

## CHANGES IN GAIT BIOMECHANICS AFTER A 6-WEEK REHABILITATION PROGRAM FOR RUNNERS WITH ILIOTIBIAL BAND SYNDROME

Reed Ferber, Silvana Echeverri, Ryan J. Leigh

Running Injury Clinic, University of Calgary

Iliotibial band syndrome (ITBS) is the second most common running injury. However, little research has been done regarding the pathomechanics associated with injury resolution. Previous studies measuring gait biomechanics have involved patients who are pain-free at the time of testing (prior to or after injury resolution) and the only known study involving a rehabilitation program did not measure gait biomechanics.

**PURPOSE:** To evaluate an ITBS rehabilitation protocol and determine potential alterations in gait kinematics, muscle strength, and ITBS pain.

**METHODS:** This quasi-experimental pilot study involved 9 subjects (5F, 4M;  $32.3 \pm 6.2$  yrs;  $173.2 \pm 8.4$  cm;  $68.5 \pm 11.5$  kg), experiencing ITBS at the time of baseline testing, who underwent a 6-week rehabilitation protocol. 3D running kinematics were measured using an 8-camera motion-capture system at 200 Hz while subjects ran on a treadmill at 2.70 m/s. ITB flexibility was measured with a digital inclinometer. Hip abductor (HABD) and extensor (HEXT) maximal isometric force output (MVIC) were measured with a force dynamometer. Self-reported visual analog pain scores (VAS) were measured using a 10 cm scale. The rehabilitation protocol included HABD and HEXT muscle resistance exercises and ITB stretching and rolling.

**RESULTS:** HABD (Pre:  $4.54 \pm 0.93$  N/kg; Post:  $5.13 \pm 0.75$  N/kg;  $p=0.01$ ) and HEXT (Pre:  $3.12 \pm 0.81$  N/kg; Post:  $3.94 \pm 0.91$  N/kg;  $p=0.02$ ) MVIC increased and pain decreased significantly (Pre:  $5.38 \pm 1.78$  cm; Post:  $0.83 \pm 0.84$  cm;  $p=0.01$ ) compared to baseline. Hip adduction (Pre:  $8.03 \pm 2.89$  deg; Post:  $7.76 \pm 3.09$  deg;  $p=0.36$ ), knee internal rotation (Pre:  $10.16 \pm 3.99$  deg; Post:  $9.30 \pm 4.53$  deg;  $p=0.06$ ) and ankle eversion (Pre:  $-8.10 \pm 2.39$  deg; Post:  $-8.16 \pm 2.61$  deg;  $p=0.43$ ) excursions and peak knee flexion angle (Pre:  $-41.58 \pm 4.15$  deg; Post:  $-39.19 \pm 3.05$  deg;  $p=0.07$ ) were not significantly different compared to baseline, nor were differences in ITB flexibility (Pre:  $-26.74 \pm 4.24$  deg; Post:  $-27.70 \pm 3.71$  deg;  $p=0.27$ ).

**CONCLUSION:** The 6-week rehabilitation program resulted in a significant increase in hip MVIC and significant decreases in pain. However, no changes in kinematic gait measures or ITB flexibility were measured compared to baseline suggesting these factors may not play a role in the underpinning aetiology of ITBS.

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