# Motor and Aptitude Assessment Methods (*in memory of Prof. Marcello Faina*)

## Prof. Christel Galvani

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

Learn about applied functional assessments in sport in order to study the functional model of performance and training.

Students, through their theoretical-practical learning experiences, will be able to devise functional evaluation proposals, pathways and protocols for concrete situations, specific individual or team sports, and specific performance objectives.

***COURSE CONTENT***

## Content covered during the lectures:

1. The implications and purposes of functional assessments.

2. Characteristics of the tests.

*How to monitor the parameters of functional assessments*

1. Mechanical-muscular parameters

– Measuring muscle strength and power.

– Isometric and dynamic maximal strength.

– Speed strength.

– Resistant strength.

– Strength/velocity and power/velocity curve.

– Agility.

2. Anaerobic metabolic parameters

– Measuring anaerobic capacity.

– Lactataemia.

– Oxygen deficit, EPOC and MAOD.

– Mechanical parameters.

3. Aerobic metabolic parameters

– Maximal oxygen consumption.

4. Direct tests for measuring VO2max: apparatuses and methods.

5. Measuring aerobic metabolic power: VO2max with indirect maximal testing.

– The kinetics of oxygen consumption.

– Energy expenditure and performance.

– Anaerobic threshold.

6. Alternate aerobic-anaerobic metabolism test.

– The measurement of anthropometric parameters and of body composition

– The measurement of flexibility

*How to define a functional model*

## Content covered in practical lessons

*Parameters for functional assessments in athletes*

Applied to the Rugby League.

– Anthropometry (plicometry).

– Maximum force (static and dynamic).

* Vertical jump test.
* Sprint test.
* Agility test.
* Repeated sprint ability.
* VO2 max (indirect maximal tests).

Applied to cycling.

– Mader test.

* VO2 max (direct maximal tests).
* Anaerobic metabolism test (Wingate 6s and Wingate 30s).
* Rectangular test (performance and Onset O2).

***READING LIST***

Australian Institute Of Sport-R. Tanner-C. Gore, *Physiological tests for elite athletes 2nd edition*, Human Kinetics, 2013.

A. Dal Monte-M.Faina, *Valutazione dell’atleta. Analisi funzionale e biomeccanica della capacità di prestazione,* Sports Sciences Series, UTET, Turin, 1999.

G.G. Haff-C. Dumke, *Laboratory manual for exercise physiology,* Human Kinetics, 2019, 2nd edition.

W.L. Kenney-J.H. Wilmore-D.L. Costill, *Physiology of sport and exercise,* Human Kinetics, Champaign, 2022, 8th edition.

W.D. McArdle-F.I. Katch-V.L. Katch, *Exercise physiology - - Nutrition, Energy, and Human Performance,* Lippincott Williams & Wilkins, Baltimore, 2022, 9th edition.

J.R. Morrow (Jr.)-D.P. Mood-W. Zhu -M. Kang, *Measurement and evaluation in human performance,* Human Kinetics, (6th edition), 2023.

***TEACHING METHOD***

Lectures and laboratory lessons.

***ASSESSMENT METHOD AND CRITERIA***

Written exam; if sufficient the grade earned on the written test, an oral examination to follow. The two open-ended questions asked in the interim written test will all carry the same mark, from 0 (in the case of no answer) to 20 (in the case of an exemplary answer). For each test, students must be able to define: in what kind of population the test can be administered, the materials & methods, precautions, data analysis and output data (with correct units of measurement). The oral exam includes three questions, each question is worth a maximum of 4 marks. The mark for the oral exam is added to that of the written exam. The last question for defining the final mark is posed by the student's lecturer.

The grade is represented by a mark out of thirty.

***NOTES AND PREREQUISITES***

Students can take the exam only after having passed General and Sports Physiology.

Students must possess a basic knowledge of the concepts of both exercise physiology and movement biomechanics.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG or on the Faculty notice board.