

UPPER LIMB SENSORIMOTOR AND FUNCTIONAL PERFORMANCE IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Purpose: There are many causes of disability in patients with rheumatoid arthritis (RA) including articular destruction, deformity, pain and muscle dysfunction. Although considerable sensorimotor deficits have been described in the lower limbs of RA patients¹, which contribute to reduced functional performance and disability, little is known about the presence and consequences of sensorimotor deficits in the upper limb. Therefore, we examined upper limb sensorimotor and functional performance in RA patients.

Relevance: Knowledge of upper limb sensorimotor deficits in RA patients will enable therapists to tailor rehabilitation appropriately.

Subjects: 31 RA patients (mean age, height & weight; 65yrs, 9 males (1.71m, 76kg), 22 females (1.64m, 72kg)) and 18 healthy subjects (66yrs, 4 males (1.72m, 75kg), 14 females (1.64m, 68kg)) attended for one assessment.

Methods: Global upper limb strength (aggregate isometric strength of shoulder flexors, abductors, elbow flexors, elbow and wrist extensors), upper limb proprioception (joint position sense (JPS) at the elbow and wrist) and global functional performance (time taken to; i) put on a shirt and button 3 buttons (dressing) and ii) cut putty with a knife and fork (eating)) was assessed.

Analysis: Between group differences were established by student t test and association by Pearson correlation coefficient. Significance was set at $P < 0.01$.

Results[#]: dominant limb	RA patients (n=31)	Healthy subjects (n=18)	Mean difference (95% CI)
Strength (N)	369 (181)**	649 (181)	280 (172 to 389)
JPS (°)	7.4 (2.9)	5.4 (2.0)	-2 (-0.4 to -3.5)
Functional performance (sec)	47.5 (15.4) *	31.5 (8.1)	-16.0 (8.1 to 23.9)

[#]mean (SD), ** lower than healthy subjects ($P < 0.001$), *slower than healthy subjects ($P < 0.001$), upper limb strength was inversely associated with global functional performance ($r = -0.3$, $P = 0.09$) and eating ($r = -0.5$, $P < 0.05$)

Conclusions: This small study confirms patients with RA have considerable upper limb weakness when compared to healthy subjects. There is a difference in proprioception (JPS) between the two groups ($P = 0.013$), which did not reach the level of statistical difference set, partially due to measurement error, whether this difference is clinically important is unknown. Strength, but possibly not sensory deficits, may contribute to the reduced upper limb function evident in the RA patients.

References:

1. Bearne L.M, Scott D.L, Hurley M.V. (2002) Quadriceps sensorimotor dysfunction caused by rheumatoid arthritis can be reversed with exercise therapy without exacerbating disease activity. *Rheumatology* 40: 1301-10