

Synthetic Turf Injuries

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1993

"At the precise moment that Davis planted his feet to jump for the ball, his turf shoes dug into the AstroTurf and held solid, as though they were nailed to the carpet. Davis felt something snap simultaneously in both knees, and he flopped to the artificial turf as if he'd been shot. He began screaming in pain. He tried to move his legs but couldn't. When the trainers and team doctor reached him and straightened both legs, Davis looked down to see why it felt as if someone were stabbing him in both knees with knives.

"I saw the doctor trying to find my kneecaps," Davis said last week from his hospital bed in Chicago. "They found my kneecaps up in my thighs."

"On the same afternoon that Davis was injured, Indianapolis Colt defensive tackle Steve Emtman turned sharply to pursue Dallas's Emmitt Smith and crashed to the artificial turf of the Hoosier Dome. His anterior cruciate ligament, medial collateral ligament and patellar tendon all ripped violently."

"One week after Davis and Emtman went down, New York Giant wideout Mike Sherrard caught a pass and after a long run pulled up short on the artificial turf at Giants Stadium. He had partially dislocated his left hip and suffered a fracture of the hip socket. He, too, is gone for the season, and on Oct. 20 he was back in the hospital with a blood clot in his hip."

<https://vault.si.com/vault/1993/11/01/a-fight-over-turf-three-recent-injuries-on-astroturf-have-underscored-nfl-players-calls-for-a-return-to-grass>

1999

Looking Back: Synthetic Turf and Football Injuries

"The controversy became public near the beginning of the 1971 season when The New York Times reported the claim of Dr. James Garrick, an orthopedic surgeon and physician for the University of Washington football team, that increased friction made these fields more dangerous than grass. Garrick had conducted a one-year study of 139 injuries in 228 high school games (80 on AstroTurf and 148 on grass) showing, per game, 0.76 injuries on the synthetic surface vs. 0.52 injuries on grass. The artificial turf had nearly a 50% higher injury rate for the same weather during the same period. Garrick thought that knee sprains, especially torn ligaments and cartilage, were more likely when players' feet "hung up on the artificial turf," and that players ran faster and hit people harder on a surface that offered more traction."

<https://scholars.unh.edu/cgi/viewcontent.cgi?article=1381&context=risk>

2011

Research- Semih Akkaya, M.D.,¹ Mustafa Serinken, M.D.,² Nuray Akkaya, M.D.,³ İbrahim Türküler, M.D.,² Emrah Uyanık, M.D.²

Turkey

Football injuries on synthetic turf fields

"Besides the soft tissue trauma including superficial injuries and contusions, ankle anterior talofibular ligament (ATFL) injuries (n=217, 22%) were determined to occur most frequently in football matches on synthetic fields. Knee ligament and meniscus injuries (n=67 6.8%), foot fractures (tibia and/or fibula lower end) (n=51 5.2%) were among the other most frequently encountered injuries (Table I). All ligament injuries and fractures in the ankle comprised up to 30.5% of all cases (n=300). The total (n=67) of ligament (n=48) and meniscus (n=19) injuries in the knee came up to 6.8% of all cases. The most frequent ligament injury seen in the knee involved the anterior cruciate ligament (n=37, 77.1%; Table I). One case diagnosed to have a calcaneus fracture was interestingly determined to have a stress fracture.

While the most frequent injury site was the lower extremity in our study group, 281 cases (28.6%) had upper extremity injury. Of these, wrist sprain/strain injuries were the second most frequent following soft tissue injuries (n=24, 2.4%; Table I). However, when upper extremity fractures were reviewed as one group, it was detected that the most frequent upper extremity injuries following soft tissue injuries were fractures."

<https://www.jointdrs.org/full-text-pdf/351>

2012

College football players suffer knee injuries about 40 percent more often when playing on an artificial surface compared to when they're playing on grass, according to a new study.

<https://www.foxnews.com/health/football-knee-injuries-likelier-on-artificial-turf-than-grass>

2013

"...a new study finds that National Football League players suffered more knee and ankle injuries when they played on FieldTurf over the past decade...the new study found anterior cruciate ligament (ACL) injuries, in particular, happened at a higher rate on the artificial surfaces...They found players suffered 1,528 knee sprains and 1,503 ankle sprains during those games, and both types of injuries were 22 percent more common in games played on FieldTurf."

"In particular, ACL sprains - often considered season-ending injuries - were 67 percent more common on FieldTurf than on natural grass."

