Should NFL Offensive Linemen Use Prophylactic Knee Braces? A Retrospective Analysis of Usage Trends, Player Performance, and Major Knee Injury

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INTRODUCTION:

Offensive linemen in American football are prone to high-energy valgus forces to the knee and associated ligament injuries. Despite inconclusive evidence, many American football offensive lineman wear prophylactic knee braces to prevent ligamentous injury. This study aims to compare injury rates and performance between NFL offensive linemen who wear knee braces and those that do not.

METHODS:

For the 2014 through 2020 NFL seasons, offensive linemen with significant playing time were identified by participation in at least 200 snaps regular season games. Identified players were placed into either the prophylactic knee bracing (PKB) group or no prophylactic knee bracing group (nPKB) using visual inspection of gameday outfits demonstrating the presence or absence of bilateral, dual-hinged metal knee braces, consistent with a functional-type knee brace. Gameday uniforms were assessed via publicly available imaging databases and/or game footage. Pro Football Focus (PFF) season grades were acquired. The number of "major" knee injuries were identified using publicly available data and defined as medial collateral ligament (MCL) injury, anterior cruciate ligament (ACL) injury, patellar dislocation, patellar or quadriceps tendon tears, and/or meniscus pathology requiring games missed; injuries were compared among PKB and nPKB groups. An unpaired *t*-test analysis was used to compare mean performance grades while a two sample Z proportion test was utilized to compare injury rates.

RESULTS:

A total of 1561 players were identified. Yearly prevalence of prophylactic knee brace (PKB) usage declined linearly, starting with 16.3% of players (N=36) using prophylactic knee braces in 2014 to 5.6% (N=13) usage in 2020 (Figure 1). Within the total player cohort, 161 first year players (rookies) were identified. The prevalence of PKB use within the rookie subgroup also demonstrated a comparable yearly decline from 19.4% in 2014 to 4.0% and 8.0% in 2019 and 2020, respectively (Figure 1). There was no significant difference between performance metrics, including PFF overall, pass block, and run block grades, between PKB users (overall PFF grade = 66.2 ± 11.0) and non-bracers (66.3 ± 11.0) for the cumulative study period and most individual seasons (Table 1). As for injury occurrence, the nPKB group demonstrated a significantly greater number of "major" knee injuries (N=69) compared to the PKB group (N=2) during the seven-season study period (Figure 2). Given totals of 1407 players in the nPKB group and 154 players in the PKB group, this equated to injury rates of 0.049 and 0.013 injuries per player for the nPKB and PKB groups, respectively (p=0.04). Specific "major" knee injuries for the nPKB group included 43 isolated MCL injuries, 15 isolated ACL tears, 3 combined ligamentous injuries involving ACL and MCL pathology, 4 MCL injuries with concomitant meniscus tear or patella dislocation, 2 isolated meniscus tears, and 2 isolated patellar ligament or quadricep tendon tears (Figure 3). The injuries of the PKB group included 1 MCL sprain and 1 isolated ACL tear.

DISCUSSION AND CONCLUSION:

This is the first study to examine current prophylactic knee bracing trends within NFL offensive linemen. The prevalence decreased from the 2014 to 2020 seasons, which may be explained in part by the concomitant decrease in bracing by rookie players. Though limitations exist, the results show that knee brace prophylaxis by NFL offensive linemen decreases risk of "major" knee injury without a significant difference in performance.

Table 1. Performance in NFL OL Wearing Prophylactic Braces Versus Non-Wearers

	PFF Overall Grade ± SD		
Year	Brace	No Brace	*P*
2014 (n=220)	66.1 ± 9.8 (n=36)	69.4 ± 10.5 (n=184)	0.07
2015 (n=221)	63.1 ± 9.9 (n=27)	67.9 ± 10.6 (n=194)	0.03
2016 (n=220)	69.1 ± 11.7 (n=25)	69.7 ± 10.5 (n=195)	0.80
2017 (n=230)	66.4 ± 11.5 (n=22)	64.5 ± 10.9 (n=208)	0.46
2018 (n=218)	68.6 ± 9.9 (n=16)	64.8 ± 10.7 (n=202)	0.16
2019 (n=221)	61.6 ± 12.3 (n=15)	63.9 ± 10.8 (n=206)	0.49
2020 (n=231)	69.1 ± 12.2 (n=13)	64.9 ± 11.6 (n=218)	0.24
Cumulative (n=1,561)	66.2 ± 11.0 (n=154)	66.3 ± 11.0 (n=1,407)	0.85

OL = Offensive lineman, PFF = Pro Football Focus

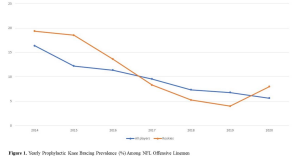

Figure 1. Yearly Prophylactic Knee Bracing Prevalence (%) Among NFL Offensive Linemen

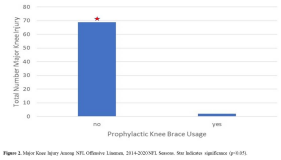

Figure 2. Major Knee Injury Among NFL Offensive Linemen, 2014-2020 NFL Seasons. Star Indicates significance (p<0.05).

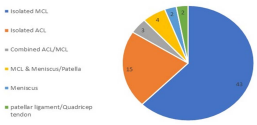

Figure 3. Types of Knee Injury Among Non-Bracers