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**Difference in proximal femur loading due to muscle activity during
partial weight bearing and NWB standing- A cross-sectional study.**

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Difference in proximal femur loading due to muscle activity during partial weight bearing and NWB standing- A cross-sectional study.

Proximal femoral fracture, managed surgically, follow weight bearing restrictions during rehabilitation to accommodate the underlying bone quality and avoid exceeding the biological limits of compressive forces due to the co-contraction of muscles spanning the hip joint. However, there are differences in opinion about weight bearing restrictions post-operatively. Thus, our study aims to determine whether muscle contraction would vary in weight bearing and non-weight bearing (NWB) standing, hence altering joint loading.

In this study, 102 normal healthy individuals between the age of 21- 60 years were included. Muscle activity of four hip spanning muscles rectus femoris (RF), medial hamstring (MH), gluteus maximus (GMAX) and gluteus medius (GMED) was checked using surface electromyography in 25% weight bearing (25%WB), 50% weight bearing (50%WB) and NWB standing with the help of axillary crutches. The collected data was coded and entered into a statistical package for social sciences (SPSS). Friedman Test and Kruskal-Wallis test with post hoc analysis was used for data analysis. p value of < 0.05 was considered as statistically significant.

At different weight bearing positions muscle contraction showed significant difference in RF ($p < 0.001$), GMAX ($p < 0.001$) and GMED ($p = 0.002$), muscles but MH ($p = 0.655$), did not show significant difference. Comparison of different muscle contractions in 25%WB ($p = 0.000$), 50%WB ($p = 0.000$) and NWB ($p = 0.000$) standing showed significant difference.

Contractions of various hip spanning muscles during partial weight bearing standing was found to be similar to that of NWB standing, considering this early supervised weight bearing can be permitted in patients with proximal femur fractures