



# Preliminary Reference Values for Lumbar Muscle Compression Resistance (MCRI) in Healthy Adults - Observational Study Using BFpress

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## Abstract

Quantitative assessment of muscle mechanical properties is critical in physiotherapy. The BFpress device allows objective measurement of lumbar muscle compression resistance, but normative data are lacking. This observational study measured 150 healthy physiotherapists ( $\approx 2/3$  male,  $1/3$  female; Age 20-55) in prone position at L4-L5. Most participants ( $\approx 135$ ) had values 25-27 kg, while  $\approx 15$  exceeded 30 kg. All were asymptomatic. Maximum recorded value: 38 kg. These preliminary reference values provide a foundation for future clinical and research applications.

## Introduction

Objective evaluation of muscle mechanical properties is essential in physiotherapy. Devices such as BFpress allow quantitative measurement of muscle resistance, offering more precise data than subjective palpation. Normative reference values for lumbar muscle compression resistance are currently lacking. Establishing such values helps distinguish normal from altered tissue behavior.

## Methods

**Study Design:** Cross-sectional observational study.

**Participants:** 150 healthy physiotherapists, age 20-55,  $2/3$  male,  $1/3$  female.

**Measurement:** BFpress device at L4-L5, prone position.

**Repetitions:** 4-6 compressions per participant; Mean recorded.

**Examiner:** Single physiotherapist (to reduce variability).

## Results

135 participants ( $\approx 90\%$ ) had 25–27 kg.

15 participants ( $\approx 10\%$ )  $>30$  kg.

Maximum: 38 kg (previously treated patient).

All participants were functional and asymptomatic.



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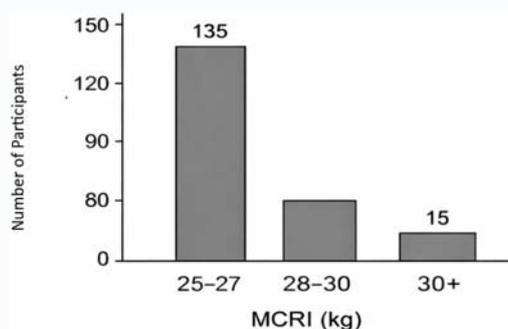
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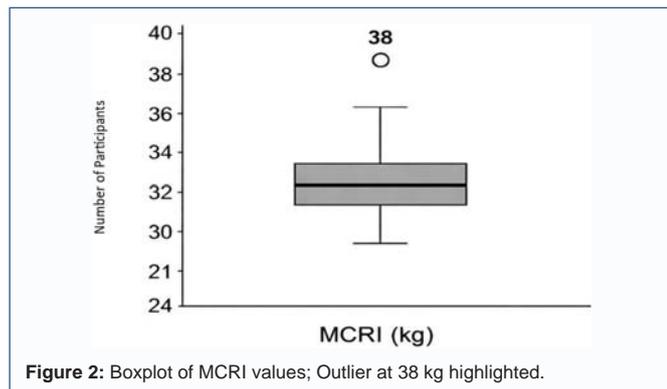
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**Figure 1:** Distribution of MCRI values in 150 healthy physiotherapists (Histogram).



## Discussion

This study provides preliminary normative values for lumbar muscle compression resistance. Values clustered between 25-27 kg in healthy individuals, indicating normal variability. High values, such as 38 kg, likely reflect prior therapy rather than superior function. These findings are consistent with previous literature on muscle mechanical properties in healthy adults.

## Conclusion

Lumbar muscle compression resistance in healthy adults primarily ranges 25-27 kg. These data can guide physiotherapists in clinical assessment and future research using BFpress.

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