.455
Injury characteristics			
Preseason/offseason injury	66	95	<.001
In-season injury	107	44	
Player draft status			
Drafted, n (%)	131 (75)	74 (54)	
Drafted in rounds 1-3	82	29	<.001
Drafted in rounds 4-7	49	45	.027
Player position group			
Quarterback	12	2	>.99
Running backs (RB, FB)	15	13	.041
Receivers (WR, TE)	30	37	.012
Offensive linemen (OL, LS)	35	11	.605
Defensive linemen (DE, DT)	23	20	.576
Linebacker	27	22	.343
Defensive backs (CB, FS, SS, S)	31	31	.009
Punter or kicker	1	2	.293

^aData presented as mean ± SD or No. of players (%). Bolded P values indicate statistically significant difference between groups ($P < .05$). ACLR, anterior cruciate ligament reconstruction; CB, cornerback; DE, defensive end; DT, defensive tackle; FB, fullback; FS, free safety; LS, long snapper; NFL, National Football League; OL, offensive lineman; RB, running back; S, safety; SS, strong safety; TE, tight end; WR, wide receiver.

kicker, defensive end, defensive tackle, linebacker, cornerback, safety, free safety, and strong safety. The 16 positions were then grouped into the following cohorts for performance evaluation: defensive backs (cornerback, strong safety, free safety, safety); defensive linemen (defensive tackle, defensive end); linebacker; offensive linemen (offensive lineman and long snapper); quarterback; running back and fullback; receivers (wide receiver, tight end); and punters and kickers. All descriptive information are displayed in Table 1.

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Ethical approval was not sought for the present study.

The Pro Football Reference database¹⁰ was used to collect information on snap count, games played, games started, and AV. Performance data were collected for 3 years before and after the ACL injury. Data from the year of the injury were only included if the player was eligible for all 16 regular season games that season. Return-to-play time was ascertained by calculating the amount of time between injury date and return-to-play date. Injury date was obtained via online search for news publications and confirmed on FantasyData¹⁸ and Pro Football Reference.¹⁰ The return-to-play date was defined as playing in at least 1 snap of 1 regular season NFL game.

An AV methodology was utilized to create a standardized metric to quantify the aggregate performance level of NFL players of different positions as described previously.^{9,28} First, team points were allocated to offensive and defensive players according to overall team performance. Then, further calculations were performed on each player's specific function within the team (blocker, rusher, receiver, passer, front seven, secondary). Thus, the aggregate AV for each player was calculated as a sum of all the points obtained by that player for each of his various functions. The detailed calculations for AVs for offensive and defensive players can be found in Supplemental Tables S1 and S2, respectively.^{9,10}

Statistical Analysis

Descriptive statistics were tabulated. All continuous outcome variables were analyzed for normality using histograms, box plots, and the Kolmogorov-Smirnov test. Homogeneity of variance was tested using the Levene test. Given the data violated these conditions and the desired retention of outliers, continuous variables were reported with medians and interquartile ranges. Categorical variables were summarized using the frequency and percentage. The primary outcome measures for player performance were AV and snap count. Secondary outcome measures included the number of games in which the athletes played and the number of games in which they started each season.

Nonparametric tests for games played, games started, AV, and snap count were compared for the 3 seasons before with the 3 seasons after injury using Wilcoxon signed rank tests. Performance metrics were also compared between the immediate preinjury season and the third year postinjury. This was performed to better compare the athletes' performance in the season immediately before their injury and 3 seasons after to allow time for adequate rehabilitation. Chi-square test was used for univariate group comparisons of categorical variables. Kruskal-Wallis test was used to determine significant differences in these measures across player positions. Given the expected AV and snap count varies by position, the percentage change from preinjury to postinjury was used to compare across positions. When the Kruskal-Wallis test demonstrated a significant difference between positions, post hoc pairwise comparisons were performed for a significant omnibus test using Dunn test. Nonparametric regression models using generalized additive models were constructed to control for

potential confounders including BMI²¹ and draft round,³² which have been shown to affect performance after ACLR. An alpha level of $P < .05$ was used for statistical significance for all tests. All statistical analyses were performed using SAS Version 9.2 (SAS Institute).

