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### **Balance and Muscular Torque Difference Between Recreationally Active Males and Females**

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Research has shown that running related injuries (RRI) are common in males and females with females being more susceptible to these injuries which is believed to be due to biological differences. Balance assessments have been used to help identify differences between genders and may help lead to injury prevention techniques. **PURPOSE:** To investigate the difference in static and dynamic balance and the amount of muscular torque in the lower-limb musculature between genders. **METHODS:** Nine healthy recreationally active college aged students between the age of 18-30 (males = 3, 24.3±2.1 years; females = 6, 20.8±0.4 years) participated. Center of pressure (COP) was measured on Bertec Force plates during double leg stance (DLS) and single leg stance (SLS) to determine static balance (S). COP was also measured during Y Balance test and reach distances (cm) to determine dynamic balance (D). A Biodex Dynamometer was used to measure muscular torque (T) in supine and standing hip flexion/extension, knee flexion/extension, and ankle plantar/dorsiflexion to determine the rotational force produced around each joint. Five different speeds were used for hip, knee (60, 120, 180, 240, and 300°/s) and ankle torques (60, 90, 120, 150, 180°/s). Two tailed t-tests were used to compare variables. **RESULTS:** Males showed greater reach distances in the Y Balance test for dominant posteromedial (M=88.3±2.7, F=69.6±11.5 cm, p=0.01) and nondominant posterolateral (M=92.1±3.9, F=78.0±6.8 cm, p=0.04) directions. Females showed lower COP excursions in the Y-plane during SLS (M=0.0456±0.0002, F=0.0392±0.0050, p=0.03), the X-plane in anterior direction of Y Balance test (M=0.0330±0.0029, F=0.0267±0.0052, p=0.04). Females also had greater peak T at 300°/s during supinated hip flexion (M=284.7±26.3, F=342.0±45.7 Nm, p=0.04) for the dominant leg. **CONCLUSION:** Males showed greater reach distance in the posterior direction than females, thus showing their capability to control COP during D, while females showed lower COP excursion in S. Currently, there is not sufficient evidence demonstrating that males or females produced higher T at the given axis of rotations. Biological differences are a factor in RRI and less dependent on COP and T. Therefore, gender differences in COP and T may not be related to injury related gender disparity.