Contributi del Dipartimento
Pubblicazioni su riviste indicizzate

- Law in Early Postural Adjustments. Bertucco M, Cesari P, Latash ML. Neuroscience. 2012 (accepted for publication);

We tested a hypothesis that the classical relation between movement time and index of difficulty (ID) in quick pointing action (Fitts’ Law) reflects processes at the level of motor planning. Healthy subjects stood on a force platform and performed quick and accurate hand movements into targets of different size located at two distances. The short distance did not require trunk rotation, while the long distance did. Movement kinematics and contact forces and moments recorded by the platform were studied. Movement time scaled with ID for both movements. However, the data could not be fitted with a single regression: Movements over the long distance had a larger intercept corresponding to movement times about 140 ms longer than movements over the shorter distance. The magnitude of postural adjustments prior to movement initiation scaled with ID for both short and long distances. Our results provide strong support for the hypothesis that Fitts’ Law emerges at the level of motor planning, not at the level of corrections of ongoing movements. They show that, during natural movements, changes in movement distance may lead to changes in the relation between movement time and ID, for example when the contribution of different body segments to the movement varies and when the action of Coriolis force may require an additional correction of the movement trajectory;
Factors modifying the clinical penetrance of DYT1 dystonia are incompletely defined. Particularly, the contribution of extra-genetic factors has been subject to only limited investigation. We performed an exploratory analysis of the exposure to perinatal adversity, childhood infections, general anaesthesia and trauma comparing 39 manifesting carriers of the ΔGAG mutation, 23 non-manifesting carriers and 48 non-carriers from a multi-centre European series of 28 families with DYT1 dystonia, by means of a self-completed questionnaire and clinical interview. A positive association between a history of perinatal adversities and manifestation of dystonia was detected, which was not confounded by age, gender, or education level Odds Ratio: 11.1 (p=0.046; 95% confidence interval 1.04-118.8). Perinatal adversities might modulate the clinical penetrance of DYT1 dystonia; their interaction with known genetic factors modifying penetrance of this condition should be investigated in new, larger collaborative studies;

Studies demonstrate that elite athletes are able to extract kinematic information of observed domain-specific actions to predict their future course. Little is known, however, on the perceptuo-motor processes and neural correlates of the athletes' ability to predict fooling actions. Combining psychophysics and transcranial magnetic stimulation, we explored the impact of motor and perceptual expertise on the ability to predict the fate of observed actual or fake soccer penalty kicks. We manipulated the congruence between the model's body kinematics and the subsequent ball trajectory and investigated the prediction performance and cortico-spinal reactivity of expert kickers, goalkeepers, and novices. Kickers and goalkeepers outperformed novices by anticipating the actual kick direction from the model's initial body movements. However, kickers were more often fooled than goalkeepers and novices in cases of incongruent actions. Congruent and incongruent actions engendered a comparable facilitation of kickers' lower limb motor representation, but their neurophysiological response was correlated with their greater susceptibility to be fooled. Moreover, when compared with actual actions, motor facilitation for incongruent actions was lower among goalkeepers and higher among novices. Thus, responding to fooling actions requires updation of simulative motor representations of others' actions and is facilitated by visual rather than by motor expertise;

Contributi del Dipartimento
Partecipazioni a congressi internazionali

Enhancing motor performance by suggestion: A behavioural and neurophysiological study on force production. **Fiorio M, Emadi Andani M, Negrello G, Tinazzi M.** XLIII Congresso della Società Italiana di Neurologia, 7-9 Ottobre, 2012 Rimini (oral communication);

Increased proprioceptive drift at the rubber hand illusion in cerebellar ataxia: a form of ‘cognitive dysmetria’? **Fiorio M**, Mariotti C, Antonello E, Panzeri M, Classen J, **Tinazzi M**. XLIII Congresso della Società Italiana di Neurologia, 7-9 Ottobre, 2012, Rimini (poster);

L’uso della Stimolazione Magnetica Transcranica Ripetitiva (rTMS) nella riabilitazione del linguaggio: un caso clinico. **Magalini A.** III Congresso nazionale dell’Associazione Italiana di Neuropsicologia, 17-18 Novembre, 2012 Montecatini Terme (poster);

Il ruolo del rinforzo nella prestazione motoria e nell’apprendimento. **Magalini A.** III Congresso nazionale dell’Associazione Italiana di Neuropsicologia, 17-18 Novembre, 2012 Montecatini Terme (oral communication);
Varie

Organizzazione di eventi scientifici