

Medical or Research Professionals/Clinicians

Topic area: *Clinical topics by area of research*

Specific topic: **33. Rehabilitation**

EULAR13-3669

HAND ASSESSMENT WITH THE E-CONE IN RHEUMATOID ARTHRITIS AND HAND OSTEOARTHRITIS.

N. van Merendonk¹, V. van Alebeek¹, L. Spreeuwiers², D. Spreeuwiers³, P. J. Kroon⁴, L. Roorda¹, J. Dekker^{1,5}, A. F. Hoeksma^{1,*}

¹Amsterdam Rehabilitation Research Center, Reade, Amsterdam, ²Department of EEMCS, University of Twente, Enschede, ³Department of Public and Occupational Health and EMGO-institute, VU University Medical Center, Amsterdam, ⁴Sensor Imprint Technology, Leusden, ⁵Department of Rehabilitation Medicine, VU University Medical Center, Amsterdam, Netherlands

My abstract has been or will be presented at a scientific meeting during a 12 months period prior to EULAR 2013:

No

Is the first author applying for a travel bursary?: No

Is the first author of this abstract an undergraduate medical student?: No

Background: Rheumatoid arthritis (RA) is a systemic inflammatory, progressive disease resulting in deformities of the hand. Besides synovitis, tenosynovitis of the extrinsic flexor tendons is one of the initial features of RA, leading to friction and consequently to an imbalanced coordination of the hand muscles. This phenomenon is also seen in patients with hand osteoarthritis (HOA).

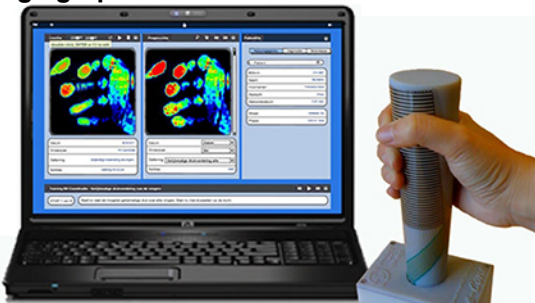
For the treatment of RA and HOA, focused on optimal hand coordination, feedback regarding the coordination of the intrinsic and extrinsic muscles is essential. We have developed a new device to provide this feedback, by means of pressure sensors attached to a cone that register and visualize the distribution of hand pressure on a screen: the E-cone (figure 1). In clinical practice, the E-cone has been successfully used as a treatment device; patients can easily interpret the image on the screen, and use this as cue to improve their handgrip. In order to implement the E-cone as a diagnostic device, inter- and intra-observer reliability has to be determined.

Objectives: To assess the reliability of the E-cone in RA or HOA patients and healthy subjects, while assessing the handgrip pattern and pressure distribution.

Methods: This study included patients with RA or HOA, treated in the hand rehabilitation team, and healthy subjects without impairments. The subjects raised the E-cone with each hand successively. This assessment was filmed with a webcam. The handgrip pattern and the pressure distribution were assessed twice, using a 5-point Numeric Rating Scale by two independent assessors separately, using the film for the assessment of the handgrip pattern. The inter- and intra-rater reliability were calculated via intra-class correlation (ICC).

Results: Fifty participants (9 RA, 17 HOA and 24 healthy subjects) were assessed; mean age 49.8 years (59.8, 64.4 and 35.7), 88% females. The inter- and intra-rater reliability of the handgrip pattern were in moderate agreement with intra-class correlations of 0.48 and 0.49 respectively. The inter- and intra-rater reliability of the pressure distribution were in fair agreement, both with an intra-class correlation of 0.38.

Image/graph:



Conclusions: Although the E-cone can easily and successfully be used as a treatment device in restoring handgrip coordination and facilitating tendon gliding in stenosing tenosynovitis, the device can not yet be used as a diagnostic tool.

Disclosure of Interest: None Declared