Workshop 14 June 2017 – Cologne, Germany

Do you struggle to decide which variables to extract from your biomechanical data, particularly if you are recording motion data from different joints, 3D force data, or EMG data from various muscles?

Do you think that there are better ways to explore your data, but these are probably too complex to use unless if you are an engineer?

Now think again!

Statistical Parametric Mapping (SPM) is the analysis technique that allows the statistical analysis of typical biomechanical data e.g. 1D curves and vectors. It allows to avoid subjective analysis decisions. Actually it works like the basic statistical analyses we all know, such as t-tests, ANOVA, and linear regression, but it extends these to one-dimensional profiles of forces or kinematics. Actually, pretty much anyone can use it with a little bit of training, which only requires one to learn the basic principles that underpin the technique, and then apply this through very basic tools.

Workshop description

Through expert presentations you will learn to understand the concepts underpinning SPM.

Through tutorial you will conduct basic SPM analyses in Matlab and learn how to present these.

Topics covered during the workshop

- Principles of probability and Random Field Theory
- Running a t-test using SPM
- Linear regression using SPM
- ANOVA using SPM

Pre-workshop preparation

- Suggest to refresh basic use of Matlab if possible. No problem if no Matlab experience, but best to already have had some exposure. There are some valuable Youtube videos if you are new to Matlab.
- Refresh theory on t-test, ANOVA and regression if possible.

Tutors

Todd C. Pataky is an Associate Professor in Bioengineering at Shinshu University. He has published over 45 articles in peer-reviewed journals, approximately 30 of which pertain directly to theoretical and applied aspects of SPM. His 2004-2006 postdoctoral training in functional brain analysis alerted him to the utility of the SPM methodology, and he has since been adopting SPM procedures for analyses of 1D, 2D, and 3D biomechanical continua.

Mark A. Robinson is a Lecturer in Biomechanics at Liverpool John Moores University. He is an early career academic with 15 publications in international journals and contributions to two book chapters. His research spans clinical and sports biomechanics and he uses SPM methodology increasingly for the analysis of complex biomechanical data. He is also interested in the pedagogy of statistics and how complex ideas can be best taught in both an applied and theoretical context.

Jos Vanrenterghem is a Lecturer in Biomechanics at Liverpool John Moores University. He has published over 30 articles in peer-reviewed journals. He teaches biomechanics across undergraduate and postgraduate levels, providing him with a good insight in the common issues that students face when analysing biomechanical data. He has also delivered a series of workshops on research practise in Biomechanics, and devotes much of his work to making biomechanics available to those with limited mathematical or engineering formation.

Organisation

Jos Vanrenterghem
jos.vanrenterghem@kuleuven.be
T: +32 (0) 16 37 37 00.

Location

German Sport University Cologne
(view on google maps)

Cost

99€ (£85). This includes registration, all workshop materials, and lunch. To guarantee the quality of delivery the number of places is limited. Registration is confirmed once done via this link.

Accommodation

See www.isbs2017.com for suggestions.