

# HALO is **easier and faster** to use in the clinic for measuring ROM and compares well to the gold standard for accuracy and reliability

Measuring range of motion (ROM) of an impaired anatomical joint, such as a shoulder, is an essential tool of the physiotherapist in the clinic. The shoulder has a normal ROM and can vary slightly for each individual depending on age and gender. Typically, an impaired shoulder may have limited ROM caused by injury or diseases such as arthritis and be associated with pain, swelling and/or stiffness. Improving ROM of a shoulder in flexion, abduction, internal rotation and external rotation through therapeutic exercises is known to improve function.

ROM measurements are critical for providing baseline data, monitoring improvement and deterioration of function and for determining functional limitations by quantifying the degree of change. The gold standard for measuring ROM is the universal goniometer. It may be constructed of metal or plastic and has arms that measure in 1° increments.

HALO is a digital and laser guided device that addresses the challenges of universal goniometers. HALO requires one-handed operation that allows the therapist to stabilise the limb. This is to prevent movement compensations especially of an already impaired joint. The built-in laser guidance feature of HALO assists the therapist to align anatomic landmarks as the lasers intersect with the joint axis. This reduces error and enhances repeatability. The digital display assists the therapist in readability of the measurements.

Reliability and validity of HALO are excellent with all intra- and inter-class correlation coefficient (ICC)s comparing it to the gold standard are greater than 0.75 ( Figure 1). The reliability and accuracy of HALO compares extremely well to the gold standard. This is because there is no significant difference between HALO and Gold Standard for measures of ROM. The measurements were made by two raters who were blinded to the measurements. A third individual recorded the measurements. Intra-rater reliability was also excellent.

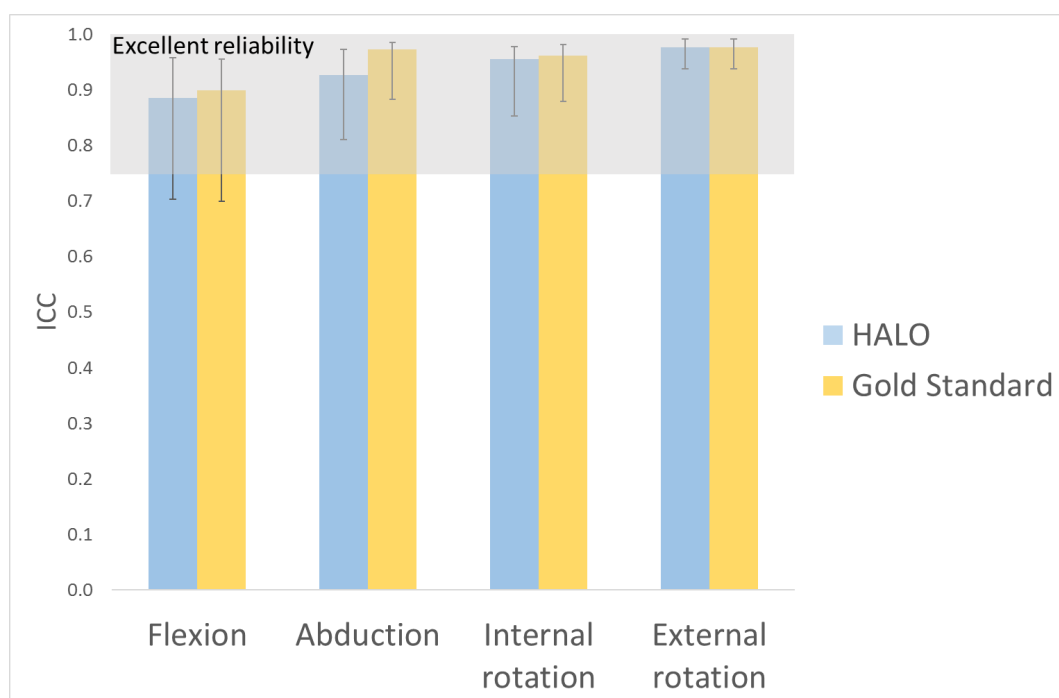


Figure 1 HALO compares very well to gold standard for accuracy and reliability