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Original Research

Sex Differences and Representative Values for 6 Lower Extremity Alignment Measures

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Abstract

Context: A discrepancy in anterior cruciate ligament (ACL) injury rates exists between men and women. Structural differences between the sexes often are implicated as a factor in this discrepancy. Researchers anecdotally assume that men and women tend to display different normative values for certain lower extremity alignments, but published information about these values is limited.

Objective: To evaluate the effect of sex on 6 measures of lower extremity alignment and to report representative values of these measures from a sample of active adults and elite athletes.

Design: Descriptive cohort design.

Setting: University research laboratory.

Patients or Other Participants: A total of 118 healthy adults (57 men: age = 21.1 ± 3.0 years, height = 179.1 ± 7.3 cm, mass = 79.8 ± 13.0 kg; 61 women: age = 20.0 ± 1.6 years, height = 167.7 ± 6.7 cm, mass = 62.7 ± 5.5 kg) volunteered.

Main Outcome Measure(s): Six common measures of lower extremity posture (navicular drop, tibial varum, quadriceps angle, genu recurvatum, anterior pelvic tilt, femoral anteversion) were collected using established methods. One measurement was taken for each participant for each lower extremity alignment. We measured the right lower extremity only.

Results: Compared with men, women demonstrated larger quadriceps angles, more genu recurvatum, greater anterior pelvic tilt, and more femoral anteversion.

Conclusions: We observed differences between men and women for 4 of the 6 lower extremity alignments that we measured. Future researchers should focus on identifying how sex and skeletal alignment affect biomechanical performance of functional tasks and what these differences specifically mean regarding the

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discrepancy in anterior cruciate ligament injury rates between the sexes.

Keywords: malalignment, femoral anteversion, genu recurvatum, anterior pelvic tilt, quadriceps angle

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