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Dynamic reorganization of leader–follower coordination in expert Latin American dance

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Abstract

Interpersonal coordination in joint action is often described in terms of stable leader–follower roles. However, in complex embodied interactions such as partner dance, coordination and role organization may be dynamically reconfigured across movement contexts. This study examined how physical connection, partner experience, and role-related asymmetry shape coordination in expert Latin American dance. Eight expert dance pairs performed a standardized rumba sequence under connected and non-connected conditions with familiar and unfamiliar partners. Motion capture data were analyzed using C2RQA to assess directional coupling across segmented movement phases. Coordination strength, temporal structure, complexity, and role-related asymmetry were quantified. Results showed sparse, intermittent coordination that varied systematically across phases. Effects of physical connection and partner experience were context-dependent, and leader–follower asymmetry shifted rather than remaining fixed. These findings highlight dynamic, context-sensitive reorganization of coordination and roles in expert joint action through flexible perception-action coupling.

Keywords: interpersonal coordination, joint action, physical connection, leader/follower, C²RP/C²RQA, Latin American dance