

## An Assessment of the Hip Muscular Imbalance for Patients with Rheumatism

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**Abstract :** Rheumatism is a muscular disorder that affects the muscles of the upper and lower limbs. This condition could potentially progress to impair the movement of patients. This study aims to investigate the hip muscular imbalance in patients with chronic rheumatism. A clinical trial involving a total of 15 participants, made up of 10 patients and 5 control subjects, took place in KATH Hospital between August and September. Participants recruited for the study were of age  $54 \pm 8$  years, weight  $65 \pm 8$  kg, and height  $176 \pm 8$  cm. Muscle signals were recorded from the rectus femoris, and vastus lateralis on the right and left hip of participants. The parameters used in determining the hip muscular imbalances were the maximum voluntary contraction (MVC%), the mean difference, and hip muscle fatigue levels. The mean signals were compared using a t-test, and the metrics for muscle fatigue assessment were based on the root mean square (RMS), mean absolute value (MAV) and mean frequency (MEF), which were computed between the hip muscles of participants. The results indicated that there were significant imbalances in the muscle coactivity between the right and left hip muscles of patients. The patients' MVC values were observed to be above 10% when compared with control subjects. Furthermore, the mean difference was seen to be higher with  $p > 0.002$  among patients, which indicated clear differences in the hip muscle contraction activities. The findings indicate significant hip muscular imbalances for patients with rheumatism compared with control subjects. Information about the imbalances among patients will be useful for clinicians in designing therapeutic muscle-strengthening exercises.

**Keywords :** muscular, imbalances, rheumatism, Hip

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