Penn State’s Center for Sports Surface Research

THE SPORTSTURF SCOOP

Sports Turf Injury Research
A Fight Over Turf

Three recent injuries on Astroturf have underscored NFL players’ calls for a return to grass | by Peter Ougs

Chicago Bears wide receiver Warren McVay had his helmet fly over his shoulder into the face mask of Philadelphia’s John Grimsley on Oct. 11, and McVay, in full position, had Eighteenth-Nation Mark McMillen’s right ankle right under his foot, and the pass was a bit underthrown. Davis flipped to would have been very rare and outjumped McMillen for the ball.

All the precise moment that Davis planned his left to jump for the ball, his turf shies dug into the Astroturf and melted under, so though they were buried in the carpet, Davis felt something sharp is inserted on his back. He leaped to the artificial turf, as if for their shot, the ball scrambling in time. He tried to reach his legs, but couldn’t. When the quarterback threw in short yardage, and it was a low throw, Davis looked down to see if he didn’t and someone was stepping forward to get his knees, Davis looked up. He said, “I have the cleats.” He said, “I have the cleats.”

The player’s vision is the result of the design elements that make up the Astroturf. The turf is composed of fibers that interlock with each other, and this helps to improve traction and reduce the risk of injuries. However, some players feel that the turf is not safe for play.

Astroturf

The artificial turf has a non-slip surface, which reduces the risk of injury. It also has a higher safety factor than natural grass, which helps to reduce the risk of injuries. However, some players feel that the turf is not safe for play.

Prescription Athletic Turf

The prescription athletic turf has a non-slip surface, which reduces the risk of injury. It also has a higher safety factor than natural grass, which helps to reduce the risk of injuries. However, some players feel that the turf is not safe for play.

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Injury Research

Is there a difference in injury risk when playing on synthetic turf vs. natural grass?
How is Injury Risk Measured

- Mechanical Tests
  - Traction testers
  - Gmax tests
- Biomechanical Tests
- Epidemiological Tests
Epidemiological Studies

• Very few of these studies – Why?
  – Shoe type?
  – Contact vs. non-contact?
  – Weather conditions
  – Who records the data?
  – Aggravate previous injury?
  – Statistics – need large sample size
Comparisons with Natural Grass
Injury Studies

- 12 scientific injury studies published – infilled synthetic turf vs. natural grass (peer-reviewed)
  - Soccer: 9 studies
    - Europe
    - Wide demographic
  - Football: 2 studies
    - High school
    - College
  - 1 rugby study

- So, are injuries common on synthetic turf?
Research Results

- No study found a higher overall injury rate on synthetic turf
  - 1 football study – lower overall injury rate on synthetic turf
High School Football Study

**Synthetic – higher incidence of...**
- Zero-day time loss injuries
- Non-contact injuries
- Surface/epidermal injuries
- Injuries during high temperatures

**Grass – higher incidence of...**
- 22+ day injuries
- Head and neural trauma
- Ligament injuries
- *most injuries on dry fields*
2010 NFL Injury and Safety Panel

- Higher number of knee and ankle injuries on synthetic turf
- Study has not been published in scientific journal
  (as of summer 2011)
Published scientific papers:
No difference in overall injury rate
Surface Injury Research

• Future studies –
  – Injury patterns
  – Injury prevention (shoe selection, etc.)

• Complete listing of studies on our website: http://ssrc.psu.edu
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