

Pelvic Tilt Disparities and Lower Extremity Strength and Mobility Differences in Collegiate Wrestlers

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Category: Masters

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ABSTRACT

The presence of excessive anterior pelvic tilt (PT) prior to performing loaded structural movements such as a squat or deadlift may be detrimental. However the ability to move from a neutral spine into a slight anterior PT during these movements may be beneficial for postural control, but this capability and relationship to hip function is under-represented in the literature. **PURPOSE:** The purpose of this study was to determine the relationship between the ability to move into an anterior PT, hip and hamstring range of motion (ROM), hip strength, and y-balance test (YBT) scores in Division I wrestlers. **METHODS:** Twenty-two collegiate wrestlers completed a PT test, YBT, hip and hamstring ROM, and hip strength tests during pre-season after clearance by the team physician. Wrestlers were divided into: 1) those that could perform an anterior PT without compensation (PT-N; n = 11; age 19.7 ± 1.6 y; height: 175.3 ± 8.4 cm; mass: 79.4 ± 26.1 kg), and 2) those showing mobility or stability concerns during the PT test (PT-C; n = 11; age 19.6 ± 1.7 y; height: 176.5 ± 4.6 cm; mass: 73.8 ± 10.4 kg). Total hip ROM on the right (R) and left (L) was measured by summing internal and external rotation measured using a goniometer. Hip adduction and abduction strength was measured using a dynamometer, and calculated relative to body weight. The standardized YBT approach included measures of leg length to determine a composite score for both legs. Hamstring ROM was measured using the sit-and-reach test (SRT). Data were recorded using mean ± standard deviations. **RESULTS:** PT-N had higher total ROM than PT-C in the R hip (78.2 ± 11.1° vs 74.1 ± 8.8°), L hip (72.9 ± 10.8° vs 71.5 ± 8.8°), and SRT scores (39.4 ± 4.3 cm vs 33.5 ± 8.3 cm). PT-N had greater relative strength than PT-C for R hip adduction (44.6 ± 10.5 vs 40.7 ± 11.1 kg), L hip adduction (42.5 ± 9.7 vs 39.1 ± 11.8 kg), and L hip abduction (40.3 ± 14.3 vs 36.0 ± 6.8 kg), however these differences were muted relative to body weight. PT-N had higher composite YBT scores on the R leg (95.2 ± 8.5 vs 92.4 ± 4.8 %) and L leg (97.1 ± 9.1 vs 90.9 ± 4.4 %). **CONCLUSION:** In collegiate wrestlers sufficient hip mobility, motor control, and hip symmetry may be related to optimal postural control at the hip when flexing under heavy load. Further research with a larger sample size and baseline measures of PT is recommended to examine these trends in more detail.