Athletic Injuries and Field Conditions

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Everyone loves a well maintained athletic field. Coaches, players, and spectators all appreciate a well manicured field, but possibly not for the same reasons. What is pleasing to the spectator may not always be acceptable to coaches and players. The deep rich green color that is so appealing to the television people can in reality be a facade. The real test of an athletic field is its playing quality. Fields should be judged on their ability to enhance playing performance without sacrificing player safety. Fortunately for the field manager, the management practices that lead to acceptable playing conditions also usually lend themselves to being asthetically pleasing.

The measurement of playing quality is no easy task on our athletic fields due to the inherent variability of a natural field. This variability is not only found between fields in differing locations, but also within the same field due to differing use patterns, turf density, soil bulk density values, and soil moisture contents. In order to develop guidelines for providing maximum playing quality conditions, quantitative test methods need to be utilized. The two chief methods are impact absorption (surface hardness) and traction.

During the 1980's great strides were made to validate these methods of measuring hardness and traction. In 1984 Harper, Waddington, Morehouse, and Buckley published a report monitoring playing conditions and football injuries of twelve Pennsylvania high schools. In this report they stated that 21% of all football-related injuries reported during the 1981 season at these schools were classified by the trainers as either definitely or possibly field related. This report noted the wide range of field types in this study and the desperate need for a method to quantify these fields. A 1988 report by Rogers, Waddington, and Harper on twenty-four Pennsylvania high school athletic fields showed that this field variability could be accounted for through surface hardness and traction measurement techniques. This thirteen month study covered a wide range of soil moisture and growing conditions. An interesting point in the study was the strong association between the softer playing surfaces and the schools that practiced good management practices such as core cultivation, fertilization, and weed control.

With a completed study showing that a significant number of injuries are caused by field conditions, and a completed study showing there is a way to measure and account for field conditions, the next logical step was to conduct a study combining injury occurrences and field conditions. A pilot study was conducted during Fall 1989 on the Michigan State University football practice fields with the idea that this study would be conducted on the whole by the Big Ten Conference beginning August 1990. At this date the funding possibilities look good, but will not be official until Summer 1990. It is imperative that this research area be studied in order that the final goal of athletic field safety be accomplished.

Research on natural athletic fields is at a critical point. The synthetic surface industry has been funding a great deal of research in the past few years. The old idea of synthetic surfaces are as hard as concrete is no longer a valid point in most arenas. This is due to ever improving cushioned underpadding, and is presently only carried forth by sportscasters who either never played a game in their lives or ex-athlete commentators who played during the early years of synthetic surfaces. Luckily the media is very strong and is our ally, therefore, we have some time to react. Studies to determine the most wear tolerant species and varieties are needed in addition to continued hardness and traction research. Additionally, answers to these questions as well as fertility regimes need to be researched on a variety of soil types to more simulate existing conditions. Finally, old and new techniques such as soil warming, amendments to alleviate compaction tendencies, and domed arenas need further investigation. In order to accomplish these objectives three qualifications must be met. First, you need a qualified researcher willing to expend the time and effort to investigate these matters. Second, financial support from outside sources is necessary. Third, and certainly not least, there is the critical need for qualified graduate students to assist in and conduct these research projects. Without all three of these factors, the research program will suffer tremendously.

Finally, a few tips from my travels to athletic fields during 1989. The problem of growing grass on sidelines has long been a problem. The traffic makes it virtuously impossible to have a stand of turf. Many facilities have chosen to install synthetic surfaces in these bench areas. However, they seem to not make the areas large enough such that there is a tremendously worn area between the out-of-bounds line and the synthetic surface. Players want to be as close to the coach as possible so this means they will crowd the sidelines as much as they can. I did see one situation this year where the synthetic surface butted directly next to the boundary line. This seems highly logical and should help to deter a wear problem.

The other interesting tidbit is in the area of metal fences, specifically for baseball and softball complexes. The metal prongs that stick up in the outfield are potentially dangerous for our "Weekend Warriors." In this ever increasing litigious society it is advisable to take any and all precautions. In one case I saw where they chose to cover the top of the fence with plastic drain pipe. When the player hit the fence and jumped up, they did not come down on any sharp metal objects! It was suggested that the drain tile be black, and not white, so as to not cause any unnecessary glare.

The 1990 season promises to be a great one, and with leisure time on the rise, our athletic fields will receive increased use pressure. My single suggestion is to join a Sports Turf Association and get involved!