<https://www.reuters.com/article/us-nfl-leg-injuries-idUSBRE88D1KT20120914>

Artificial Turf Injuries - sports medicine (football / soccer / lacrosse synthetic fields) ACL women
<https://www.youtube.com/watch?v=a0qZPHvCPJk>

2015

MRSA infection

"...the cut a visiting football player sustained in November 2013 on the field at Newport High School has led to a lawsuit against two school districts.

The lawsuit filed in Campbell County Circuit Court claims the cut Brycen McWilliams sustained became infected with a virulent strain of the staph bacteria from the artificial turf on the field.

McWilliams, a junior running back from Somerset High School in south central Kentucky, spent weeks in the hospital and missed part of the spring semester as the infection festered, his attorney Tad Thomas said. The infection was Methicillin-resistant Staphylococcus aureus (MRSA), which doesn't respond to antibiotics. He still suffers residual effects, Thomas said.

"It almost killed him," Thomas said."

McWilliams sued Newport Independent Schools, Newport Central Catholic and the Motz Group, a Cincinnati-firm the school had contracted the previous summer to clean the field after a flash flood.

<https://www.cincinnati.com/story/news/local/northern-ky/2015/05/19/football-field-give-player-infection/27608513/>

Columbus, OH

Artificial Turf can lead to Higher Risk of Injuries. Nathan Baca investigative report.

<https://www.youtube.com/watch?v=INWXPwt9g>

The players, whom safety is at risk, do not feel comfortable with this surface. They are outspoken about their disapproval, and the risks, whether real, or perceived, have caused so much concern that the use of the artificial turf at the highest stage of the sport should be held off until extensive research is done. At this point it is likely too late to change the surface, but it is utterly important that player safety is of the highest importance, especially when FIFA has made that claim. Rather than the studies displaying inconclusive evidence over the safety of artificial turf, the studies need to prove with high statistical significance that artificial turf is truly a safe alternative. Some of the studies that were examined here were commissioned by FIFA, so there may be some bias that comes into play. Soccer is a physical game, with ACL tears, turf abrasions and concussions occurring regardless of surface. FIFA just needs to make sure that the artificial surfaces do not increase these injuries.

<https://sites.duke.edu/wcwp/tournament-guides/world-cup-2015-guide/all-about-that-turf/injuries/>

2017

Wales

Turf burns, rugby players

<https://youtu.be/QsbAE08pvM>

2018

Research- Christina D. Mack, PhD, MSPH*, Elliott B. Hershman, MD, Robert B. Anderson, MD
Higher Rates of Lower Extremity Injury on Synthetic Turf Compared With Natural Turf Among National Football League Athletes: Epidemiologic Confirmation of a Biomechanical Hypothesis
"Play on synthetic turf resulted in a 16% increase in lower extremity injuries per play than that on natural turf (IRR, 1.16; 95% CI, 1.10-1.23). This association between synthetic turf and injury remained when injuries were restricted to those that resulted in ≥8 days missed, as well as when categorizations were narrowed to focus on distal injuries anatomically closer to the playing

surface (knee, ankle/foot). The higher rate of injury on synthetic turf was notably stronger when injuries were restricted to noncontact/surface contact injuries (IRRs, 1.20-2.03; all statistically significant).

https://journals.sagepub.com/doi/10.1177/0363546518808499?url_ver=Z39.88-2003&rfr_id=ori:id:crossref.org&rfr_dat=cr_pub%20%20pubmed

Ireland-Rugby

'Staggering' amount of injuries on 4G pitches compared to grass

Recent Premiership study bears out the belief that plastic pitches are more dangerous

"...the most recent Premiership study bears out the belief that plastic pitches are more dangerous and cause more injuries than grass."

"It said that for that season 608 injuries were recorded on grass, 170 on artificial surfaces. With just three pitches the exposure to plastic was less, but returned injury rates of 129.1 per 1,000 hours compared to the grass rate of 89.6 per 1,000 hours, the total hours representing 25 matches. The average severity for match injuries on grass was 32 days, compared with 37 days for artificial turf.

As stated in the official report: "The overall burden of injuries on natural grass was 2,481 per 1,000 days compared with 4,740 per 1,000 days on artificial turf, a staggering difference."

