

Supplemental Digital Content 3 Contributions of individual lower-limb muscles to each component of the HCF during running at a steady-state speed of 2.15 ± 0.18 m/s (rows 1-4). The HCF was defined as the force directly applied to the hip joint (femoral head) by the pelvis. It was expressed in the femoral reference frame whereby positive represented a force directed in the posterior, inferior and lateral directions. The posterior-anterior component of the HCF is displayed in the left column. The inferior-superior component of the HCF is displayed in the middle column. The lateral-medial component of the HCF is displayed in the right column. The bottom row (row 5) contains data for the sagittal plane hip joint angle (flexion-extension), which is included for reference purposes to aid the reader with data interpretation. All data are plotted across a single stride cycle from foot-strike to foot-strike. Toe-off is indicated by the red dotted vertical line. Abbreviations are as follows: GMAX: Gluteus Maximus; GMED: Gluteus Medius; HAMS: Hamstrings; ILPSO: Iliopsoas; RF: Rectus femoris; PIRI: Piriformis; ADD: Adductors. Note that the major ipsilateral hip muscles were found to be the dominant contributors to each component of the HCF, whereas there was minimal contribution from all other muscles (row 4).

