

INJURY OCCURRENCE AND FOOTWEAR PERFORMANCE ON ARTIFICIAL SOCCER TURF

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Background

Since the 1960s, artificial soccer turf (AST) has been controversially discussed in relation to game characteristics, injuries and, recently, also with respect to footwear. The structure of current AST (3rd generation) is characterized by a sand and rubber infilled fiber carpet covering an elastic bottom layer. In 2004 AST was included in the FIFA rules of the game as official match play surface, subject to compliance with FIFA 2star performance standards.

Injury Occurrence

Increased injury occurrence in game and practice used to be major problem of the earlier generations of AST [1]. In contrast, research shows no differences with respect to injury frequency and severity on 3rd generation AST. However, it is reported that injury types may differ as Ekstrand et al. (2006) observed more ankle sprains on AST. Thus, further investigations with respect to injury occurrence and injury type are required.

Footwear Performance

Athletic footwear function highly depends on the surface on which it is used. Hence, the implementation of AST forced the footwear industry to initiate corresponding research, especially with respect to potentially new requirements for outsole traction. Innovative AST shoes were shown to provide superior athletic performance and biomechanical characteristics which was matched by players' perception [4]. Additionally, the innovative footwear decreased ankle eversion joint moments during soccer specific turning movements compared to firm and soft ground shoes designed for natural grass [3]. Based on those findings, it is suggested that AST footwear should use a rather high number of relatively low stud elements.

Discussion

Soccer injuries, AST and footwear characteristics are often directly related to each other in the public discussion. However, prospective scientific studies that investigate and provide proof of these relationships are missing. Therefore, injury risk and lower extremity loading in soccer as well as their potential interaction need to be further examined. Thereby, the concept of mechanically available versus biomechanically utilized friction during shoe ground interaction plays an important role. It illustrates the sensory motor skills of athletes to adapt their sport specific movement patterns according to varying circumstances.

References

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