SOP #2005

Lateral pinch grip strength test

- Always review the SOP before beginning administration of the measurement tool.
- Always read the SOP instructions verbatim to the participant.
- Never modify the procedure or instructions (a modified test is invalid/incomplete).
- Always notify the coordinator if you have any doubt or questions about the SOP.

Description

The lateral pinch (key pinch) strength test, that is, thumb to index finger, provides a quantitative measurement of the maximum voluntary strength of the hand and forearm muscles during a pinching task. It serves as an indicator of hand function.

Equipment

- □ Standard or digital JAMAR® (Sammons Preston) pinch gauge
- □ Chair with armrests
- □ Footrest or pillow (as needed)

Participant preparation

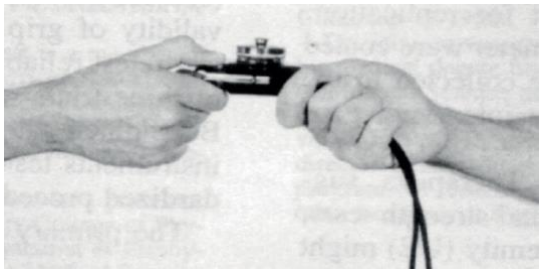
Starting position:

- □ The participant is seated comfortably on a chair with the back against the chair backrest, the feet flat on the floor. If the feet do not touch the floor, a footrest is placed under the feet, or a pillow is positioned behind their back.
- □ The tested arm is positioned against the body, shoulder neutrally rotated, elbow flexed to 90º (parallel to the floor), the forearm supported on the armrest, forearm and wrist in a neutral position (wrist: extension [0° to 30°] and ulnar deviation [0° to 15°]).
- □ The participant holds the pinch gauge between the pulp of their thumb and the lateral aspect of the 2nd phalanx of the index finger.



Examiner instructions

- □ The examiner holds the distal end of the pinch gauge to prevent the device from falling, while supporting its weight without creating a fixed point, as this may induce compensatory movements
- □ The examiner verifies the participant's position and monitors any compensatory movements



Test administration

Demonstration

The examiner may provide a demonstration if necessary.

Practice

A submaximal practice trial may be performed to ensure correct understanding of the movement, confirm the absence of pain, and verify the stability of the position

Procedure

- □ The standardized instructions are provided to the participant: *"We are going to use this device to measure the strength of your fingers. WhenI say **'Go'**, you must squeeze as hard as you can like this, for 3 to 5 seconds. We will repeat the exercise 3 to 5 times for each hand. Do you have any questions?"* The examiner demonstrates the lateral pinch position as part of the instructions and addresses any questions if needed.
- □ The participant is instructed to exhale while squeezing to avoid holding their breath.
- □ At the "Go" signal, the participant begins squeezing the pinch gauge. Throughout the contraction, the examiner repeatedly gives verbal encouragement for approximately 3 to 5 seconds: *"Hard, hard, hard, hard"*. At the end of this period, the participant is instructed to stop squeezing: *"Relax"*
- □ 3 to 5 trials are performed with each hand, alternating between the dominant and non-dominant side to reduce the impact of fatigue. The pinch gauge is reset to 0 prior to each repetition.

Trial(s)

Three trials are performed; however, up to two additional trials must be perform if any of the trials are considered invalid (deviation from the starting position, pinch gauge touching the thigh, effort considered submaximal) or if a staircase effect is observed (strength 1st trial < 2nd trial < 3rd trial).

Result

- □ The strength measured by the pinch gauge is recorded on the scoring sheet in kilograms. The validity of the result for each trial must be recorded on the scoring sheet (valid or invalid).
- □ Ensure regular calibration of the device in accordance with the manufacturer's recommendations.

References

1. Mathiowetz V, Kashman N, Volland G, Weber K, Dowe M, Rogers S. Grip and pinch strength: normative data for adults. Arch Phys Med Rehabil 1985;66:69-74.
2. Fess EE, Moran C. Clinical Assessment Recommendation. Indianapolis: American Society of Hand Therapists; 1981.
3. Phillips JM, Lindstrom-Hazel DK, Harrow Swantek S, Courtnay Catalano E. Grip and Pinch Strength Norms for Michigan Workers. The Open Journal of Occupational Therapy 2013;1:17.
4. Hebert LJ, Remec JF, Saulnier J, Vial C, Puymirat J. The use of muscle strength assessed with handheld dynamometers as a non-invasive biological marker in myotonic dystrophy type 1 patients: a multicenter study. BMC Musculoskelet Disord 2010;11:72.