RESULTS

A total of 312 NFL players sustained an ACL injury and underwent ACLR during the 2013 to 2018 seasons. This included 161 combined offseason and preseason injuries and 151 combined regular season and postseason injuries. Players with offseason and preseason injuries were significantly less likely to return to play (59.0% vs 29.0%; $P < .001$) (Table 1). Most ACL injuries were sustained in linebackers ($n = 49$, 15.7%), wide receivers ($n = 47$, 15.1%), and offensive linemen ($n = 42$, 13.5%) (Table 1). The mean \pm SD return-to-play time was 12.4 ± 2.5 months after injury. Only 55.4% ($n = 173/312$) of players returned to play after ACLR. Of the eligible players, only 41.3% ($n = 107/259$) were playing 2 seasons after injury, and only 28.5% (59/207) remained in the NFL for 3 seasons after injury. This was adjusted to include only the players injured through 2017 for 2-year return to play and 2016 for 3-year return to play, as postinjury data were only available through the most recent 2019 to 2020 season.

Games Played

The injured athletes played in 13.7 ± 3.7 games preinjury and 8.7 ± 10.3 games postinjury, averaged across 3 seasons pre- and postinjury (Figure 2A). The athletes played in 4.3 fewer games per season postinjury ($P < .0001$). When comparing the number of games played in the season immediately before their injury and the third season postinjury, players played in an average of 7.0 fewer games ($P < .0001$). This analysis includes only those 59 players who were still playing in the league 3 years postinjury.

Games Started

The average number of games in which the injured athletes started was 8.3 (11.7 SD) preinjury and 3.0 (10.5 SD) postinjury, averaged across 3 seasons pre- and postinjury (Figure 2B). The athletes started in 1.0 fewer games per season postinjury ($P < .0001$). Regarding the 59 players still playing in the league 3 years postinjury, players started in an average of 1.0 fewer games ($P < .0001$).

Snap Count

In terms of snap count, there was a 49.6% decrease in snap counts during the first 3 years after returning from an ACLR. The average snap count for all players was 619.0 ± 520.3 preinjury and 259.0 ± 574.2 postinjury, averaged across 3 seasons pre- and postinjury (Figure 3B). Thus, players were not able to return to their preinjury level of

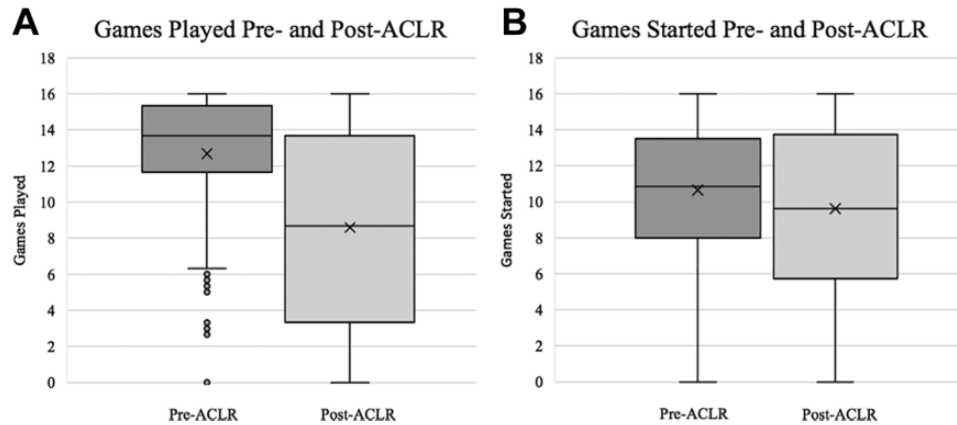


Figure 2. Box plots demonstrating number of (A) games played and (B) games started before and after ACLR. The X on the box plot represents the mean, the center line represents the median, error bars represent SDs, and circles represent outliers. ACLR, anterior cruciate ligament reconstruction. Pre-ACLR, before ACL injury and reconstruction; Post-ACLR, after ACL injury and reconstruction.

