
Grip Strength Evaluation Appendix – Section 16.8a, AMA Guides, p. 508

- **AMA 5th Edition, Section 16.8a-Principles (Strength Evaluation), pg. 508:**
“Decreased strength cannot be rated in the presence of (1) decreased motion, (2) painful conditions, (3) deformities or (4) amputations, since they prevent effective application of maximal force in the region being evaluated.
- **AMA 5th Edition Section 16.8, pg. 508:**
- *“..the impairment due to loss strength could be combined with other impairments only if based on unrelated etiologic or pathomechanical causes.”*
- **AMA Guides, 5th Edition, page 509:**
- *Manual muscle testing is subject to individual’s conscious and subconscious control. Individuals whose performance is inhibited by pain may not be good candidates for this testing. Results of strength testing should be reproducible on different occasions or by two or more trained observers.*

Rating Reduction of Grasping Power

1. **AMA Guides, p. 507:** Grip impairment typically used for muscle tear, **tendon release** and **excision of the epicondyle**
2. **AMA 5th page 508:** Decreased strength cannot be rated in the presence of (1) decreased motion, (2) painful conditions, (3) deformities or (4) amputations, since they prevent effective application of maximal force in the region being evaluated.
3. **AMA 5th Section 16-5d Principles, pg. 494:** Grip Strength Reduction cannot be combined with ROM deficits or peripheral nerve disorders. **In compression neuropathies additional values are not given for decreased grip strength.**

Validating Strength Measurements During Examination – Standard Testing

1. **AMA Guides, Section 168b, page 508:** To be considered reliable:
 - 1.1. Tests must be repeated at intervals during examination
 - 1.2. Tests are repeated 3-times with each hand at different times during the examination
 - 1.3. Readings with less than 20% variation are to be considered reliable.
- **AMA 5th Edition Section 16.8, pg. 508:** *“The test is usually repeated three times with each hand at different times during the examination, and the values are recorded and later compared.”*
- *“Tests repeated at intervals during an examination are considered to be reliable if there is less than 20% variation in the readings. If there is more than 20% variation in the readings, one may assume the individual is not exerting full effort.”*
- *“Grip strength measurements may be taken with a Jamar dynamometer. The second (4^{cm}) or third (6^{cm}) position, according to the size of the hand, usually allows the individual to apply maximal effort.”*
2. **If after standard testing lack of full effort is suspected:**
 - 2.1. Measurements from the 5 settings of the dynamometer should be taken
 - 2.2. Rapid Exchange testing of each hand (5-times)

- **AMA 5th Edition Section 16.8b-Grip & Pinch Strength. pgs. 510:**

“If there is evidence that the individual is exerting less than maximal effort, the grip strength measurements are invalid for estimating impairment.

Consistency Testing: Exertion and Strength Testing Techniques

Consistency tests are designed to ensure reproducibility and greater accuracy. These measurements, such as one that checks the individual's lumbosacral spine range of motion (Section 15.9) are good but imperfect indicators of people's efforts. The physician must use the entire range of clinical skill and judgment when assessing whether or not the measurements or tests results are plausible and consistent with the impairment being evaluated. If, in spite of an observation or test result, the medical evidence appears insufficient to verify that an impairment of a certain magnitude exists, the physician may modify the impairment rating accordingly and then describe and explain the reason for the modification in writing. - AMA Guides, pg. 19: Section 2.5c

AMA Guides, Section 16.8b – Grip and Pinch Strength, pgs 508 to 510: When dynamometer measurements are taken, if maximum effort is exerted, the data obtained will follow a bell curve. With maximum, exertion/strength being greatest near the mid point. The use of dynamometer readings that have been affected by other impairment factors (pain, limitations of motion, muscle weakness, musculature atrophy, deconditioning, bone deformities, **lack of full effort/voluntary restriction**) **creates an unrealistic result and produces a greater amount of Impairment & Permanent Disability** than actually exists by inflating the overall strength loss index.

Bell-Shaped Curve Technique

Two techniques have been reported to help detect individuals who exert less than maximal effort on grip strength testing. Stokes pointed out that the plotting of grip strength measurements from each of the five handle settings of the Jamar dynamometer would produce a bell-shaped curve. Those individuals not exerting maximal effort will produce results yielding a straight line or a flat curve.”

- AMA 5th Edition, pg. 508

The Rapid Exchange Grip Technique

An alternate method is **the rapid exchange grip technique**. The grip strength is first determined by standard techniques. The individual then is instructed to grip the dynamometer with maximal effort, first with one hand, then quickly with the other hand for at least five exchanges. Individuals who did not exert maximal effort with the standard technique will record significantly higher strength readings.

AMA 5th Edition Section 15.8a, pg. 399: *“The physician should seek consistency when testing active motion, strength and sensation. Tests with inconsistent results should be repeated. Results that remain inconsistent should be disregarded. When the physiological measurements fail to match known pathology, they should be repeated and, if still inconsistent, disallowed until documented evidence is provided for the abnormalities noted on the physical examination.”*

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