<https://www.irishtimes.com/sport/rugby/staggering-amount-of-injuries-on-4g-pitches-compared-to-grass-1.3641369>

2019

Research- Galvin J. Loughran, BS*, Christian T. Vulpis, BS, Jordan P. Murphy, MS, Incidence of Knee Injuries on Artificial Turf Versus Natural Grass in National Collegiate Athletic Association American Football: 2004-2005 Through 2013-2014 Seasons

"A total of 3,009,205 athlete exposures and 2460 knee injuries were reported from 2004 to 2014: 1389 MCL, 522 ACL, 269 lateral meniscal, 164 medial meniscal, and 116 PCL. Athletes experienced all knee injuries at a significantly higher rate when participating in competitions as compared with practices. Athletes participating in competitions on artificial turf experienced PCL injuries at 2.94 times the rate as those playing on grass (RR = 2.94; 95% CI, 1.61-5.68). When stratified by competition level, Division I athletes participating in competitions on artificial turf experienced PCL injuries at 2.99 times the rate as those playing on grass (RR = 2.99; 95% CI, 1.39-6.99), and athletes in lower NCAA divisions (II and III) experienced ACL injuries at 1.63 times the rate (RR = 1.63; 95% CI, 1.10-2.45) and PCL injuries at 3.13 times the rate (RR = 3.13; 95% CI, 1.14-10.69) on artificial turf as compared with grass."

<https://journals.sagepub.com/doi/10.1177/0363546519833925>

Distillation of above study done by Turf Grass International:

- 1,280 NFL games (213,935 distinct plays) were played during the 2012-16 Seasons
- 4,801 lower body injuries occurred affecting 2,032 NFL Players
- Synthetic turf resulted in a 27% increase in non-contact lower body injuries
- There was a 56% higher knee/ankle/foot injury rate on synthetic turf resulting in any time lost from injury and a 67% higher injury rate resulting in > 8 days time lost from injury.

- There was a 68% higher ankle injury rate on synthetic turf resulting in any time lost from injury and a 103% increase in injury rates on synthetic turf resulting in > 8 days time lost from injury.
- Applying the incidence rate ratios of injuries in this study, if every NFL game were played on natural grass during these 5 seasons, there would have been 319 fewer lower body injuries.

This is widely recognized among professional athletes and is documented in NFL player surveys:

- 82.4% of NFL players think that artificial turf contributes more to injury
- 89.1% of NFL players think that artificial turf causes more soreness and fatigue
- 89.7% of NFL players think that artificial turf is more likely to shorten their career

https://media.cbs17.com/nxs-wncntv-media-us-east-1/document_dev/2019/04/09/Synthetic%20Field%20Safety%20Concerns_1554833449098_81418165_ver1.0.pdf

NCAA: ARTIFICIAL TURF CAN INCREASE KNEE INJURY RISK

<https://ryortho.com/breaking/ncaa-artificial-turf-can-increase-knee-injury-risk/>

"It feels like whenever you fall down or like put your knee on the ground like during a play like you're gonna get scraped up, you're gonna start bleeding so you try to avoid that as much as possible but when you're on the grass like when you fall down the scrapes that you get aren't as bad," said J.P. King, a football player at Richard Montgomery."

Ben Stricker, a soccer player at Walt Whitman, weighed in.

"There's like dust that rises from the grass when you're like running on it and also it's just very slippery. You can fall. It's very easy to slip and fall," said Stricker. "I'm kind of conscious about maybe like I have to hold back just a little bit so I don't fall because I really don't want to fall and hurt myself."

<https://www.fox5dc.com/news/synthetic-turf-raising-concerns-among-parents-in-montgomery-county-after-reported-injuries>

Cleveland, OH

Using UH Sports Medicine Institute's school-based electronic medical record (EMR) system, physician-researchers from University Hospitals, Case Western Reserve University and UH Sports Medicine Institute analyzed data collected by 26 high school athletic trainers during the 2017-2018 athletic seasons.

They found athletes were 58 percent more likely to sustain an injury during athletic activity on artificial turf. Injury rates were significantly higher for football, girls and boys soccer, and rugby athletes. Lower extremity, upper extremity, and torso injuries were also found to occur with a higher incidence on artificial turf.

Previous studies, although less comprehensive, back the UH Sports Medicine Institute team's findings. A systematic review published last year evaluated the risk of ACL injuries in football and soccer athletes playing on artificial and natural grass surfaces. The authors found an increased rate of ACL injury in football athletes playing on artificial turf compared with natural grass, but no increased risk in soccer.

