



Program of

First course

“Basics in Motion Analysis”
TRAMA Network Project

10-12th September 2007

“Luigi Divieti Lab”
Bioengineering Department
Politecnico of Milan
ITALY

Monday, 10th September 2007

- 9.30 – 10.30 *Marcello Crivellini, Manuela Galli*
Welcome to TRAMA Grant Holders.
General description of TRAMA Project
- 10.30 – 10.45 Break
- 10.45 – 12.30 *Helga Hirschfeld*
Theories of motor control
 - Motor control overview
 - Control models hierarchical and heterarchical (systems)
 - Movement coordination
 - Feedback and feed forward control (open, closed loop control)
 - Spasticity
- 12.30 - 14.00 Lunch
- 14.00 - 15.45 *Antonio Pedotti*
Movement analysis
Quantitative movement analysis: history and applications
- 15.45 - 16.00 Break
- 16.00 - 17.30 *Manuela Galli*
The Motion Analysis Lab
 - The quantitative evaluation of movement
 - Equipment description for the evaluation of kinematics, kinetics and EMG
- 17.30 - 18.00 **Discussion**

Tuesday, 11th September 2007

9.30 - 10.45

Guy Cheron

Physiology of Motor Control

Neurophysiology of brain area related to movement and in motor control

11.00 - 12.30

Helga Hirschfeld

Postural orientation and equilibrium

- Neural control of postural orientation and equilibrium
- Biomechanical principles (CoM, CoP, postural stability)
- Postural orientation, body sway
- Coordination of postural equilibrium
- Compensatory postural adjustments (external force triggered responses)
- Anticipatory postural adjustments for voluntary movements
- Sensory control of postural orientation and equilibrium

12.30 - 13

Discussion

13.00 – 14.00

Lunch

14.00 - 15.30

Manuela Galli, Giorgio Albertini

Posture evaluation

- Normal postural control
- Abnormal postural control and typical features in patients with postural control disorders

15.30 - 15.45

Break

15.45 - 18.00

Manuela Galli, Helga Hirschfeld

Practical session in Lab

- Acquisition of posture: experimental protocols and data elaborations
- Compensatory, anticipatory adjustments

Wednesday, 12th September 2007

9.30 - 10.30

Helga Hirschfeld

Neural control of human locomotion

- Neural convergence
- Central pattern generators
- Descending influences
- Sensory feedback and adaptation of gait
- Task specificity of gait
- Goals of gait assessment

10.30 - 10.45

Break

10.45 - 12.45

Manuela Galli, Marcello Crivellini

Quantitative Gait Analysis

- Experimental set-up, international protocols, data analysis
- The gait cycle. Spatial and temporal parameters in normal walking
- Kinematics of normal walking

12.45 - 14.00

Lunch

14.00 - 15.30

Manuela Galli, Marcello Crivellini

Quantitative Gait Analysis

- Kinetics of normal walking
- Muscle activity of normal walking

15.30 - 15.45

Break

15.45 - 17.00

Practical session

- Anthropometric measurements
- Markers and electrodes position
- Acquisition of a Gait Analysis trial
- Data elaboration

17.00 - 18.00

Conclusions

- Organization of the experimental activity in EU Lab and Latin American Labs
- Definition of the expected results for the next course in January 2008

At the end of the course the Latin American grant holders will spend two weeks at Laboratorio Luigi Divieti for practical sessions focused on Motion Analysis.

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