

Hand Grip Strength 'how to' guide

Hand grip strength is used as a measure of muscle strength.

Materials required:

- Hand Grip Dynamometer
- Chair with back rest

Procedure:

- Patient position: subject seated, shoulders adducted and neutrally rotated, elbow flexed at 90°, forearm in neutral and wrist between 0 and 30° of dorsiflexion. The arm is not supported by examiner or armrest and the dynamometer is presented vertically and in line with the forearm.

Instruction to participant:

"I want you to hold the handle like this and squeeze as hard as you can." The examiner demonstrates and then gives the dynamometer to the subject. "Are you ready? Squeeze as hard as you can." As the subject begins to squeeze, the examiner says, "Harder!... Harder!... Relax"

How to measure:

- It is recommended that the test is repeated a total of six times, three on each side.
- A rest of 60 seconds is recommended between each trial to prevent fatigue.
- The maximum measurement on each side is recorded. Read grip strength in kilograms and record the result to the nearest 1 kg.
- Also record hand dominance, i.e. right, left or ambidextrous

Example Cut Points:

At risk if max score:

Female	<16kg
Male	<27kg

* Select the most appropriate cut point for the population you are working with

Frequently asked questions:

Q: Which hand grip dynamometer should I use?

A: There is a wide range of hand grip dynamometers. The Jamar hand dynamometer (Lafayette Instrument Company, USA) is the most widely cited in the literature and accepted as the gold standard by which other dynamometers are evaluated. It is recommended if comparing pre and post intervention measures that the same instrument is used to improve accuracy.

Q: How long should the patient grip for?

A: It is suggested that 3 seconds is a sufficient period of time for a patient to exert maximal strength during a hand grip strength assessment.

Key references:

1. Roberts HC, Denison HJ, Martin HJ, Patel HP, Syddall H, Cooper C, Sayer AA. A review of the measurement of grip strength in clinical and epidemiological studies: towards a standardised approach. *Age Ageing*. 2011 Jul;40(4):423-9.
2. Dodds RM, Syddall HE, Cooper R et al. Grip strength across the life course: normative data from twelve British studies. *PLoS One* 2014; 9: e113637.
3. Massy-Westropp, N.M., et al., *Hand Grip Strength: age and gender stratified normative data in a population-based study*. BMC research notes, 2011. 4(1): p. 1-5.

4. Núñez-Cortés, R., et al., *Handgrip strength measurement protocols for all-cause and cause-specific mortality outcomes in more than 3 million participants: A systematic review and meta-regression analysis*. Clinical Nutrition, 2022.

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