

[INSTRUMENT REVIEW]**Use of Handheld Dynamometer for the Measurement of Neck Muscle Strength in Asymptomatic Healthy Population: A Short Instrument Review**Dod Vrushali¹, Anap Deepak²¹Post Graduate Student, ²Prof. & H.O.D., Dept. Musculoskeletal physiotherapy, D.V.V.P. F's College of Physiotherapy, Ahmednagar, Maharashtra, India**Introduction**

Clinical evaluation of muscle function yields valuable clinical information when diagnosing and treating patients with a range of neuro musculoskeletal diseases. Handheld dynamometers can be used to quantify muscle force output in the clinical context.^[1]

Isokinetic dynamometers, manual muscle testing, and handheld dynamometry (HHD) are the instruments that can be used to measure muscular strength. A handheld dynamometer is a beneficial and effective equipment in clinical settings, and it can guarantee quantitative strength assessment. Additionally, it is regarded as a valid and trustworthy instrument for determining the strength of the muscles in the upper and lower limbs.^[2]

Because it takes less training, the handheld dynamometer (HDD) is a more affordable and portable tool for measuring muscle strength, which may make it more useful in clinical settings.^[5]

Cervical muscular strength is measured using non-standardized techniques. There have been several uses of different instrumentation, settings, constraints, push or pull techniques, and break or create tests. HHD can capture objective strength values with reasonable ease and speed. A person can be tested with HHD while seated or on a table. If the individual is seated, the trunk can be placed against an immovable object, like a table, or secured with straps. There have been reports of both pushing and pulling techniques with HHD.⁶

Use of HHD in neck muscle strength:

Although HHDs are frequently employed in physical

therapy, there are specific concerns with the "make" state. This means that the force applied to the HHD and the force produced by contracting muscles are equal and opposing. While it is advised that in healthy populations, utilizing an HHD is reliable.^[3] Thus, evaluating cervical muscular strength is helpful for both determining the effectiveness of conservative treatment programs and identifying musculoskeletal abnormalities that might cause discomfort, disability, and neck disorders.^[4]

**References**

1. Garcia MA, Fonseca DS, Souza VH. Handheld dynamometers for muscle strength assessment: Pitfalls, misconceptions, and facts. *Brazilian Journal of Physical Therapy*. 2021 May;25(3):231.
2. Tanveer F, Arslan SA, Darain H, Ahmad A. Reliability of handheld dynamometer for assessing isometric lumbar muscles strength in asymptomatic healthy population. *Pakistan journal of medical sciences*. 2021 Mar;37(2):461.
3. Ashall A, Dobbin N, Thorpe C. The concurrent validity and intrarater reliability of a handheld

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- dynamometer for the assessment of neck strength in semi-professional rugby union players. *Physical therapy in sport*. 2021 May 1;49:229-35.
4. Martins TS, Pinheiro-Araujo CF, Gorla C, Florencio LL, Martins J, Fernández-de-Las-Peñas C, Oliveira AS, Bevilaqua-Grossi D. Neck strength evaluated with fixed and portable Dynamometers in asymptomatic individuals: correlation, concurrent validity, and agreement. *Journal of Manipulative and Physiological Therapeutics*. 2022 Sep 1;45(7):543-50.
 5. Pinto-Ramos J, Moreira T, Costa F, Tavares H, Cabral J, Costa-Santos C, Barroso J, Sousa-Pinto B. Handheld dynamometer reliability to measure knee extension strength in rehabilitation patients—A cross-sectional study. *one*. 2022 May 17;17(5):0268254.
 6. David A. Krause, PT, DSc, O.C.S., Kelsey A. Hansen, S.P.T., Matthew J. Hastreiter, S.P.T., Taylor N. Kuhn, S.P.T., Molly L. Peichel, S.P.T., and John H. Hollman, PT, PhD, A Comparison of Various Cervical Muscle Strength Testing Methods Using a Handheld Dynamometer.