Two Decades of Baskets and Breaks: Consequences of Hand Fractures on Player Performance in NBA from 2003-2023

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INTRODUCTION: Hand fractures are common in professional basketball players and can result in significant time off the court. This study aims to characterize the nature of hand fractures in the National Basketball Association (NBA) and evaluate whether, over the past 20 years, these fractures have led to increased rates of surgical repair, decreased time to return to play (RTP), and reduced the number of games missed. The secondary aim is to compare the short-term and long-term changes in playing time (PT) for players after sustaining a hand fracture.

METHODS: Hand injury data in the NBA from the start of the 2003 regular season to the end of the 2023 regular season was extracted from the publicly available database Pro Sports Transactions. Carpal, metacarpal, and phalanx fractures were identified. The date of injury, date of RTP, number of games missed, and surgical vs. non-surgical management of the injury were independently verified using official player game logs and team season schedules. Fractures not sustained during NBA-related activities were excluded. Season-ending injuries (SEIs) were counted separately and defined as injuries preventing return to play for at least 5 games before the end of the team's regular season. Short-term average PT was calculated using the 5 games prior to the injury and the 5 games after RTP. Long-term average PT was calculated using the seasons prior to and following the injury. Statistical analyses, including t-tests and chi-squared tests, were performed to compare data from the 2003-2012 seasons with the 2013-2022 seasons.

RESULTS: There were 173 reported hand fractures from 2003-2023: 35 carpal fractures, 71 metacarpal fractures, and 67 phalanx fractures. The average recovery time for hand fractures was 44.8 days, resulting in 16.0 missed games. Carpal fractures had the highest RTP and number of games missed (56.4 days and 21.3 games, respectively), the highest proportion of surgical interventions (42.9%), the highest proportion of SEIs (40%). There was no statistically significant difference in the rates of surgical repair of hand fractures before and after 2013 ($p > 0.05$). Similarly, there were no statistically significant differences in RTP ($p = 0.60$) and number of games missed ($p = 0.76$). Surgical repair of hand fractures was associated with increased RTP ($p < 0.01$) and more games missed ($p < 0.01$). Phalanx fractures resulted in the largest short-term and long-term changes in PT, with players playing an average of 1.68 minutes less per game shortly after RTP, and 2.39 minutes less during the season following their injury.

DISCUSSION AND CONCLUSION: Over the past two decades, the rates of hand surgery in the NBA have remained stable, with no significant change in the RTP or number of games missed for hand fractures. Carpal fractures, while less common, required the longest RTP and had the highest risk of SEI. Phalanx fractures resulted in the largest decrease in short-term and long-term PT. Overall, hand fractures requiring surgical repair increased RTP and number of games missed compared to non-surgically managed fractures.

Table 1: Summary of Injury Demographics by Fracture Type, 2003-2023

	Total	Required Surgery	Average RTP (in days)	Games Missed	SEIs
Carpal	35	9 (42.9%)	56.4	21.3	14 (40.0%)
Metacarpal	71	23 (40.4%)	45.6	15.3	14 (19.7%)
Phalanx	67	22 (40.0%)	39.6	14.6	12 (17.9%)
Total	173	54 (40.6%)	44.8	16.0	40 (23.1%)

Table 2: Injury Demographics by Fracture Type, 2003-2012 vs. 2013-2022 seasons

		Total	Required Surgery	Average RTP (in days)	Games Missed	SEIs
Carpal	*2003-2012*	19	4 (21.1%)	54.0	23.3	7 (36.8%)
	2013-2022	16	5 (31.3%)	59.6	18.8	7 (43.8%)
Metacarpal	*2003-2012*	36	11 (30.6%)	46.6	15.2	7 (19.4%)
	2013-2022	35	12 (34.3%)	44.5	15.4	7 (16.7%)
Phalanx	*2003-2012*	44	11 (25%)	42.3	14.6	9 (20.5%)
	2013-2022	23	11 (47.8%)	34.9	14.5	3 (13.0%)
Total	*2003-2012*	99	26 (26.3%)	45.8	16.2	23 (23.2%)
	2013-2022	74	28 (37.8%)	43.5	15.6	17 (23.0%)

Table 3: Short-Term and Long-Term Playing Time Changes by Fracture Type

	Short-Term			*Long-Term*		
	Average Pre-Injury PT (in minutes)	Average Post-Injury PT (in minutes)	Average PT Change (in minutes)	Average Pre-Injury PT (in minutes)	Average Post-Injury PT (in minutes)	Average PT Change (in minutes)
Carpal	24.68	23.83	-0.86	24.09	22.74	-1.35
Metacarpal	25.87	25.05	-0.82	25.00	27.12	2.13
Phalanx	27.56	25.89	-1.68	27.18	24.79	-2.39

Table 4: RTP for Non-Surgically and Surgically Repaired Fractures

	Average RTP for Non-surgically Repaired Fracture (in days)	Average RTP for Surgically Repaired Fracture (in days)
Carpal	48.1	67.4
Metacarpal	41.9	51.0
Phalanx	31.8	51.2
Overall	38.6	53.8