

# Correlation of Foot Posture with Balance and Pelvic Tilt in Healthy Runners

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## Abstract

**Introduction:** Hyper-pronated foot is a functional deformity which mainly affects the total body kinematic chain during dynamic weight-bearing events such as running when the foot lands on the ground. Furthermore, individuals with hyper-pronated foot may exhibit anterior pelvic tilt owing to the biomechanical relations, which alters balance as well. Runners with hyper-pronated feet are at high risk of injury, possibly because of larger torque generated at the lower limb.

**Objective:** The purpose of the study was to find out the relationship of hyper-pronated foot with anterior pelvic tilt and dynamic balance in recreational runners.

**Methods:** A cross-sectional study was conducted in 55 healthy recreational runners with hyper-pronated foot aged 19-30 years. They were assessed by foot posture index for hyper-pronated foot, Star Excursion Balance Test for dynamic balance evaluation, and the photogrammetry method to determine the anterior pelvic tilt angle.

**Results:** The results revealed a poor correlation between foot posture index and dynamic body balance ( $r = 0.23$ ) and a moderate correlation between foot posture index and anterior pelvic tilt angle ( $r = 0.47$ ).

**Conclusions:** There was no significant correlation of foot posture index with dynamic body balance, whereas a minimal correlation was found between foot posture index and the anterior pelvic tilt angle. Therefore, hyper-pronated foot does not significantly directly influence balance or posture.

**Keywords:** Anterior Pelvic Tilt; Dynamic Balance; Hyper-pronation; Running Injuries