Society for the
Neural Control of Movement

**1-D-32 Coupled pairs do not necessarily interact**

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Previous studies that examined paired sensorimotor interaction suggested that rigidly coupled partners negotiate roles through the coupling force [1-3]. As a result, several human-robot interaction strategies have been developed with such explicit role distribution [4-6]. However, the evidence for role formation in human pairs is missing; to understand how rigidly coupled pairs negotiate roles through the coupling, we systematically examined rigidly coupled pairs who made point-to-point reaching movements. Our results reveal the consistency of the coupling force during the movement, from the very beginning of interaction. Do partners somehow negotiate the roles prior to interaction? A more likely explanation is that the coupling force is a by-product of two people who independently planned their reaching movements. We developed a computational model of two independent motion planners, which explains inter-pair coupling force variability. We demonstrate that the coupling force alone is an unreliable measure of interaction, and that coupled reaching is not a suitable task to examine sensorimotor interaction between humans. [1] Reed KB, Peshkin M (2008), IEEE Trans Haptics 1: 108-20. [2] Stefanov N, Peer A, Buss M (2009), Proc Worldhaptics 51-6. [3] van der Wel RPRD, Knoblich G & Sebanz N (2011), J Exp Psychol 37: 1420-31. [4] Evrard P, Kheddar A (2009), Proc Worldhaptics 45-50. [5] Oguz S, Kucukyilmaz A, Sezgin T, Basdogan C (2010), Proc Worldhaptics 371-8. [6] Mörtl A, Lawitzky M, Kucukyilmaz A, Sezgin M, Basdogan C, Kirche S (2012), Int J of Robotics Research 31(13): 1656-74.

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| | | | Jacob Bloomberg[3], Ajitkumar Mulavara[4], Rachael Seidler[1] | [3]NASA Johnson Space Center, [4]Universities Space Research Association |
| **Monday, April 25** | **1-C-27** | Anticipatory postural adjustments as a function of response complexity in simple reaction time tasks | Michael Kennefick[1], Alexander Wright[1], Jonathan Smirl[1], Paul van Donkelaar[1] | [1]University of British Columbia |
| **Monday, April 25** | **1-C-28** | Modulation of cortical excitability with changes in base of support during standing | Tulika Nandi[1], Beth Fisher[1], George Salem[1] | [1]University of Southern California |
| **Monday, April 25** | **1-C-29** | Cooling-induced cortical deactivations reveal the contributions of parietal area 5 to memory-guided stumbling correction in the walking cat | Carmen Wong[1], Keir Pearson[1], Stephen Lomber[1] | [1]The University of Western Ontario |
| **Monday, April 25** | **1-C-30** | Movement Planning and Postural Adjustment in Single and Multiple Step Initiation | Ruopeng Sun[1], Tianyu Zhao[1], John Shea[1] | [1]Indiana University Bloomington |
| **Monday, April 25** | **1-C-31** | Automatic step detection and gait variability evaluation using inertial sensors | Barrois Rémi[1], Laurent Oudre[1], Ricard Damien[1], Pierre-Paul Vidal[1] | [1]CognAc G |
| **Monday, April 25** | **1-D-32** | Coupled pairs do not necessarily interact | Niek Beckers[1], Atsushi Takagi[2], Arno Stienen[1], Etienne Burdet[2] | [1]University of Twente, [2]Imperial College London |
| **Monday, April 25** | **1-D-33** | Quantifying Ipsilateral Silent Period in Electromyography to Measure Interhemispheric Inhibition | Yi-Ling Kuo[1], Beth Fisher[1] | [1]University of Southern California |
| **Monday, April 25** | **1-D-34** | Current grasping theories cannot explain kinematic changes in grasping when only seeing one digit | Chiara Bozzacchi[1], Eli Brenner[2], Fulvio Domini[3] | [1]Istituto Italiano Tecnologia, [2]Vrije Universiteit, [3]Brown University |
| **Monday, April 25** | **1-D-35** | Practice order effects of tactile and visual guidance during movement on tracing performance and cortical activation | Patrick Lee[1], Sahana Kukke[1] | [1]The Catholic University of America |
| **Monday, April 25** | **1-D-36** | Keeping and object vertical: The emergence of a basic skill | Luis Schettino[1], Christopher Kelbaugh[1], Michael Leff[1], Nada Fadl[1], Raphaela Gassanov[1] | [1]Lafayette College |
| **Monday, April 25** | **1-D-37** | Cerebellar responses to auditory errors in musical material after piano training | Markus Lappe[1], Claudia Lappe[2], Bodeck Sabine[2], Pantev Christo[2] | [1]University of Muenster, [2]West.-Wilhelms-Univ. Münster |
| **Tuesday, April 26** | **2-B-1** | CONGRUENT AUDITORY STIMULI INCREASE THE PROPORTION OF CORRECT RESPONSES IN AN INSPECTION TIME PARADIGM. | Joelle Hajj[1], Anthony Carlsen [1] | [1]University of Ottawa |
| **Tuesday, April 26** | **2-B-2** | Curved movement trajectories when reaching diagonally | Zrinka Potocanac[1], Olivier Sigaud[2], Jan Babic[1] | [1]Jozef Stefan Institute, [2]Sorbonne Universites, UPMC Univ Paris 06, UMR 7222 |