Chronic non-specific neck pain

Chronic non-specific neck pain is related to limited cervical spine mobility, impaired function, neck muscles myofascial pain syndrome, and stress at work. The aforementioned factors are strongly related and may lead to a negative impact on health-related quality of life.

There are limited reports about the reliability of measuring neck extensor muscle strength using a portable dynamometer in neck pain patients. The aims of the current study were 1) to investigate intra- and inter-rater reliability of neck extensor isometric strength measurement using a portable dynamometer in patients with chronic non-specific neck pain (CNSNP) and 2) to compare neck extensor isometric strength in participants with and without CNSNP.

Guidelines for Reporting Reliability and Agreement Studies (GRRAS) were followed. Two examiners received a 15-minute training before enrollment. Inter-rater reliability was assessed with a 10-minute interval between measurements, and intra-rater reliability was assessed with a 10-day interval. Three trials were assessed and examiners were blind to the strength values (in Newtons) from other sessions of 20 individuals with CNSNP (mean±SD= 37.9 ± 9.8y; Neck Disability Index 29.2 ± 7.4%) and 20 individuals with other musculoskeletal disorders (mean ± SD = 32.8 ± 46.2y).

Intra-rater reliability was excellent with intraclass correlation coefficient (ICC)(3,1) of 0.95 (CI:0.90-0.97) and inter-rater reliability was good to excellent with ICC(2,1) of 0.88 (CI:0.77-0.94) in CNSNP. No significant difference of neck extensor strength was found between CNSNP (93.27N±31.94) and Individuals without CNSNP (111.43N±40.11) ($p > 0.05$).

A portable dynamometer is a reliable tool for measuring maximal isometric neck extension strength in individuals with CNSNP. Slightly but no significant differences of neck extensor strength values between individuals with and without CNSNP. Future studies are needed to assess the generalizability of the findings in patients with other muscle deconditioning [1)].

1)
Grondin F, Colman D, Peyrot N, Maillard O, Freppel S, Caderby T, Perdrix Y. Reliability and difference in neck extensor muscles strength measured by a portable dynamometer in individuals with and without chronic neck pain. J Man Manip Ther. 2022 Mar 25:1-7. doi: 10.1080/10669817.2021.2024676. Epub ahead of print. PMID: 35332857.