28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

SEX-SPECIFIC KINETIC AND KINEMATIC CHARACTERISTICS UNDERPINNING CHANGE OF DIRECTION PERFORMANCE IN BASKETBALL PLAYERS

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INTRODUCTION:
In basketball, change of direction (COD) activity comprises ~20.7% of the speed demands, being determinant during both offensive and defensive moments of the game (1). Although there is a great deal of literature investigating COD performance related factors (2), sex-specific information is still limited (3). Consequently, training for women basketball players is often informed from men data. Interestingly, the recent inclusion of microtechnology allow basketball coaches to monitor reliable kinetic and kinematic measures during sport-specific tasks (4,5), which might help to provide a precise sex-specific characterization of different CODs. Therefore, the aims of this study were to (I) evaluate the sex-specific kinetic and kinematic outcomes underpinning COD performance, (II) compare the kinetic and kinematic outcomes across three different COD tasks, and (III) examine the sex- and test-specific outcome most strongly related to COD performance in basketball players.
METHODS:
Thirty young basketball players (17 men and 13 women) competing at the national level were assessed for the modified 505 test, modified T-test and V-cut test. The maximum values of acceleration (ACCmax), deceleration (DECmax), velocity (VELmax), and centripetal force (CentFmax) were measured using Local Positioning System technology (WIMU PRO, Realtrack Systems S.L., Almería, Spain).
RESULTS:
Men players displayed greater ACCmax, VELmax, DECmax, and CentFmax outputs for each section of the 505 test, T-test, and V-cut test (all, $p < 0.05$), resulting in a faster COD performance than women players across tests (all, ES > -1.42; 95% CI = -3.45 to -0.57). The 505 test demanded significantly greater kinematic outputs than T-test, and V-cut test for men ($p < 0.001$) and women players ($p < 0.01$), respectively. In addition, ACCmax explained ~26-58% of the variability in COD time for men players, while DECmax and VELmax explained 38% and 53% of the variability in T-test and V-cut test time, respectively.
CONCLUSION:
These findings suggest that using men and women COD data as interchangeable information may lead to important errors of interpretation when testing and training. The test-specific kinematic profile should be considered to regulate COD intensity, especially to progress in the ACCmax and DECmax demands, which require an optimal player's physical capacity to tolerate the associated loading. Men and women basketball players present different COD determinants, which may help coaches to prescribe individualized training programs.

Topic: **Biomechanics**

Presentation **Oral**

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Supported by SporTools GmbH

31565