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Anticipating the Motor Anticipation: The Cases of Lionel Messi and Andrea Pirlo

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ABSTRACT

The suggestive hypothesis of the neural system of Messi that slows the external motor perception was recently proposed by Jafari and Smith and commented by Erren et al. This theory is re-discussed considering the principles of motor anticipation, fast decision making, the memory of past situations and originality during decision making.

The anticipation of the motor anticipation was supposed as a distinctive characteristic of high-level players.

Keywords: Motor anticipation, Time perception, Motor skills, Open skills.

TIME FLOW

Recently, researchers discussed the high skill level of one of the most famous active soccer players: Lionel Messi [1,2]. In particular, their explanation based on: (i) sudden interactions between the structures of neural circuits [3]; (ii) large availability of automatized motor skills that indirectly lead to gain time “to read the game” (predictive brains) [2] and improves the decision making “against” the environment; (iii) fast beta and gamma oscillations of the cortical columns that reduce the perception time [4].

In short, they concluded that for Lionel Messi perceptual time was somehow slowed down during decisive, quick situational actions.

DISCUSSION

The case of Lionel Messi is intriguing and the high speed within the neural circuit is one of the aspects that could explain his “slowed” time passing. In this terms, we believe that would be useful, also, considerer the hypothesis about the low glial ratio in the brain as demonstrated by Diamond et al. [5] on the Albert Einstein's cerebral cortex (in particular in the left area 39). Whereas this computation is practically impossible, we can elaborate on the effects described by Jafari and Smith [1] with the expression “he seems to move more slowly”. Indeed, this sentence can be a little bit misleading because of lacks of a global perspective. As indicated by the Authors, high-speed performance during automatized motor skill must be supported by physical characteristics (low center of mass, high speed, and strength; Jafari and Smith; [1]. The deliberate orientation of the body (i.e. face to goal-line) and the arrangement of body segments to avoid an opponent intervention are important factors to define the soccer ability [6,7].

We agreed with the general message expressed by Jafari and Smith [1] and Erren et al. [2]. However, we prefer to frame the talent of Lionel Messi into a superior ability in motor anticipation such as anticipate the events [8-10]. Indeed, time is an absolute condition for all players: the difference lies in the high-speed motor control [11,12] that awards Messi with more time to think, plan tricks and evaluate more events at once. These conditions lead to high accuracy during decision making (pre-motor cortex), and consequently more time to check the environmental response and eventually re-modulate the action [13,14].

Thus, within this motor anticipation approach, we assert that the predictive brain of Messi produces a “better use of time to read games and plan ahead”. In our opinion, the best players can “anticipate the anticipation outcomes” of their other opponents in a reduced timeframe.

It seems, therefore, it's not just a matter of time-speed perception (i.e. fast neural conduction and a highly effective information processing), nor of the integration between the actual reading of the environment and memorized similar experiences [15]. Rather, Messi is empowered by a superior individual ability to creatively solve a situation [16] anticipating and not just reacting to the opponent's understanding of match play.

To better understand the ability to anticipate the motor anticipation of others, it could be useful to recall the famous “no-look” assist of Andrea Pirlo to Fabio Grosso during the extra time of FIFA World Cup semi-final in 2006 against Germany [17,18].

The Italian player performed a passage towards an unexpected direction that deceived the other players (both mates and opponents) [19].

The extraordinary capacity to induce the motor anticipation forward a solution (not the action but the mental prevision) is the evidence of highly proficient perceptual and cognitive function that, nowadays, is the hallmark of highly talented players.

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