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Coordination and variability during anticipated and unanticipated sidestepping

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Highlights

- Coordination becomes more in-phase when sidestepping tasks are unanticipated.
- Trunk motion dominates trunk-pelvis coupled motion during sidestepping tasks.
- Coordination variability is greater when sidestepping tasks are unanticipated.

ABSTRACT

Background: Numerous investigations have attempted to link the incidence and risk of non-contact anterior cruciate ligament injuries to specific intrinsic and extrinsic mechanisms. However, these are often measured in isolation.

Research Question: This study utilizes a dynamical systems approach to investigate differences in coordination and coordination variability between segments and joints in anticipated and unanticipated sidestepping, a task linked to a high risk of non-contact anterior cruciate ligament injuries.

Methods: Full body, three-dimensional kinematics and knee kinetic data were collected on 22 male collegiate soccer players during anticipated and unanticipated sidestepping tasks. A