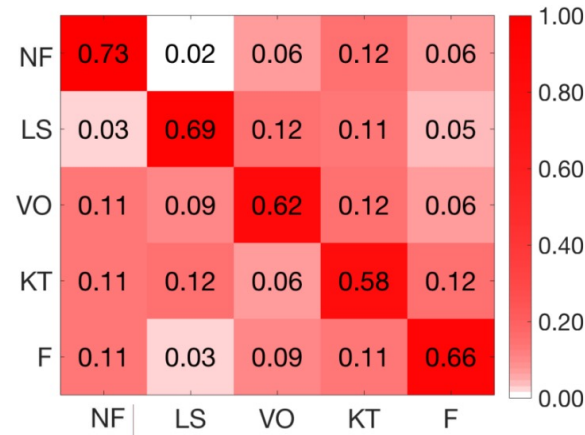
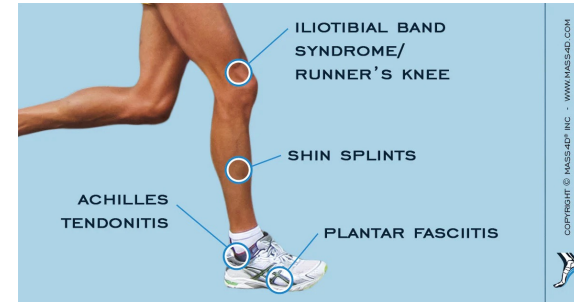


# Classification of Treadmill Running Fatigue Using Neural Networks

Dhrasti Dalal<sup>1</sup>, Alizee Leleu<sup>3</sup>, Mohit Malu<sup>2</sup>, Tomas Ward<sup>3</sup>, Andreas Spanias<sup>2</sup>  
<sup>1</sup>ASU SBHSE, <sup>2</sup>ASU SECEE, <sup>3</sup>Dublin City University

**Problem Statement: Increased interest in recreational running has resulted in increased incidence rate of overuse injuries associated with fatigue related form decline**

- Being able to detect fatigue would improve sport and recreational outcomes by reducing injuries
- Data collection outside of lab – portable inertial measurement units (IMUs)



## Previous study

Using supervised machine learning (leave one subject out cross validation)

On data collected from track running

## Proposed Study

Using a long short-term memory (LSTM) neural network

On data collected from treadmill running

## Potential Impact

- Clinical translation and rehabilitation applications
- Basic science - analyze biomechanical differences in fatigue onset between track and treadmill

