

THE SCIENCE BEHIND THE SURFACE

shaw[®]
SPORTS TURF

WHAT IS G-MAX?

When a player in any sport falls onto the playing surface, the impact of the fall is absorbed by the player or by the playing surface. As the surface gets harder, more of the impact is then absorbed by the player's body.

g-Max, or impact testing, is a measurement of the shock-attenuation of the playing surface. The test results for g-Max are exhibited as a ratio of the acceleration/deceleration that happens during impact to the normal acceleration rate which comes as a result of gravity.

Measuring g-Max can help interpret the relative safety of a playing surface against a standard. The ASTM standard for g-Max values on a playing surface is 200. Anything over that level is considered to be unsafe. The Synthetic Turf Council (STC) has established a g-Max level of below 165 for the life of the field as its standard measure.

A g-Max measurement that is too low can signify a field that creates player fatigue. Regardless of whether the ASTM or STC standard is used, many architects involved in field design have their own preferences for what g-Max levels should be. When working with an architect, it is important to know their acceptable threshold.

One important factor is that g-Max values change over time. Surfaces become harder. Annual testing should be done to allow owners to know where the playing surface is and provide a heads-up for future issues.

Testing should be done by an independent party. Having the manufacturer or installer do the testing comes with its own set of problems, chief among them, an inherent conflict of interest. All equipment should conform to ASTM Standard F355 – Procedure A. The procedures and test location should conform to ASTM Specification F1936. Regarding testing equipment, the accelerometer should have a calibration certificate that is current and should be NIST traceable.