<https://www.uhhospitals.org/for-clinicians/articles-and-news/articles/2019/08/artificial-turf-versus-natural-grass>

United Kingdom- Soccer

"Earlier this season, Manchester United voiced concerns about having to play a Champions League match on Young Boys' plastic pitch at the Stade de Suisse, while the Scottish Professional Football League (SPFL) has been faced with a lobby from the players' union (PFA Scotland) calling for such parks to be banned in the top flight.

Speaking in February, Rangers manager Steven Gerrard, who saw midfielder Jamie Murphy seriously injured on Kilmarnock's Rugby Park surface earlier this season, told the media: "I agree with the majority of the players in terms of trying to get them out of the game at the elite level.

"I've given my opinion on this before. I don't like plastic pitches, I didn't like playing on them. I think they're dangerous. I respect the teams that have put them in place for financial reasons – but for me having been a player and now being a coach, I believe the game would be in a better place if there were no plastic pitches.

"The people who don't agree with taking them out of the game need to think about the players, their health and safety. My opinion is that players are a lot safer on grass."

<https://www.goal.com/en-gb/news/do-artificial-football-pitches-cause-more-injuries-than/1prtyjo6rv5jh13jpf7fvb0jfz>

2020

Casey Reynolds, Ph.D.

A total of 4,801 lower body injuries occurred from 2012 to 2016 affecting 2,032 players. Play on synthetic turf had a 16 percent higher rate of lower body injuries than on natural grass. This included contact and noncontact that resulted in any time loss. For noncontact injuries, synthetic turf injury rates were 27 percent higher than injury rates on natural grass. However, when examining noncontact knee, ankle and foot injuries, play on synthetic turf had a 56 percent higher rate of injuries resulting in any time loss and a 67 percent higher rate of injuries resulting in more than eight days of time loss. The greatest difference in noncontact injury rates between synthetic and natural turf were to the ankle: synthetic turf resulted in a 68-percent-higher rate of injuries resulting in any time loss and a 103-percent-higher rate of injuries resulting in more than eight days of time loss.

In the NCAA research, there were a total of 3,009,205 athlete exposures and 2,460 knee ligament and meniscal tears reported by the NCAA Injury Surveillance System throughout the 2004-2005 to 2013-2014 NCAA playing seasons. Injury rates for all knee ligament and meniscal tears examined during this period were higher during competitions than in practices. Analysis of this data indicates a significantly increased rate of posterior cruciate ligament (PCL) and anterior

cruciate ligament (ACL) on artificial turf compared to natural grass during competitive events, although there were no differences in the rate of medial collateral ligament (MCL), medial meniscal, or lateral meniscal injuries.

Specifically, athletes in Division I competitions experienced PCL tears at 2.99 times the rate on artificial turf (199-percent increase) as they did on natural grass. Division II and III athletes experience ACL tears at 1.63 times the rate of those playing on natural grass and 3.13 times the number of PCL tears as those playing on natural grass. This equates to a 63-percent increase in ACL tears and a 213-percent increase in PCL tears to Division II and III football players on artificial turf. Furthermore, the rate of PCL tears during competition in all divisions on artificial turf was 2.94 times higher (194-percent increase) than on natural grass.

<https://sportsfieldmanagementonline.com/2020/01/03/natural-grass-and-synthetic-turf-injury-research/11008/>

A 2019 study by Cleveland-based University Hospitals featured data from 26 high school trainers during the 2017-2018 athletic season who reported 953 injuries: 368 were on natural grass, while 585 were on synthetic turf.

The study also found that upper and lower extremities as well as torso injuries occurred more on synthetic turf than natural grass. The sports most vulnerable to the injuries? Football, men's lacrosse, rugby and girls and boys soccer led the way.

**Misquotes in article referencing costs for maintaining artificial v natural grass fields

<https://cronkitenews.azpbs.org/2020/07/03/athletes-injuries-artificial-turf/>

The big turnoff for the use of artificial turf is an alarming increase rate in non-contact related injuries to lower extremities. Data analysis done by the NFLPA of injury reports from all NFL games from 2011-2019 found that there were 32% more non-contact knee injuries on turf and 69% more non-contact ankle injuries.

