Università degli Studi di Verona
Corso di Laurea Magistrale in Scienze motorie preventive e adattate
Corso di Laurea Magistrale in Scienze dello sport e della prestazione fisica
A.A. 2015-2016

Corso Integrato *Tecnologie e metodiche per la valutazione funzionale*	*Docente* *Barbara Pellegrini*

Obiettivi del Corso

Skills in assessing the best equipment and methodology for the acquisition of biomechanical and physiological parameters for the evaluation of physical exercise and human movement. Understanding of working principle of equipment and skills in evaluating benefits and disadvantages of different experimental setup. Ability in understanding basic movement and main descriptors. Skills in processing of the signals obtained from experimental session and extraction of parameter of interest by using worksheets. Skill in representing the result by means of graphs and diagrams and skills in performing basic statistical tests aimed in testing the between groups differences and correlations between variables.

Programma del Corso

1. *Revision of the main mechanical quantity (displacement, speed, acceleration, mass, force, torque, work, energy, power) and electrical (voltage, current, resistor…)*
2. *Trasductors*
3. *Introduction to acsuisition and sampling systems, Analysis of mono and bidimensional signals (sampling rate, frequency,)*
4. *Classification and characteristic of the measurement systems, (accuracy, resolution, …)*
5. *Motion measurement systems (potentiometers, photocells, accelerometer, goniometers, conventional video system, optoeletronic motion capture system)*
6. *Force measurement systems (celle di carico, pedane dinamometriche e baropodometriche, solette baropodometriche, ergometro iscocinetico, misura forza della pedalata)*
7. *Bioelectric measurement systems (ECG, EMG, galvanic response,...)*
8. *Ergospirometric, cardiorespiratory and oxygen uptake measurement (Quark, Portapres, NIRS)*
9. *Methods of data analysis, parameter extraction, (analysis of phase duration, peaks, average, integration, frequency analysis, normalization)*

10. Methods of data representation, tables and graphs, statistical analysis (t-test, correlations)

Modalità d'esame

- *a list of research questions will be made available to the students after the laboratory classes,, along with a database of data collected during the experimental session. Each student will select a research question he/she would like to address by using data present in the database. It is required that each student individually write and send 1 week before the exam date, a report that contains the description of the instrumentation used to acquire the data, the protocol, and the procedure for data analysis. The evaluation of the report will concur to the final evaluation*
- *The written exam, will be composed by multiple choice quiz and by question to be answered by describing possible setup, equipments and data processing for specific measurement in the field of human movement and exercise.*
- *If the global evaluation is positive, an oral exam will be required for the grade confirmation.*

Testi consigliati

o Slides

o Lecture and laboratory handouts.

Robertson G., Caldwell G., Hamill J., Kamen G., Whittlesey S., Research Methods in Biomechanics, Human Kinetics, 2004.