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**Title:**

SARAH: STRENGTHENING AND STRETCHING FOR PEOPLE WITH RHEUMATOID ARTHRITIS OF THE HANDS: A RANDOMISED CONTROLLED TRIAL

**Background:**

The effectiveness of exercise for improving hand and wrist function in people with RA is uncertain. The study aim was to estimate the clinical and cost-effectiveness of adding an optimised exercise programme for hands and upper limbs to standard care for patients with RA.

**Methods:**

A multi-centre RCT involving 17 English NHS trusts recruited patients diagnosed with RA with pain/dysfunction of the hands and/or wrist joints who were not on a DMARD or on a stable DMARD regimen for ≥3 months. Patients were excluded if <18 years old, had upper limb surgery/fracture in the last 6 months, on a waiting list for upper limb surgery or were pregnant.

Participants were randomised to either usual care or usual care plus an exercise programme. Usual care consisted of joint protection education, general exercise advice and functional splinting if required. The exercise programme consisted of 6 sessions of strengthening and stretching exercises with a hand therapist, daily home exercises and strategies to maximise adherence.

Follow-up was at 4 and 12 months post-randomisation. Outcome assessors were blind to group assignment and independent of treatment delivery.

The primary outcome was the Michigan Hand outcomes Questionnaire (MHQ) overall hand function subscale score at 12 months. Secondary outcome measures included the full MHQ, pain, quality of life (EQ-5D, SF-12), physical impairments and self-efficacy. Medication and health care use were collected for the health economics evaluation.

**Results**

490 patients were randomised (244 to usual care, 246 to exercise programme). Outcomes were obtained for 89% of participants at 12 months (222 for usual care, 216 for exercise programme). There was a statistically significant difference in favour of the exercise programme for the primary outcome at 4 and 12 months (mean difference [95%CI] 4.60 [2.22 to 6.97] and 4.35 [1.60 to 7.10] respectively) corresponding to a small to moderate standardised effect (0.3). There was no difference in pain scores or adverse events. There was a small, statistically significant difference in self-efficacy scores favouring exercises at 4 and 12 months.

The estimated mean healthcare cost of the exercise programme was approximately £100 higher than usual care (mean difference 97.98 [-607.0 to 815.6 95%CI].

The estimated difference in mean QALYs accrued over 12 months was 0.01 greater (95%CI -0.03 to 0.05) in the exercise programme group than in usual care and a corresponding ICER of £10,689 (EQ-5D based).

 **Conclusions**

The results of the SARAH trial suggest that the addition of an exercise programme for RA wrists/hands to usual care is clinically and cost effective when compared to usual care alone. No adverse effects were associated with the exercise programme.

The cost per QALY gained is well below NICE’s benchmark cost-effective thresholds of £20,000 - 30,000.