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Emergent Coordination in Joint Interception

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41st European Conference on Visual Perception (ECPV) 2018 Trieste

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Welcome Address

The 41st European Conference on Visual Perception (ECPV) took place in Trieste (Italy), from August 26 to 30, 2018. This edition was dedicated to the memory of our esteemed colleague and friend Tom Troscianko, with an emotional Memorial lecture in his honour held by Peter Thompson during the opening ceremony.

The conference saw the participation of over 900 fellow vision scientists coming from all around the world; the vast majority of them actively participated, allowing us to offer an outstanding scientific program. In particular, we hosted almost 300 oral presentations in 21 symposia and 21 talk sessions, and more than 500 posters during the innovative ‘Poster day’. Among symposia, there were two special ones: the European Symposium on Perception and Action in Sport (ESPAS), gathering the most influential researchers in the field, and *Perceptual Structures – A Festschrift for Michael Kubovy*, celebrating his retirement. As concerns keynotes, the Perception lecture was held by Dejan Todorović, while the Rank Prize lecture was held by Branka Spehar; moreover, in the program we also included the Kanizsa lecture, held by Walter Gerbino. Finally, we respected the tradition of the Illusion night, this year entitled “Un mare di illusioni” as it took place by the sea.

To conclude, we sincerely thank all the volunteers, whose contribution was fundamental for the success of the conference.

The ECPV 2018 organising committee

Tiziano Agostini, Paolo Bernardis, Carlo Fantoni, Alessandra Galmonte, Mauro Murgia and Fabrizio Sors

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Expertise Differences in Identifying the Direction of an Opposing Footballer's Moves: A Behavioural and Event-Related Potentials Study With Point-Light Stimuli

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Although their EEG was recorded, skilled and novice footballers viewed temporally occluded point-light video clips of opponents dribbling the ball towards the viewer then turning to the left or right, either without deception (50% of trials) or with a stepover action to feign moving in one direction before going in the other (50% of trials). Skilled footballers showed overall superior judgement of final direction (d') based on early body kinematics. Event-related EEG alpha band-power (9–11 Hz) was greater in experts than novices both before and during the video. However, relative to the pre-stimulus peak, there was greater alpha desynchronization during action observation in experts and for deceptive than for non-deceptive actions. Event-related potential data also showed greater amplitude of a CNV-like frontal negativity in skilled players than novices. Expertise in perceiving deceptive intent thus affected EEG measures both during action observation and at the response preparation or expectancy stage.

Brain Dynamics During Action Anticipation Processes: A Study Protocol

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The stimulus identification and response selection are on the basis of the visual anticipation and play a crucial role for the decision-making in tennis. To investigate this process, we have developed a study protocol with the purpose of characterizing the dynamics of the brain activity, presenting a series of videos to the participants, simultaneously recording high density EEG (128 channels). Videos, presented in both two-dimensional and three-dimensional modalities, show an athlete who is hitting a forehand or a backhand stroke in four different areas of the court, and the videos present spatial and temporal occlusion. The participants will press, as fast and accurate as possible, a four different keyboard keys to anticipate in which of the

four court zones the ball will end. Beside behavioral data, cortical activity will also be evaluated during the visual anticipation task in terms of reaction time, evoked responses, and modulation of brain rhythms in alpha, theta, and beta bands.

Emergent Coordination in Joint Interception

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In many situations, in daily life, people show coordinated behaviour to attain a shared goal. In the present contribution, we consider a “double-pong” task, modelled after sports situations in which teams of players have to intercept a ball (e.g., receiving a volleyball serve). In the “double-pong” task, two players each control a paddle on a shared screen. Their task is to make sure that a ball that moves from the top to the bottom of the screen will be intercepted by one on them, also avoiding a collision between the paddles. We suggest that the division of labour between the two players emerges from the continuous visual coupling of the player-controlled paddles and the ball. That is to say, on many trials both players initiated a movement, which was aborted by one player when the other player was on an interception course, specified through the changing triangular relation among ball and paddles.

Both Eye Tracking and Manual Control Performance Predict Batting Accuracy in Experienced Professional Baseball Players

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We examined whether baseball players have superior eye tracking and manual control capabilities and how they relate to real-world batting. First, we tested professional baseball players from Hong Kong leagues ($n=44$) and demographically matched nonathletes ($n=47$) using an eye-tracking task in which participants visually tracked step-ramp motion that varied in both speed and direction from trial to trial. Next, we used a manual control task in which participants used a joystick to center a randomly