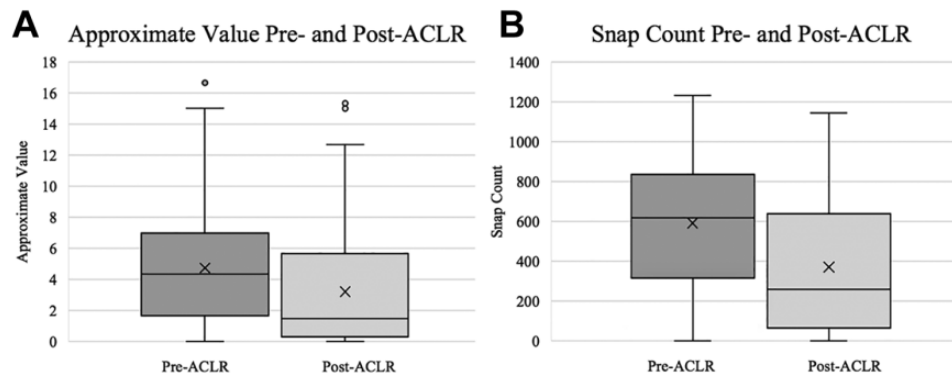


Figure 3. Box plots demonstrating (A) the approximate value and (B) the snap count pre- and post-ACLR. The X on the box plot represents the mean, the center line represents the median, error bars represent SDs, and circles represent outliers. ACLR, anterior cruciate ligament reconstruction; Pre-ACLR, before ACL injury and reconstruction; Post-ACLR, after ACL injury and reconstruction.

play in terms of snap count ($P < .0001$). This remained true for the 59 players still playing in the league 3 years post-injury, with an average decrease of 291.5 ± 591.5 snap counts per season compared with preinjury levels ($P < .0001$).

Approximate Value

In terms of player performance, there was a 41.7% decrease in AV during the first 3 years after returning from an ACLR. The average AV was 4.3 (5.3 SD) preinjury and 1.5 (5.3 SD) postinjury, averaged across 3 seasons pre- and postinjury (Figure 3A). Thus, players were not able to return to their preinjury level of play in terms of AV ($P < .0001$). For the 59 players who were still playing in the league 3 years postinjury, the AV remained 2.0 (6.0 SD) points less than it was during the season before injury ($P < .0001$).

Return to Play and Performance by Position

Return to play by position is outlined in Table 2. Quarterbacks were more likely than other positions to return to play (92.9% vs 53.7%; $P = .0040$) and remain active in the league 3 years postinjury (60.0% vs 26.9%; $P = .0241$). There were no significant differences in pre- and postinjury in games played ($P = .5161$) or games started ($P = .3845$) across the various positions.

Across all positions, there was an average decrease in snap count between 16.8% and 83.5% of the preinjury level. Receivers and quarterbacks returned closest to their preinjury snap count with only 17.7% and 16.8% decreases, respectively. Running backs and defensive linemen had significant decreases in their snap count of 83.5% and 73.2%, respectively (Figure 4A). The percentage change in snap count pre- and postinjury was not statistically different across positions when accounting for multiple comparisons ($P = .1113$). However, when controlling for BMI and draft

TABLE 2
1-Year, 2-Year, and 3-Year Return-to-Play Rates and Return-to-Play Time Overall and by Position^a

Position	No. of Players (%)	RTP After 1 y		Remained Active After Injury, % (n/Total for Position)	
		Rate, % (n/Total for Position) (n = 312)	Time, mo, Median [IQR]	2-y Rate (n = 259) ^b	3-y Rate (n = 207) ^c
CB	36 (11.5)	52.8 (19/36)	12.6 [2.1]	29.0 (9/31)	28.0 (7/25)
DE	22 (7.1)	54.5 (12/22)	15.1 [5.3]	41.2 (7/17)	35.7 (5/14)
DT	21 (6.7)	47.6 (10/21)	10.8 [1.3]	29.4 (5/17)	6.7 (1/15)
FB	3 (1.0)	33.3 (1/3)	15.1 [0]	0 (0/2)	0 (0/2)
FS	5 (1.6)	60.0 (3/5)	9.2 [3.8]	40.0 (2/5)	40.0 (2/5)
K	1 (0.3)	0 (0/1)	N/A	0 (0/1)	0 (0/1)
LB	49 (15.7)	51.0 (25/49)	13.0 [3.8]	38.1 (16/42)	25.0 (8/32)
LS	4 (1.3)	75.0 (3/4)	12.4 [4.9]	33.3 (1/3)	0 (0/1)
OL	42 (13.5)	69.1 (29/42)	11.8 [3.0]	64.9 (24/37)	44.8 (13/29)
P	2 (0.6)	0 (0/2)	25.1 [0]	100 (1/1)	0 (0/0)
QB	14 (4.5)	71.4 (10/14)	12.4 [2.7]	84.6 (11/13)	60.0 (6/10)
RB	25 (8.0)	52.0 (13/25)	12.4 [1.5]	42.1 (8/19)	25.0 (4/16)
S	18 (5.8)	44.4 (8/18)	11.4 [1.3]	27.3 (3/11)	16.7 (1/6)
SS	3 (1.0)	0 (0/3)	49.9 [0]	0 (0/3)	0 (0/3)
TE	20 (6.4)	25.0 (5/20)	15.0 [4.5]	21.4 (3/14)	14.3 (2/14)
WR	47 (15.1)	46.8 (22/47)	12.5 [2.0]	39.5 (17/43)	29.4 (10/34)
Total	312 (100)	51.3 (160/312)	12.4 [2.5]	41.3 (107/259)	28.5 (59/207)

