

## TURF RELATED ATHLETIC INJURIES

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A review of the literature indicates that in December of '84, Harper, et. al., published a report entitled "Turf Management, Athletic Field Conditions and Injuries in High School Football." Ten high school's football programs reported turf related injuries, any possible turf related injuries, and non-turf related injuries. This was done with the help of Certified Athletic Trainers who did injury evaluation and recording for the ten Schools. In addition to the injury recording, the playing and the practice fields were examined for different characteristics in August and then again in November. The results of the study have indicated that of 210 reportable injuries, 5.7 percent were directly field related, 15% were possibly field related, for a total of 20% of possibly field related injuries.

A major difference was noted in the quality of game practice fields. Maintenance practices were found to be much higher for game fields than for practice fields and the wear the fields received was significantly higher for the practice fields than for the game fields.

Roger's, in his study, "Relationships Between Athletic Field Hardness, and Traction, Vegetation, Soil Properties, and Maintenance Practices", reported in December of '88 several important facts relating to athletic injuries. Foremost among these was that good maintenance practices and good soil and turf grass conditions were generally found to be associated with lower impact values which indicated a lesser degree of hardness. Hard surface conditions were associated with lower soil moisture contents, greater bulk density, and lesser turf cover. Aerated fields have lower bulk densities and lower impact values.

Also found was, "Practice fields were harder than game fields, and fields were harder inside the hash marks, due primarily to compact soil and lesser turf cover." These factors indicate that hardness can be managed, consequently good maintenance should be instituted to provide less hard surfaces to play on.

Sanderson, in 1979 wrote in "Athletic Purchase and Facilities", that soil compaction is a leading cause of football injuries. He too indicated that aerification should be performed on all playing fields three times during the Spring, Summer and Fall. Poorly aerated fields may need attention monthly from Spring until three weeks before the first game. Garrick and Requa, in "Physician and Sports Medicine" reported in 1981 that over 60% of all injuries occur to the lower extremities. It is a known fact that repeated trauma on hard surfaces cause stress fractures, overuse syndromes, and severe contusions with impact.

It was shown by Moorehouse in "Medicine and Science in Sports", that footwear using seven cleats developed the highest coefficient of friction on grass fields. He also found the multi-cleated shoes had less friction and were consequently safer to use on grass since there was not the ability for the foot to become fixated in the turf.

It has been shown by Noyes, Clancey, Hughston and others, that foot fixation while rotation occurs at the knee is a leading cause to major knee injuries of the Anterior Cruciate Ligament. Since this injury usually occurs during non-contact periods it is felt to be turf related in that improper foot wear and turf may cause this problem.

Francis Cosgrove reported in a paper for the Nassau County Parks and Recreation Department in New York State, that safer playing fields in softball could be accomplished with consistent recommendations that use prudent liability concepts. He claims that if those responsible owners, operators, maintenance supervisors and workers, recognize that liability of safe fields falls on everyone then better care and guidelines to better care of fields can be addressed.

Several areas of problems associated with softball fields are overuse of facilities, return to play to soon after rain outs, improper design and layout, fixed and rigid bases, poor seasonal and daily routine maintenance, and poor skill levels on poorly matched fields. He indicates that skill levels should be matched to fields by strength of the athletes playing on that field for example, women's softball does not need as long of out field space as men's softball, consequently, inadequate fields may be converted over for women's leagues instead of discontinuing of the field. He also recommended that maintenance workers and supervisors should contact the American Softball Association for the softball field and complex specification guide.

O'Donaghue, In the Treatment of Injuries to Athletes talks about field conditions which are optimal. He indicates level, firmly sodded fields, that are carefully screened for debris, such as glass, stones and other foreign materials are the best for practice and play. He specifically talks of the removal of small imperfections, which often take the form of small holes, or grooves and may provide potential injury to the lower extremities. Ample sideline room is also imperative for all sports. The style of equipment should be safe, with extra padding on removeable objects, and on goalposts and fences that are too close to the fields.

Michigan State University uses several approaches to maintain athletic fields and to prevent athletic injuries. Foremost among these is careful attention to the contour of the playing surfaces. Each field is inspected weekly to ensure that no ruts or holes or foreign debris is present before practice or

games. Particularly this is important, after home football games where large crowds of 70 thousand plus attend. Parking for these people is usually done on practice fields and some game fields. If the weather is inclement, the playing surface may be damaged. Consequently, the careful attention that is given by the maintenance workers is appreciated by the coaches. Another technique used to insure good practice facilities and game fields is the rotation of the practice area during practice sessions. Coaches are instructed to use alternating hash marks, end zones, goal areas and face off areas, during their practice routines. This promotes even wear to all areas of the practice field and game fields. Practices are also held on artificial surfaces during severe inclement weather to protect the turf areas.

Remember, that injuries and playing surfaces do have a relationship. Good awareness to playing surface, maintenance and practice techniques may help to prevent significant turf related injuries.

#### Bibliography

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