In the Steelers week 1 matchup with the Giants, the Steelers right tackle Zach Banner suffered a season ending ACL injury and also saw James Conner get his foot stuck in the turf causing an ankle injury that ended his day after just 15 snaps. In a post game interview with Minkah Fitzpatrick the Steelers safety said, "It's unfortunate to see all those injuries at MetLife. I'm very fortunate mine was just an ankle roll. My belief is I was being protected or something. It's unfortunate those guys had to have their seasons taken away from them because of the turf." This spurred follow-on questions about how the players prepare differently for games on turf to which Fitzpatrick explained "I am not a very big fan of artificial turf. There is no give to it at all. When we play on regular grass, the grass might shift or come up a little bit. If you put a whole lot of weight into the ground on artificial turf there is no give whatsoever. The only thing that's going to give is your body."

The 49ers' Arik Armstead also voiced his displeasure by tweeting "fix this trash MetLife turf."

<https://profootballmania.com/2020/10/09/should-the-nfl-move-on-from-artificial-turf/>

"Based on NFL injury data collected from 2012 to 2018, not only was the contact injury rate for lower extremities higher during practices and games held on artificial turf, NFL players consistently experienced a much higher rate of non-contact lower extremity injuries on turf compared to natural surfaces. Specifically, players have a 28% higher rate of non-contact lower extremity injuries when playing on artificial turf. Of those non-contact injuries, players have a 32% higher rate of non-contact knee injuries on turf and a staggering 69% higher rate of non-contact foot/ankle injuries on turf compared to grass.

Tretter also spoke with media via video conference Wednesday.

"The data stands out," Tretter said, according to ESPN. "Those numbers are staggering, the difference in injury rate between turf and natural grass. It's possible to get grass in every location, and it's about pushing for that. We all should be working toward the safest style of play. We know the dangers of playing on turf. That's not good for anybody. It's not good for players. It's not good for the GMs and the head coaches. It's not good for the owners. It's not good for the fans. Increased injuries isn't good for anybody."

https://www.sportingnews.com/us/nfl/news/metlife-stadium-turf-nfl-injured-jets-giants/1ifxmbcsuc_kp21lhvlnsjcz5y2

"When you combine a rushed preseason with a surface that, generally speaking, has been proven to cause an increase in injuries, and which players are uncomfortable with prior to the game, you have the perfect storm which the 49ers endured on Sunday."

"According to the New York Daily News, the material used at MetLife Stadium was changed from UBU Speed Series S5-M turf to FieldTurf Classic HD, installed in early June. It is the same exact turf used by the Detroit Lions at Ford Field, per FieldTurf's website."

"In addition to the Jets, Giants and Lions, three other NFL teams utilize FieldTurf artificial turf, but different compounds. The Atlanta Falcons and New England Patriots use FieldTurf CORE and the Seattle Seahawks use FieldTurf Revolution 360. The Green Bay Packers, Philadelphia Eagles, Tampa Bay Buccaneers, Washington Football Team and Carolina Panthers all use FieldTurf practice fields"

<https://www.knbr.com/2020/09/23/dont-blame-it-all-on-the-turf-for-injuries-blame-the-nfls-rushed-preseason-too/>

"The NFL Players Association president cited the league's official injury reports from 2012-2018 to state his case that natural grass fields provide a much lower risk for injuries, compared to artificial surfaces, during practices and games.

The analysis shows that players have a 28% overall higher rate of non-contact lower extremity injuries on turf. Non-contact knee injuries occur at a 32% higher clip and non-contact foot or ankle injuries are 69% percent more likely on artificial fields."

<https://apnews.com/article/nfl-football-archive-9b34d4402f2f82ae60708605f65aa560>

"I don't exactly why it happened (so many key players injured in same game), but as far as the feeling that was on the sideline — that's as many knee injuries and ankle stuff and people

getting caught on the turf that I ever have been a part of,” 49ers head coach Kyle Shanahan said after the game. “From what I saw the other team did too. I know our players talked about it the entire game — just how sticky the turf was — I think that was the first time people played on it.”

“49ers defensive star Arik Armstead said he noticed something was different with turf in pregame warmups.”

“You felt the turf was pretty thick and guys seemed to be stuck in the ground more regularly,” he said.”

<https://sanfrancisco.cbslocal.com/2020/09/21/injury-ravaged-san-francisco-49ers-question-safety-of-metlife-stadium-artificial-turf/>

Why so many NFL injuries this season? One sports-medicine doctor thinks he knows why
so many NFL injuries this season? One sports-medicine doctor thinks he knows why
“There have been several studies on the incidence of Achilles injuries over the years, and it has gone from a fairly rare occurrence to a surprisingly more common one.

