ISB 2019 Calgary Tutorial: **Statistics and Biomechanics**

Supplementary Material

This folder contains the supplementary material listed below. These documents contain a variety of information regarding fundamental statistical concepts. The were created mainly as an extended background to compliment the papers listed below as “Source”.

Notes:
- Each document is titled as it appeared in the original source material. No modifications have been made.
- All documents are also available to download from the links below. They are assembled here simply for convenience.
- While many aspects of the documents can be appreciated in isolation, in some cases the original article is necessary for context.
- Sources are listed below in chronological order

Source	Link	PDF file name(s)
Pataky TC, Robinson MA, Vanrenterghem J. Vector field statistical analysis of kinematic and force trajectories. Journal of biomechanics. 2013 Sep 27;46(14):2394-401.	Link	cca covariance scalar_extraction uni_multivariate
Pataky TC, Robinson MA, Vanrenterghem J, Savage R, Bates KT, Crompton RH. Vector field statistics for objective center-of-pressure trajectory analysis during gait, with evidence of scalar sensitivity to small coordinate system rotations. Gait & posture. 2014 May 1;40(1): 255-8.	Link	spm_alpha_p spm_multiple_comparisons uni_multivariate2
Pataky TC, Vanrenterghem J, Robinson MA. Zero-vs. one-dimensional, parametric vs. non-parametric, and confidence interval vs. hypothesis testing procedures in one-dimensional biomechanical trajectory analysis. Journal of biomechanics. 2015 May 1;48(7): 1277-85.	Link	bootstrap_permutation ci_design_dependence param_nonparam pdfs rft_fda t_statistic_1d
Pataky TC, Vanrenterghem J, Robinson MA. Two-way ANOVA for scalar trajectories, with experimental evidence of non-phasic interactions. Journal of biomechanics. 2015 Jan 2;48(1):186-9.	Link	anova spm_pca
Pataky TC, Vanrenterghem J, Robinson MA. The probability of false positives in zero-dimensional analyses of one-dimensional kinematic, force and EMG trajectories. Journal of Biomechanics. 2016 Jun 14;49(9):1468-76.	Link	convolution fwhm_estimation fwhm_typical_values randn1d
Pataky TC, Robinson MA, Vanrenterghem J. Region-of-interest analyses of one-dimensional biomechanical trajectories: bridging 0D and 1D theory, augmenting statistical power. PeerJ. 2016 Nov 2;4:e2652.	Link	fwhm roi_analysis roi_nomenclature

Source	Link	PDF file name(s)
Pataky TC, Robinson MA, Vanrenterghem J. A computational framework for estimating statistical power and planning hypothesis-driven experiments involving one-dimensional biomechanical continua. Journal of biomechanics. 2018 Jan 3;66:159-64.	Link	power_methods power_posthoc power_terminology
Pataky TC, Vanrenterghem J, Robinson MA. Bayesian inverse kinematics vs. least-squares inverse kinematics in estimates of planar postures and rotations in the absence of soft tissue artifact. Journal of biomechanics. 2019 Jan 3;82:324-9.	Link	bayes0_basics bayes1_population_mean bayes2_inverse_kinematics bayes3_lsik_divergence