

PHYL3004: PHYSIOLOGY OF INTEGRATED ORGAN SYSTEMS

UNIT NOTES

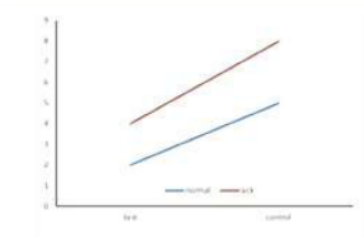
Statistics	1
Interaction.....	1
Non-Parametric Statistics	1
Non-Normal Data	1
Control Systems	2
Control Circuits	2
Negative Feedback Control Systems	3
Power, Gain and Stability.....	3
Multiple Control Systems.....	4
Positive Feedback	4
Feedforward Control	4
Exercise Physiology	5
Energy Systems.....	5
Muscle Fuel	5
Perfusion during Exercise.....	6
Ventilation and Exercise	7
Thermal Physiology.....	8
Heat Balance	8
Sweat Glands.....	8
Heat Acclimatization.....	9
Heat Balance	9
The Prescriptive Zone	9
Surface Area and Thermoregulation	10
Non-Shivering Thermogenesis	10
Fever	10
Motor Control System.....	11
Motor Control at the Spinal Level	11
Motor Control at the Brainstem and Cortex Level	12
Voluntary Motor Control	14
Balance and Postural Reflexes	15
Nociception and Pain.....	16
Reproductive Endocrinology	18
Steroid Hormones.....	18
Eicosanoid Hormones	18
Protein Hormones	19
Determinants of Hormone Action	19
Control of the Endocrine System.....	20
Hierarchy of Control	20
GnRH Neurons	20
Kisspeptin Neurons.....	21
Integrated Physiology	22
Effect of the Gut Microbiome on Control of Organ and Tissue Function	22
Circadian Rhythms.....	23
Obesity and the Respiratory System	24
Ethanol	26

Statistics

- Univariate data has one measured variable which has random variation
- Bivariate data has two measured variables
- Pearson correlation coefficient (r) is used to test for association
- Coefficient of determination (R^2) is how well the line fits the data

Interaction

- Was the effect for factor 2 the same for all levels of factor one
- If the test has the same effect on two groups, there is no interaction
 - Graphs will be parallel



No interaction, "test" has SAME effect on sick and normal



Interaction, "test" has DIFFERENT effect on sick and normal

Non-Parametric Statistics

- Mann-Whitney U-Test is equivalent to an unpaired t-test
- Wilcoxon signed-rank test is equivalent to a paired t-test
- Non-parametric tests do not assume normal distribution
 - Assumption that measurements are ordinal but not interval
 - Ignores how much bigger or smaller a value is and only looks at rank order

Non-Normal Data

- Normal distribution assumes that mean and median are the same
- Skew will show as different mean and median on frequency histogram
 - Kurtosis is when plot is too flat or pointy
- Same median and mean does not prove normality of data