^aCB, cornerback; DE, defensive end; DT, defensive tackle; FB, fullback; FS, free safety; IQR, interquartile range; K, kicker; LB, linebacker; LS, long snapper; N/A, not applicable; OL, offensive lineman; P, punter; QB, quarterback; RB, running back; RTP, return to play; S, safety; SS, strong safety; TE, tight end; WR, wide receiver.

^bTwo-year rate includes players injured between seasons 2013 and 2017.

^cThree-year rate includes players injured between seasons 2013 and 2016.

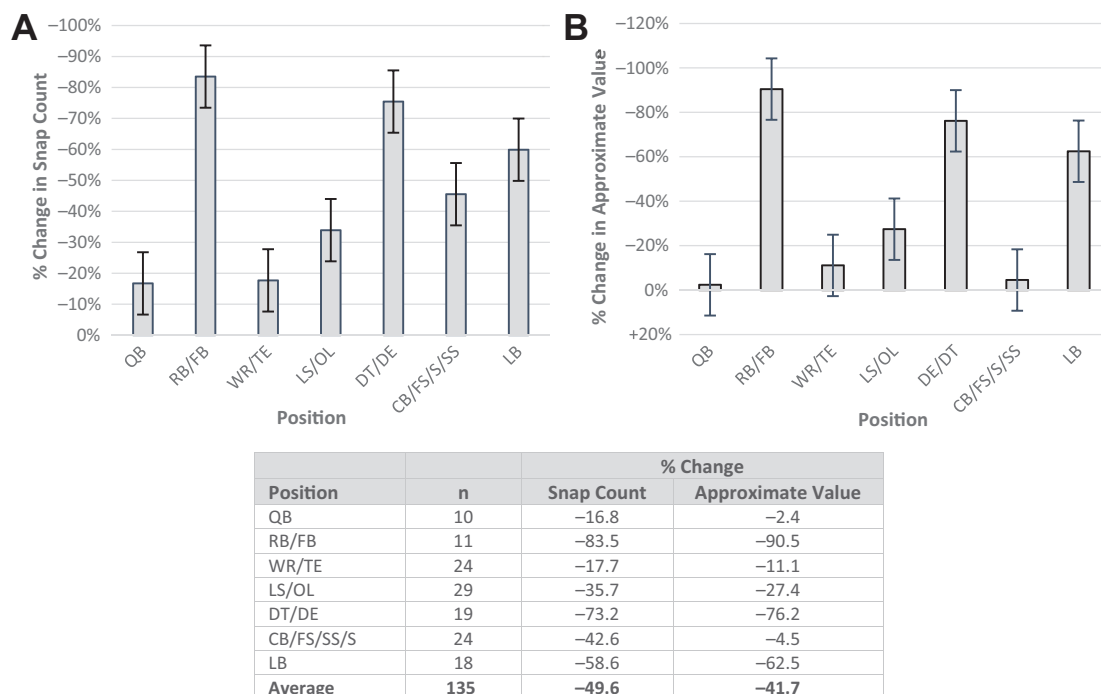


Figure 4. Percentage change by position in (A) snap count and (B) approximate value from preinjury to after ACLR. Negative values indicate a decrease compared with preinjury levels. ACLR, anterior cruciate ligament reconstruction; CB, cornerback; DE, defensive end; DT, defensive tackle; FS, free safety; FB, fullback; LB, linebacker; LS, long snapper; OL, offensive lineman; QB, quarterback; RB, running back; S, safety; SS, strong safety; TE, tight end; WR, wide receiver.

round, both of which have been found to affect ACLR outcomes in previous studies,^{21,32} we observed the quarterback position was a significant predictor for superior return to play in terms of snap count (parameter estimate, 1.2; $P = .0008$).

