

## **PhD Research Studentship (3 year full-time) ref: CV/PF/SF/5/8/2011**

### **Title: Assessment of Artificial Turf Performance through Human Testing**

### **Assessment of Artificial Turf Performance through Human Testing**

Artificial turf pitches are commonly used for a variety of sports, such as football, hockey and rugby. Their mechanical properties are designed to suit the requirements of the specific sport and achieved through appropriate selection of carpet design, infill and shockpad materials. For example, in rugby impact protection and traction are key features to be considered, while in hockey a smooth surface that provides consistent ball roll is critical. This project aims to develop a suite of valid and reliable tests that can be performed on artificial turf pitches to evaluate their performance from a player perspective. These are likely to include player perception and movement tests, the latter ranging from basic movements through to sport specific and in-game scenarios. A key aspect is the sensitivity of the tests, which must be sufficient to distinguish between pitch surfaces of different properties. Such tests would represent a powerful tool in the ongoing development of new artificial turf products and in benchmarking performance against natural turf.

#### **Objectives**

1. Review current knowledge in player field testing on artificial turf pitches and other sports surfaces.
2. Rationalise and classify the categories of movements and range of measurements that will be required to test the key properties of a surface.
3. Develop a suite of valid, reliable and relevant player tests (perception / biomechanical / physiological) that can be used to evaluate pitch surface performance.
4. Quantify the sensitivity of each test to the pitch surface properties.
5. Investigate the level of correlation between the current mechanical tests and the newly developed human tests.
6. Disseminate the findings widely to both academic and industry audiences through peer-reviewed journal publications and presentations.

This project requires knowledge and experience in the following areas: experimental sports biomechanics and human perception testing, sport surfaces (or materials) engineering, mechanics, and research methods in studies involving human participants.

This studentship is available in the thriving and expanding Sport Surfaces Research Group (SSRG) at Loughborough University (currently 3-4 academics, 4 full-time PhD students, 1 Research Associate and 2 technicians) with the student based in the world-leading Sports Technology Institute. This growing topic of research combines human performance science with artificial sports surfaces engineering and novel measurement techniques. The ideal candidate will have experience in all these areas.

The successful candidate will be largely responsible for the day-to-day running of their project, supported by academic supervisors and the SSRG. A steering committee may also support the work comprising industry partners, sport governing bodies and sports associations.

The successful applicant must be eligible for UK/EU funding, and will receive a minimum annual stipend of £13,590 plus tuition fees, however self-funded students will also be considered. Applicants should be highly motivated and have at least a good 2.1 honours degree or equivalent in an appropriate undergraduate discipline and/or Master's level training. Informal enquires should be directed to Dr Steph Forrester (01509-564824, [s.forrester@lboro.ac.uk](mailto:s.forrester@lboro.ac.uk)) or Dr Paul Fleming (01509-222616, [p.r.fleming@lboro.ac.uk](mailto:p.r.fleming@lboro.ac.uk)) Sports Technology Institute, Wolfson School of Engineering.

Closing Date: May 2012