Muscle moment arms for different femoral morphologies:

Lever arms were calculated for each individual muscle fascicle across ranges of hip sagittal motion (20° extension, 90° flexion), hip frontal motion (30° adduction, 50° abduction), and hip transversal motion (40° internal, 40° external rotation), reported as rows. Average lever arms were calculated for the fascicles constituting each muscle and the specific number of fascicles is reported in brackets next to the muscle’s name.

Four different modelled femoral morphologies were compared: the baseline unmorphed model, characterized by a femoral antetorsion of 5.5°, as well as morphed femurs with retrotorsion of -15° and antetorsion of +25° and +45°, reported as columns. Additionally, muscle lever arms were also calculated for the morphed femur with +45° of antetorsion and a fixed hip internal rotation angle of 20° (rightmost column), in order to mimic a compensatory kinematic strategy suspected to restore abduction capacity in pathological patients with torsional deformities.