

Hand Grip Strength PROTOCOL

About Hand Grip Strength

Reliable and valid evaluation of hand strength can provide an objective index of general upper body strength. The power grip is the result of forceful flexion of all finger joints with the maximum voluntary force that the subject is able to exert under normal biokinetic conditions. The synergistic action of flexor and extensor muscles and the interplay of muscle groups is an important factor in the strength of the resulting grip. Many factors influence the strength of the grip, including muscle strength, hand dominance, fatigue, time of day, age, nutritional status, restricted motion, and pain.

Procedure

Adapted from Lafayette Instruments using Hand Dynamometer Model 78010

- Illustrate the use of the instrument to the participant prior to testing.
- The participant should be in a standing position, arms at their side, not touching their body. Keep elbow bent slightly. Administer the test on the non-dominant hand. (**Exception:** In the event that hand grip must be done on the other side of the body from protocol, go ahead and do the measurement and record it as normal, but leave a marginal note indicating the side used, in case an analyst looks into it later as an outlier).
- Ask the participant to squeeze the dynamometer with as much force as possible, being careful to squeeze only once for each measurement.
- Three trials should be made with a pause of about 10-20 seconds between each trial to avoid the effects of muscle fatigue.
- Record the result of each trial to the nearest pound or kilogram. If the difference in scores is within 6.6 lbs. or 3 kgs., the test is complete. If the difference between any two measures is more than 6.6 lbs. or 3 kgs., then repeat the test once more after a rest period. Use the best 3 measurements (ie. the highest three) in your data report.
- When a 4th measurement is taken with the hand grip (when any of the 3 measurements are 3 kg apart) be sure the outlier (THE LOWEST VALUE) is crossed off with your initials so that the 3 HIGHEST measurements are clearly indicated for data entry.
- The results are compared to published age and sex-specific norms. (See Page 2.)

Hand Grip Strength Protocol

Continued

Evaluation of Hand Grip Strength Results

The following tables are averages based on data obtained from large groups of people. Significant variations from these figures should not necessarily be considered abnormal or indicative of a problem. For example, a 6'2" tall, 30 year old man weighing 210 lb. may have a higher grip strength than average, while a 30 year old, 5'7" man weighing 135 lb. may have a lower than average grip strength.

Strength testers are particularly useful in showing *change* over time. For example, measuring a person's strength during the course of an illness or injury can assess loss of strength. For someone recovering from an illness or injury who is undergoing physical therapy, measuring at the beginning and then at regular intervals can assess whether the therapy is having the desired results.

Adult Data for Lafayette Model 78010 Dynamometer* Averages of Grip Strength in kg. for Adults

Age	Male – Dominant Hand	Male – Non Dominant Hand	Female – Dominant Hand	Female – Non Dominant Hand
20	36 kg	35 kg	21.5 kg	19 kg
25	39 kg	36 kg	22 kg	20 kg
30	40.25 kg	36 kg	21 kg	19 kg
35	39 kg	35.5 kg	19.5 kg	18.75 kg
40	37.5 kg	34 kg	18.5 kg	17.75 kg
45	35.75 kg	32.5 kg	17.5 kg	16.75 kg
50	33 kg	30.25 kg	17.5 kg	16.5 kg

* From Lafayette Instrument Owner's Manual from tests on more than 2000 subjects; 1986