

SHOCK ABSORBENCY OF LONG PILE ARTIFICIAL TURF

Nunome, H. 1)

1) Research Centre of Health, Physical Fitness and Sports, Nagoya Univ., Japan

Keywords: 3g turf, DIN test, new test

Introduction

Use of artificial turf is becoming very common in football code. Major soccer (FIFA & UEFA) and rugby (IRB) organizations recently accepted the use of the 3-g turf for official and international tournaments. In contrast to the report for the earlier generation, cohort studies reported no clear differences for injury risk of between 3-g turf and natural turf. However, soccer players still had negative overall impression and felt greater physical efforts when they play on 3-g turf [1]. Of various aspects, the cushioning ability is a key feature. To date, “Shock Absorbency” has been approved by a simple mechanical testing (DIN18032-2). However, it has been suggested that the test does not reflect actual loading cause by human sports actions. To compensate the inadequacies, a new testing procedure has been proposed and revealed unknown feature of 3-g turf [2].

Methods

A series of experiments were conducted in the present study: 1) human hard landing test to obtain the baseline of the load of acute human sports action, 2) re-examination of the validity DIN test, 3) development of new testing procedure which precisely reflects the loading force caused by human hard landing and 4) comparison of the shock absorbing property between natural turf and 3-g turf using a modified testing procedure.

Results and discussion

It can be seen in the figure that most types of 3-g turfs demonstrated milder rate of loading than that of natural turf. A 3-g turf with unusual infill component (sand only) with rubber shock pad did demonstrate quite similar shock absorbing property with that of natural turf.

Conclusion

The present study clarified that most types of 3-g turf have excessive shock attenuation property than that of natural turf. This result may reinforce the needs for reconsideration of appropriate shock absorbency for 3-g turf.

References

1. Anderson, H. et al., *J Sports Sci*, 26:113-122, 2008.
2. Nunome, H et al., *International Research in Science and Soccer*, pp.69-76, Routledge, Oxon, UK, 2010.

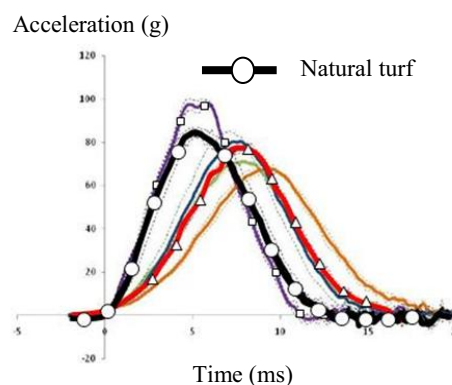


Figure 1: A comparison of the shock absorbing property between natural and 3-g turfs.