

# Creative actions in team sports are fostered by enhancing players' motor skills rather than a divergent thinking ability

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In team sports, developing creative players is widely discussed as a crucial – as well as challenging – objective. In respective empirical studies, creativity has predominantly been understood as a player's divergent thinking (DT) ability and assessed with specific cognitive tests (e.g., Memmert et al., 2013). Numerous studies indicate that DT can be improved with training (cf. Memmert, 2015). However, the underlying assumption that enhanced DT transfers to more creative on-field actions has yet to be proven. Challenging this assumption, we propose a conceptual alternative by hypothesizing that performing creative actions is foremost rooted in players' motor-skill repertoire rather than in a DT ability. To test predictions from both explanations, we conducted a series of studies consisting of two field-based experiments (I, II) and two correlational studies (I, II). In field-based experiment I, 16 elite youth footballers ( $M_{\text{age}} = 12.90 \pm 0.27$ ) were randomly assigned to a training intervention designed to enhance either their football-specific DT (DT group) or their motor-skill repertoire (functional skills; FS group). Before and after the interventions, we assessed players' football-specific DT as well as the functionality and creativity of actions performed on-field using expert ratings. As expected, the DT group improved more than the FS group in the DT test,  $F(1, 14) = 13.47, p < .01, \eta_p^2 = .49$ ; however, these improvements in DT did *not* manifest in more creative actions on-field. Rather, the FS group showed more pronounced improvements not only in the functionality,  $F(1, 14) = 8.61, p = .01, \eta_p^2 = .38$ , but also in the creativity of on-field actions,  $F(1, 14) = 5.87, p = .03, \eta_p^2 = .30$ . These results challenge the so far predominant DT framework and suggests that on-field creativity is better fostered by enhancing players' motor skills. Correlational study I, examining male under-12 ( $N = 33; M_{\text{age}} = 11.40 \pm 0.46$ ), and correlational study II, examining female under-19 elite youth footballers ( $N = 16; M_{\text{age}} = 17.51 \pm 0.81$ ), support this finding indicating no relevant correlations between players' DT and on-field creativity (under-12 players:  $r_s = -.16, p = .82$ ; under-19 players:  $r_s = .19, p = .24$ ) in contrast to moderate to large correlations between players' motor-skill level and on-field creativity (under-12 players:  $r_s = .43, p < .01$ ; under-19 players:  $r_s = .37, p = .08$ ). Besides these studies, the results of the recently conducted field-based experiment II ( $N = 34$ , males,  $M_{\text{age}} = 11.78 \pm 0.46$ ) will be presented at the conference.