Skyline - The Big Sky Undergraduate Journal
(http://skyline.bigskyconf.com/journal)

Article Title

Determination of Microbial Populations in a Synthetic Turf System (http://skyline.bigskyconf.com/cgi/viewcontent.cgi?article=1000&context=journal)

Authors

Jason J. Bass, *Weber State University* (http://skyline.bigskyconf.com/do/search/?q=author_lname%3A%22Bass%22%20author_fname%3A%22Jason%22&start=0&context=4340768) Follow (http://network.bepress.com/api/follow/subscribe?user=NTc1YWNiNzg5ZmMwNDE3Mg%3D%3D&institution=MDY1OTRiZjkyNDM5NTIxZg%3D%3D&format=html)
David W. Hintze, *Weber State University* (http://skyline.bigskyconf.com/do/search/?q=author_lname%3A%22Hintze%22%20author_fname%3A%22David%22&start=0&context=4340768) Follow (http://network.bepress.com/api/follow/subscribe?user=MmQ2ZGEyZGJmN2MyNTA5OA%3D%3D&institution=MDY1OTRiZjkyNDM5NTIxZg%3D%3D&format=html)

Abstract

There is growing concern regarding the contribution of infilled turf fields on increased athlete infections. Abrasions that occur on these fields create a port of entry for pathogens such as Staphylococcus aureus that are present on the athlete's skin or possibly on the field's surface. This study compares the occurrence of microbial populations on two infilled synthetic turf fields (year old turf vs. 6 year old turf) in three locations. Both fields were sampled once a week for at least 14 weeks (exact number varied on field and location) during the late summer and fall of a football season. Sites sampled included the sidelines, the middle of each field, and the end of each field. Tryptic Soy Agar was used to determine total microbial load, Mannitol Salt Agar for Staphylococcus, and Eosin Methylene Blue Agar to count the number of enteric organisms such as Escherichia coli. Much higher microbial populations were found on the older turf field with as much as a 104 increase over similar locations on the newer turf. This suggests microbial populations can accumulate in synthetic turf infill from year to year. When comparing the bacterial load on different areas of the field, the sideline had the highest counts with an average of 1.12x108 CFUs (colony forming units) per gram of rubber infill on the older field. On the new synthetic turf, the area with the highest number of total microorganisms was also the sideline, with an average of 2.5x105 CFUs per gram of infill. A high number of salt-tolerant bacteria were able to grow on MSA, indicating possible staphylococci, with an average of 2.77x102 CFUs per gram on the new field and 6.58x103 CFUs per gram on the older field. These results indicate that infill material can serve as a source for the spread of pathogens among student athletes, and that these organisms seem to accumulate over time posing a greater risk if proper turf cleaning is not regularly performed.

Recommended Citation

Bass, Jason J. and Hintze, David W. (2013) "Determination of Microbial Populations in a Synthetic Turf System," *Skyline - The Big Sky Undergraduate Journal*: Vol. 1: Iss. 1, Article 1.
Available at: http://skyline.bigskyconf.com/journal/vol1/iss1/1