

PROSPECTIVE BIOMECHANICAL INVESTIGATION OF ILIOTIBIAL BAND SYNDROME IN COMPETITIVE FEMALE RUNNERS

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Iliotibial band syndrome (ITBS) is one of the most common injuries runners sustain. However, the mechanisms underlying the development of ITBS are not well understood.

PURPOSE: To prospectively examine differences in running mechanics between runners who sustained ITBS and uninjured controls (CON).

METHODS: As part of an ongoing investigation, pre-injury biomechanical data were collected for a group of competitive female distance runners ($n=176$). Subjects ran along a 25m runway at a speed of 3.7 ± 0.2 m/s and 3D kinetic and kinematic data were recorded for 5 trials. All subjects were asked to report their monthly running mileage and any injuries using a web-based recording system. Six runners who developed ITBS were compared to 6 CON runners who had never experienced any knee or hip related running injuries. Rearfoot eversion (RFEV) and shank (SH) and knee (KN) internal and external rotation (IR:ER) angles and angular velocities were compared using independent t-tests ($P<0.05$).

RESULTS: No significant differences in monthly running mileage were observed between groups (104.8km vs 124.1km; $P=0.39$). The ITBS group exhibited significantly greater peak RFEV (12.1deg vs 5.6deg; $P=0.02$) and RFEV excursion (14.2deg vs 9.6deg; $P=0.01$) compared to CON. While not significant, the ITBS group also exhibited greater RFEV peak velocity (202.3deg/sec vs 160.0deg/sec; $P=0.13$) compared to CON. The ITBS group demonstrated significantly reduced peak KER (-7.1deg vs -13.0deg; $P=0.02$) and, while not significant, greater peak KNIR (3.7deg vs -3.3deg; $P=0.07$), greater peak SHIR (-11.3deg vs -5.7deg; $P=0.13$), and greater SHIR peak velocity (-160.8 deg/sec vs -121.9 deg/sec; $P=0.10$) compared to CON.

CONCLUSION: Subjects who experienced ITBS exhibited significantly different gait mechanics than CON. Repetitive exposure to greater RFEV, SHIR, and KNIR may result in excessive torsional forces at the knee necessitating greater passive restraint from the ITB.

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