ABSTRACT

Background: A scientific assessment of the force generated by muscles is vital in physiotherapy for diagnosis and prognosis. While HHDs have been frequently employed in the field, the high price tags involved in purchasing these devices prevent access in underprivileged environments. Previous studies have reported strong reliability and validity of HHDs compared to isokinetic dynamometers (Stark et al., 2011; Chamorro et al., 2017), highlighting the need for cost-effective alternatives. This study focused on developing and validating a relatively cost-effective alternative in the form of a MyoQuant HHD.

Methodology: A cross-sectional methodological study was performed among 100 healthy subjects aged 18–31 years. The strength of the quadriceps and hamstring muscles was measured using the MyoQuant and the gold standard MICROFET portable dynamometer, using a standardized test protocol. Intra-rater reliability and inter-rater reliability were determined by ICC. Criterion validity was calculated by Pearson's correlation coefficient. Measurement error was estimated by SEM and MDC, whereas agreement was calculated by Bland–Altman analysis.

Results: Inter-rater and interrater reliability were both found to be very good (ICC = 0.961–0.978 and ICC = 0.947–0.969, respectively). Significant positive correlations were detected between the MyoQuant and MICROFET for the quadriceps ($r = 0.784$) and the hamstrings ($r = 0.957$) ($P < 0.001$). There was clinically acceptable agreement

Conclusion: The MyoQuant is a reliable, consistent, and cost-effective tool for muscle strength assessment. It shows strong potential for use in routine clinical practice, particularly in resource-limited settings, promoting objective and accessible physiotherapy evaluation.

Keywords : *Dynamometer, MyoQuant, MMT, Handheld Dynamometer, Muscle Strength, Reliability, Validity.*

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