**S1 – DESCRIPTION OF THE OCCUPATIONAL THERAPY TRAINING**

Twelve OTs attended a two-day training programme led by Professor Alison Hammond. A range of theories and approaches shaped intervention delivery including: Social Cognitive Theory[35]; the Health Belief Model[36,37]; Self Management and Self Regulatory Theory[38]; effective communication, education and skills teaching strategies[39,40]; Motor learning theory[41]; and included effective features of self-management education[19-22]; specific training on joint protection methods and exercises for hand OA; and the latest research evidence on the presentation of hand OA in the community[5,6]. Sections of the programmes were role-played with OTs acting as both leaders and participants to experience the educational-behavioural methods used. To standardise delivery a leader manual and teaching materials were provided for each intervention, along with additional study materials to support OTs understanding the interventions and education methods. Manuals for patients and health professionals are available on request from the authors. All OTs were trained to deliver both interventions (joint protection education, instruction on hand exercises).

## S2 – STATISTICAL ANALYSIS

Treatment models were initially fitted to the primary and secondary outcome measures to include the two main effects of interest - no joint protection versus joint protection; no hand exercises versus hand exercises - and their interaction, adjusted for baseline values of the outcome of interest (except for measures derived using the global rating of improvement), and pre-defined potential confounders (age, gender, social class (coded as manual, non-manual, self-employed[42]), length of time with a hand condition and general practice (a priori covariates which might influence treatment outcome)).

The interaction term was then tested for statistical significance (to test the assumption of independence of treatment effects) and if null ($p \geq 0.05$) the interaction was dropped from the model and the model re-run to determine the main treatment effects for joint protection and hand exercises. If the interaction term was found to be statistically significant ($p<0.05$), the effect of joint protection and hand exercises was evaluated from a model with treatment represented as a 4-level variable (i.e. leaflet and advice (L&A), joint protection (JP), hand exercises (HEx), joint protection and hand exercises (JP&HEx)), with the effectiveness of the individual treatments compared to the leaflet and advice arm.

## S3 – STRATEGY TO IMPUTE MISSING DATA

Multiple imputation was used to impute missing data at all time-points for the variables shown in table 4 and for the adjusting baseline covariates included in the treatment models. An imputation model was fitted using Multiple Imputation by chained equations (MICE) in STATA version 12.0[30] and included 25 imputed datasets. Twenty five imputed data sets were derived so that the number of imputations exceeded the overall percentage of missing data in the data[43]. Despite not having any missing data, the treatment main effects and their interaction were also included in the imputation model. This was because they were analysed in the treatment models derived from the imputed data. The imputation model included continuous outcome measures that were modelled using predictive mean matching (nearest neighbours = 1[44]) and ordinal outcomes that were modelled using ordinal regression. Predictive mean matching was chosen so that the imputed values remained on the same scale as their original outcome and because this method is particularly suited to modelling skewed data[43]. As some of the ordinal response options were of low frequency, the augment option in STATA was used to avoid the problem of perfect prediction[44], however, despite this, the categories of "completely recovered" and "much better" on the global assessment of change outcome still needed to be combined for the model to run. After the imputation model had been applied to the data, Rubin's rules[44] were used to combine treatment effects (and their associated standard errors) across the imputed data sets to provide a single estimate of treatment effect for each analysis outcome.

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