**Hip abductor muscle volume in hip osteoarthritis and matched controls**

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**Introduction:** Hip abductor muscle strength and function is negatively impacted by the presence of hip osteoarthritis (OA). This study quantified differences in hip abductor muscle volume, levels of fatty infiltration, and strength in a population with unilateral hip OA (n=20) when compared to a control group (n=20). The impact of OA severity on these variables was also examined.

**Materials and Methods:** Volume of the gluteus maximus (GMax), medius (GMed) and minimus (GMin) and tensor fascia lata (TFL) was measured using magnetic resonance imaging and muscle asymmetry calculated between affected and unaffected limbs. Fatty infiltrate within muscles was graded using the Goutallier classification system. Hip abduction and rotation strength was tested using a hand held dynamometer. Differences between groups or between limbs were analysed using t-tests and differences in fatty infiltration using non-parametric tests.

**Results:** Decreased muscle volume was identified in GMax, GMed, and GMin on the affected side in the OA group when compared with the control group and these differences were related to severity of OA. Hip abduction and internal rotation strength was reduced in the OA group. Increased levels of fatty infiltration were identified in the affected limbs of the OA group for GMax (P>0.01) and GMin (P=0.04).

**Conclusions:** The affected limb of unilateral OA patients shows atrophy in GMin, GMed, and GMax that was related to severity of OA. OA patients showed reduced strength in hip abduction and internal rotation associated with these changes. Better targeted rehabilitation programs are required to reverse these structural and functional deficits.

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