



# Evaluation of Playing Surface Characteristics of Various In-Filled Systems

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**Note:** First-time visitors to this site may want to start by reading "[Summary and Considerations](#)". Detailed information about a particular topic can then be found in the "Table of Contents".

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## INTRODUCTION

Since synthetic turf was first installed in the Houston Astrodome in 1966, numerous studies have been conducted to evaluate the safety and playability of synthetic surfaces. These studies have included material tests on the traction and hardness of these surfaces (Valiant, 1990; Martin, 1990), human subject tests where an athlete performs various maneuvers on the surface (Cole et al., 1995; Nigg, 1997; Nigg and Segesser, 1988), and epidemiological studies that have counted athlete injuries on synthetic versus natural turfgrass (Powell and Schootman, 1992; Powell and Schootman, 1993).

Various methods have been developed to measure the playing surface quality of sports surfaces. For example, different methods of measuring playing surface hardness have been developed for synthetic turf versus natural turfgrass surfaces. For synthetic turf surfaces the U.S.A. standard is the F355 method (American Society for Testing and Materials, 2000a). For natural turfgrass the standard method is the Clegg Impact Soil Tester (CIST) (American Society for Testing and Materials, 2000b). Although both methods determine hardness by dropping a weighted accelerometer on the turf surface, some have stated that these two methods should not be correlated (Popke, 2002).

A new configuration of synthetic turf has been introduced into the market place. Termed 'infill' systems, these synthetic surfaces are comprised of a horizontal backing supporting numerous vertical nylon, polypropylene, or polyethylene fibers. These vertical fibers (pile) are much longer than those of traditional synthetic turf and can be filled with varying types of granulated material (infill media), typically sand or crumb rubber. It is believed that these new infill systems provide athletes with a surface that performs more like natural turfgrass than traditional synthetic turf (Popke, 2002).

As more synthetic turf systems using infill are introduced into the sports surface market, independent data regarding playing surface quality are required to enable consumers to make informed decisions.

## **Athlete Performance and Safety**

For a brief review of Athlete Performance and Safety of Infilled Synthetic Turf Systems follow this [link](#).

## **Objectives**

This study was designed to evaluate the playing surface quality of various infill systems over time. Surface quality will be periodically evaluated as the systems are exposed to weather and simulated foot traffic. The effects of various maintenance practices on the playing surface quality of these systems will also be evaluated.

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