The following is a review of a 2013 study published out of the University of Calgary. It compared footwear traction and lower extremity non-contact injuries on Artificial Turf vs. Natural Grass. The artificial turf surface used in the study was a FieldTurf “elite” system. The findings confirm the safety of FieldTurf and highlights the need for athletes to wear proper footwear.

Purpose: Football is the most popular high school sport, however, it has the highest rate of injury. Speculation has been prevalent that foot-fixation due to high footwear traction contributes to injury risk. Therefore, the purpose of the study was to determine if a relationship exists between athletes specific footwear traction (measured with their own shoes on the field of play) and lower extremity non-contact injury in high school football.

Method: Over three years, 555 high school football athletes had their footwear traction measured on the actual field of play at the start of the season and any injury the athletes suffered during a game was recorded. Lower extremity non-contact injury rates, grouped based on the athlete’s specific footwear traction (both translational and rotational) were compared.

Conclusion: A relationship exists between footwear traction and non-contact lower extremity injury, with increases in rotational traction leading to a greater injury rate and increases in translational traction leading to a decrease in injury. It is recommended that athletes consider selecting footwear with the lowest rotational traction values for which no detriment in performance results.

### Key Findings

- No significant difference in the number of injuries was seen between the two surfaces (p=0.066). The total injury rate of both surfaces was 13.7 (95% CI=10.2-17.2) injuries per 1000 game exposures. When broken down by surface, the injury rate on artificial turf (FieldTurf) was 14.8 (95% CI=10.0-19.6) injuries per 1000 game exposures compared to 12.2 (95% CI=7.1-17.3) injuries per 1000 game exposures on natural grass.

- There was no significant difference in the number of injuries or the injury rate between the artificial turf (FieldTurf) and natural grass surfaces.

- The results of the current study provide support for the notion that there are no differences in injury rates between current third generation artificial turf surfaces and natural grass on non-contact, lower extremity injuries in high school football.

### Number of injuries, game exposure and injury rate on the artificial turf and natural grass surfaces.

<table>
<thead>
<tr>
<th>Surface</th>
<th>Number of Injuries</th>
<th>Number of Game Exposures</th>
<th>Injuries per 1000 Game Exposures (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial Turf</td>
<td>36</td>
<td>2436</td>
<td>14.8 (10.0-19.6)</td>
</tr>
<tr>
<td>Natural Grass</td>
<td>22</td>
<td>1804</td>
<td>12.2 (7.1-17.3)</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>4240</td>
<td>13.7 (10.2-17.2)</td>
</tr>
</tbody>
</table>

CI - Confidence Interval