

# ADDUCTOR MOMENT RATIO: CORRELATION BETWEEN KNEE WIDTH, HEIGHT AND BODY MASS.

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## Introduction

This study aimed to determine if there is a correlation between tibial length, total body height, and body weight to the width of the knee. At present adductor moment ratio is defined as a ratio of height. If knee width were correlated with body height then this would be acceptable. If not, then using height as a basis for the ratio could be erroneous.

## Materials & Methods

A cadaveric study (n=11) aimed to define parameters and quantify inter and intra observational measurement errors. A live study was carried out on volunteers (n=33) who did not suffer from osteoarthritis or other knee pathologies.

## Results

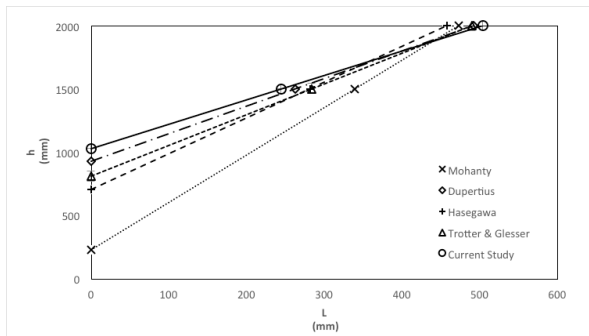


Fig. 1: A comparison of the correlation between height and tibial length, in males, drawn from this study with that from existing literature.

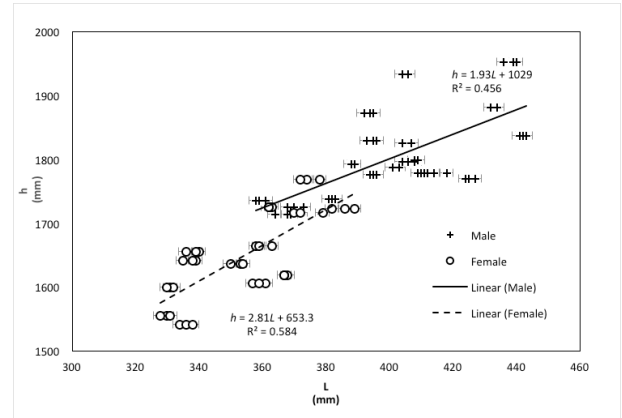


Figure 2: Correlation between tibial length and total body height in male and female subgroups of the living cohort.

In the living study there was no correlation found between tibial width and height (Male  $R^2=0.1204$ , Female  $R^2=0.0137$ ) or between tibial width and weight (Male  $R^2=0.0962$ , Female  $R^2=0.2739$ ). In comparison tibial length and height was correlated ( $R^2=0.4564$ , Female  $R^2=0.5837$ ). The mean soft tissue error from the cadaveric study for tibial length and width was 6.21mm ( $p<0.001$ ) and 9.34mm ( $p<0.001$ ) respectively.

## Conclusions

The study found no correlation between the width of the knee and total body height or body weight. Therefore, it is suggested that knee width be noted for all research studies related to the knee. Adductor moment ratio should also be redefined as a ratio of knee width. The soft tissue error measured suggests that knee width and tibial length be obtained from calibrated x-ray images; if not, these errors should be included in any report.

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