Return to prior performance by position, as measured via change in AV and snap count, is outlined in Figure 4B. Of the 135 players included in the performance analysis, quarterbacks' return to prior performance was superior to that of other positions, with only a 2.4% decrease in AV comparative to an average decrease of 50.0% across all other positions ($P = .0165$). Running backs had the greatest decrease in performance upon return to play (90.5% decrease) followed by defensive lineman (76.2% decrease) and linebackers (62.5% decrease). There was also a significant decrease in average total tackles and sacks for defensive linemen (28.1 vs 14.9; $P = .0295$) and linebackers (47.8 vs 16.2; $P = .0001$). Pairwise comparisons demonstrated a significant difference in the AV percentage change between quarterbacks and running backs ($P = .0038$). When controlling for BMI and draft round, we observed the quarterback position remained a significant predictor for superior return to preinjury performance in terms of AV (parameter estimate, 2.3; $P = .0002$).

DISCUSSION

Within the first 3 years after ACL injury, all injured NFL players experienced a significant reduction in games played, AV, and overall performance after ACLR. Whereas quarterbacks were able to maintain their performance level after ACLR, running backs, defensive lineman, and linebackers did not return to their preinjury AV at final follow-up. This performance disparity remained true when controlling for both BMI and draft round. The average return-to-play time was 12.4 ± 2.5 months after injury. Players injured in the preseason or offseason were significantly less likely to return to play compared with those injured in the regular season or postseason. To the best of the authors' knowledge, this study represented the largest performance assessment of NFL players after ACLR.

The standard of care for ACL injuries in the athletic population is ACLR,^{17,23} with about 120,000 to 200,000 ACLRs being performed each year in the United States.³⁰ Survey studies of NFL team physicians have found that 80% to 90% preferred single-bundle patellar tendon autograft.^{3,15,26} Despite the utilization of ACLR, numerous studies have shown inferior outcomes and decreased return to activity among professional athletes compared with the general population.^{2,7,13,14,16,19,31} In addition, NFL players have significantly shorter careers postoperatively (2.1 years) compared with players in other professional leagues such as the National Basketball Association (NBA; 4.5 years), National Hockey League (NHL; 4.5 years), and Major League Baseball (MLB; 2.9 years).²⁵ Therefore, although the results of our study may be generalized to other NFL players, they do not necessarily represent trends in amateur athletes or professional athletes in other sports. There is some conflicting evidence on the effects of ACL injuries on

return to play among NFL players. Keller and colleagues²² studied 98 NFL Combine participants who had previously undergone ACLR and found that there was no difference in top end speed, jumping performance, and agility testing. Conversely, Provencher et al²⁹ evaluated 110 NFL Combine participants with a history of ACLR and found that players with a previous ACLR played in fewer games (9.2 vs 11.9 games), started in fewer games (2.7 vs 5.4 games), and had lower performance metrics compared with the control group.

Given our data, the overall question that remains is why NFL players after ACLR played in fewer games, had smaller snap counts, and worse postinjury performance compared with players in previous studies.^{5,7,12,16,32} The reasons for altered postinjury performance are multifactorial. Many of the aforementioned studies obtained data from before 2010 with different ACL protocols implemented. When reviewing the literature on ACLR in NFL players, the distinction must be made whether there were concomitant knee injuries at the time of the ACL injury. In general, up to 65% of individuals with ACL injuries have concomitant meniscal pathology.¹¹ Multiple studies have shown that NFL players with concomitant chondral and meniscal injuries have a worse performance level and shorter career longevity than players with an isolated ACLR have.^{4,29}

We found that the postoperative return to play and performance among NFL players varied by player position. Return-to-play rates found in our study closely mirrored those found in previous studies of specific positions.^{7,8,16,31,33} Although receivers and quarterbacks only lost about a quarter (18% and 17%, respectively) of their total snap count postinjury, running backs and defensive linemen lost between 84% and 73% of their total snap count postinjury, respectively. Even when controlling for BMI²¹ and draft round,³² both of which have been found to affect ACLR outcomes and return to play, we observed the quarterback position remained a significant predictor for superior return to play as quantified via percentage change in snap count.

