

# Risk Manager

Answers, resources and information to help assess and reduce risk

## Gmax – Is that a new Sports Drink? By Sharon A. Orr

Many school districts throughout the Commonwealth have transitioned to synthetic or turf athletic fields. These fields can cost hundreds of thousands of dollars and constitute a significant investment, but not a maintenance-free one. Understanding the differences between natural ground cover and synthetic turf as it relates to proper field maintenance and concussions are crucial. Studies have shown that approximately 10% of sports related concussions are a result of the athletes head striking the playing surface; therefore, attention to proper maintenance procedures for playing surfaces is important.

How do you determine the hardness of your athletic fields? Athletic fields should be tested by a certified technician to determine if the playing surface falls within acceptable Gmax parameters. Gmax is the maximum negative acceleration of an object on impact, for instance, an athlete's head on a playing field, or in layman's terms, how hard the surface is when you fall on it. The higher the Gmax score, the harder the surface and greater propensity for concussive injury. Too soft a surface and athletic performance may be diminished and extra strain could be placed on muscles and joints, creating a higher risk for lower extremity injuries. Gmax testing involves dropping a "missile" of pre-determined weight onto the field and measuring the amount of force between the field and the weight at impact. Current standards recommend keeping the Gmax level

below 200 - NFL requires fields to test below 165 before every game.

Natural athletic playing fields surfaces, such as Kentucky bluegrass, Bermuda grass and ASTM sand, generally have a lower Gmax value - typically between 80-110 range. The amount of water in the soil influences Gmax levels - drier conditions equate with higher Gmax values. Maintaining adequate grass cover and aerating natural turf fields helps to reduce soil compaction and lowers Gmax levels. Avoid aerating fields when weather is hot and dry - ideal aeration is conducted after the final game of the year and in early spring.

Synthetic turf fields, when installed properly, have Gmax levels within acceptable ranges for the first few years. Frequency of use, environmental conditions and multiple sport usage can all hasten degradation of supporting material and reduce adequate Gmax levels. Over time, infill (the mix of rubber fibers composed of ground tires) supporting the synthetic grass blades gets carried away in the athletes cleats, equipment and shoes. Regular inspection of infill depths, and topping off of crumb rubber when needed, helps to keep the infill levels uniform as intended by the turf vendor. Special attention should be paid to "hot spots" - areas of turf used more frequently, such as in front of goals, along football hashmarks and any location where athletes line up for repetitive drills. After four paintings, (logos,

lines, etc.) paint should be removed completely - build-up of paint hardens and can alter the test results. Always follow the turf manufacturer's recommendations for maintenance and inspection. Some vendors include field safety testing as part of the installation contract and warranty.

Proper maintenance, regardless of whether the surfacing material is natural or synthetic, should also include grooming and inspection designed to identify and remove foreign objects, such as equipment screws, pins, track spikes, mouthpieces and athletic tape. Preventative measures may also include signage advising people what not to do on the field - examples: chew gum, walk pets, spit our sunflower seeds.

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For additional information or training on best practices and safety management within your school entity, please contact Director of Risk Management Sharon Orr at (866) 401-6600, ext. 7152 or [sorr@cmregent.com](mailto:sorr@cmregent.com).