One study showed that between the 1997 and 2002 NFL seasons, there were a mere 31 Achilles tendon ruptures — an average of 5.2 per year — with 35 percent of those occurring during the preseason. Another study looked at the 2009 through 2016 seasons and documented 101 cases, or roughly 12.6 per year, with a whopping 64 percent of those injuries happening during training camp or the preseason.

In 2020 alone, we’ve officially had 15 NFL players go down with Achilles-related injuries.”
<https://sports.yahoo.com/why-so-many-nfl-injuries-this-season-one-sportsmedicine-doctor-thinks-he-knows-why-141643231.html>

United Kingdom- Soccer

Do artificial football pitches cause more injuries than grass?

Earlier this season, Manchester United voiced concerns about having to play a Champions League match on Young Boys’ plastic pitch at the Stade de Suisse, while the Scottish Professional Football League (SPFL) has been faced with a lobby from the players’ union (PFA Scotland) calling for such parks to be banned in the top flight.

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“The people who don’t agree with taking them out of the game need to think about the players, their health and safety. My opinion is that players are a lot safer on grass.”

<https://www.goal.com/en-gb/news/do-artificial-football-pitches-cause-more-injuries-than/1prtyjo6rv5jh13jpf7fvb0jfz>

NFL WORST Injuries 2020 Season

<https://www.youtube.com/watch?v=hIJ0E31MpE4>

Cowboys react after Dak Prescott suffers gruesome injury

<https://www.youtube.com/watch?v=9S7rKFrNGxM>

Settlement means U.S. women's national soccer team will no longer have to play matches on artificial turf

"The USWNT sued U.S. Soccer for discrimination in March 2019, alleging the federation had violated both the Equal Pay Act and Title VII of the Civil Rights Act. While the equal pay claim has gotten the most attention, the U.S. women also claimed they were subjected to unequal working conditions.

They were required to play domestic games on fields with artificial turf, which is tougher on a player's body than natural grass, when the U.S. men were not."

https://www.usatoday.com/story/sports/soccer/2020/12/01/uswnt-turns-focus-back-equal-pay-after-resolving-workplace-claims/3788222001/?fbclid=IwAR1Pusn_0wQN0ot_DPILmcpkZWviHvx-WzL2NPLZKsCocbyPFmo-CsvgEOw

Concussions- soccer

"Up to 22% of soccer injuries are concussions that can result from players using their heads to direct the ball during a game."

"If the ball has too high of a pressure, **gets too waterlogged**, or both, it actually turns into a weapon. Heading that ball is like heading a brick," said Eric Nauman, a Purdue professor of mechanical engineering and basic medical sciences with a courtesy appointment in biomedical engineering."

"Soccer governing bodies already regulate ball pressure, size, mass and water absorption **at the start of a game**, but Nauman's lab is the first to conduct a study evaluating the effects of each of these ball parameters on producing an impact associated with potential neurophysiological changes."

<https://www.purdue.edu/newsroom/releases/2020/Q4/soccer-players-head-injury-risk-could-be-reduced-with-simple-adjustments-to-the-ball,-study-finds.html>

Research

Concussions, soccer

Factors affecting peak impact force during soccer headers and implications for the mitigation of head injuries

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0240162&_ga=2.174140196.766467437.1612227736-1826012749.1612227736

Soccer Ball Air Pressure Can Reduce Head Injuries

https://youtu.be/3b_19wW7K6A

2021

Netherlands

"The 31-year-old striker suffered an apparently serious ankle injury earlier this season on the artificial grass...Just like his trainer, the footballer was not satisfied with the Volendam artificial grass: "You can sand the doors with it."

<https://netherlandsnewslive.com/french-mustard-has-to-help-seuntjens-again-after-injury-on-terrible-artificial-turf-dutch-football-2/70981/>

Green knows all too well about having his availability taken from him by injury. The soft-spoken Green put extra emphasis on "grass" on Thursday, which called back to his recent injury issues in Cincinnati, where he'd suffered a serious ankle injury in training camp on the artificial turf field at Welcome Stadium during a special practice in nearby Dayton, Ohio. That injury cost him all of 2019, and came after he'd been limited to nine games in 2018 by a toe injury suffered on the turf surface at the Bengals' home of Paul Brown Stadium.

<https://www.nfl.com/news/new-cardinals-wr-a-j-green-refreshed-by-move-to-arizona-ready-to-have-fun-again>