The definition of return to play often varies among ACLR studies. Although some researchers choose to define return to play as 1 regular season game, others may define it as playing in multiple games or even playing in a full NFL season.^{5,7,12,32} We defined return to play as 1 snap in 1 regular season NFL game. The overall return-to-play rate of all 312 NFL players included in this study was 55.8%. This is much lower than the previously reported return-to-play rate of 82.4% after ACL tear in NFL players by Mai et al²⁴ and return-to-play rates in position-specific studies of 64.3% in offensive linemen,⁷ 74% in defensive linemen,³¹ and 92% in quarterbacks.¹⁶

The main measure of performance level in our study was the AV, a novel algorithm.⁹ Players acted as their own controls, and changes in AV were reported as percentages to control for any improper allocation of AV points for specific functions. To the best of the authors' knowledge, only 1 previous study has utilized this AV algorithm as a proxy for player performance,²⁸ whereas 1 study used similar unvalidated tools such as power ratings to measure performance.⁵ We found there was a 41.7% decrease in AV after ACLR, and players were not able to return to their baseline performance

within 3 years postinjury. The reduction in AV coincides with the decrease in snap count and overall return to play in our cohort. This is similar to 1 previous study by Carey et al⁵ who demonstrated a one-third decrease in performance outcomes of running backs and wide receivers after ACLR compared with matched cohorts. In their study, performance was measured using power ratings and calculated as follows: total yards divided by 10 plus touchdowns divided by 6.⁵ Conversely, we chose to use AV in our study because of its adaptability to all positions and the added consideration of the overall performance of the team. Based on power ratings, the performance of some players, who sacrifice individual statistics for the betterment of the team, would be undervalued.

In our study, the AV postinjury performance varied considerably by player position. Although quarterbacks were minimally affected by ACLR, other positions lost half of their preinjury performance returning from ACLR. Specifically, running backs, linebackers, and defensive linemen were all extremely affected. Given the especially physical nature of these positions, it is possible that the fear of reinjury may have caused these players to become more timid and hesitant postinjury.^{1,20,27} This is consistent with our finding that the average sacks and tackles per defensive linemen and linebacker decreased significantly after ACL injury. Another cause of the decreased performance outcomes may include the increased necessity for cutting and pivoting associated with these positions.³⁰ Even when controlling for BMI²¹ and draft round,³² we observed the quarterback position remained a significant predictor for superior performance postinjury as quantified via percentage change in AV.

There were several limitations to this study. The retrospective injury and performance data from FantasyData¹⁸ and the Pro Football Reference database¹⁰ did not include the incidence of concomitant intra-articular knee injuries, surgical technique, standardized rehabilitation protocol, or clinical outcome scores. Players who did not return to play were excluded from further analyses because postinjury statistics were not available. In this case, we could have used "0" for all postinjury data but believed that doing so would disallow us from examining return to prior performance as a separate variable from return to play. The AV algorithm used in this study represents a novel approach to quantifying player performance and has not previously been validated. In addition, our study did not include an uninjured control group to compare return to play the following season and length of career. Thus, we did not account for the natural career progression of uninjured players and players with ACL injury. Therefore, it is possible that changes in return to play and performance may result from confounding variables not associated with the ACL injury. For example, if a player was late in his career when injured, he may have decreased performance upon returning to the league simply due to timing of the injury. In this case, our study may have overestimated changes in performance. The opposite also stands true for players early in their career.

Another confounding factor that was not directly examined in this study was a player's preinjury status as a starter

or reserve player. In a study of 38 NFL defensive linemen who underwent ACLR between 2006 and 2012, Read et al³¹ found that elite athletes and starters were more likely to return to play than were other players on the team. In addition, there was no preinjury performance data collected on players who did not return to the NFL postinjury, and return-to-play time may be an inexact metric for recovery after ACLR. Return to play was not able to be determined during the offseason, as no games were played. Return to play is also significantly affected by the timing of injury and amount of time between injury and the beginning of the next season. Lastly, because some positions had only a few players return to play, it is possible that some of the differences did not reach statistical significance owing to them being underpowered. However, because our criteria for return to play required playing in an NFL regular season game, it implied some level of return to prior performance and, thus, makes subsequent comparisons less essential to the overall analysis.

CONCLUSION

The study findings indicated that NFL players' performance was severely affected by ACLR, with only 28.5% still active in the league 3 years postinjury. Quarterbacks were most likely to return to play and had superior performance postinjury compared with other positions. Running backs, defensive lineman, and linebackers experienced the largest decrease in their postinjury performance. By recognizing which players are at increased risk for poorer outcomes, improved preoperative counseling to establish expectations or more focused postoperative rehabilitation may better prepare athletes and organizations after ACL injuries.

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