Additional file 1: Additional information

van Balkom et al. - COGTIPS: a double-blind randomized active controlled trial protocol to study the effect of home-based, online cognitive training on cognition and brain networks in Parkinson's disease

Overview of cognitive assessments and questionnaires, including references

Cognitive screening

Montreal Cognitive Assessment [1]

Self-administered Gerocognitive Examination [2]

Neuropsychological tests

Boston naming test [3]

Category fluency [4]

Computerized adaptation of the Tower of London [5]

Controlled Oral Word Association Test ('letter fluency')[6]

Location Learning Test [7]

Pentagon copy from the Mini-Mental State Examination [8]

Rey Auditory Verbal Learning Test [9]

Rey Complex Figure Test [10]

Stroop Color Word Test [11]

Visual Form Discrimination Test [12]

Wechsler Adult Intelligence Scale-III digit span [13]

Questionnaires

Apathy scale [14]

Beck depression inventory

Alcohol and drug abuse screening (CAGE-AID, [15, 16])

Cognitive Failures Questionnaire [17]

Credibility/expectancy questionnaire [18]

New Zealand Physical Activity Questionnaire – Short Form [19]

Parkinson anxiety scale [20]

Parkinson's Disease – Cognitive Functional Rating Scale [21]

Questionnaire for Impulsive-Compulsive Disorders in Parkinson's Disease – Rating Scale [22]

MRI parameters

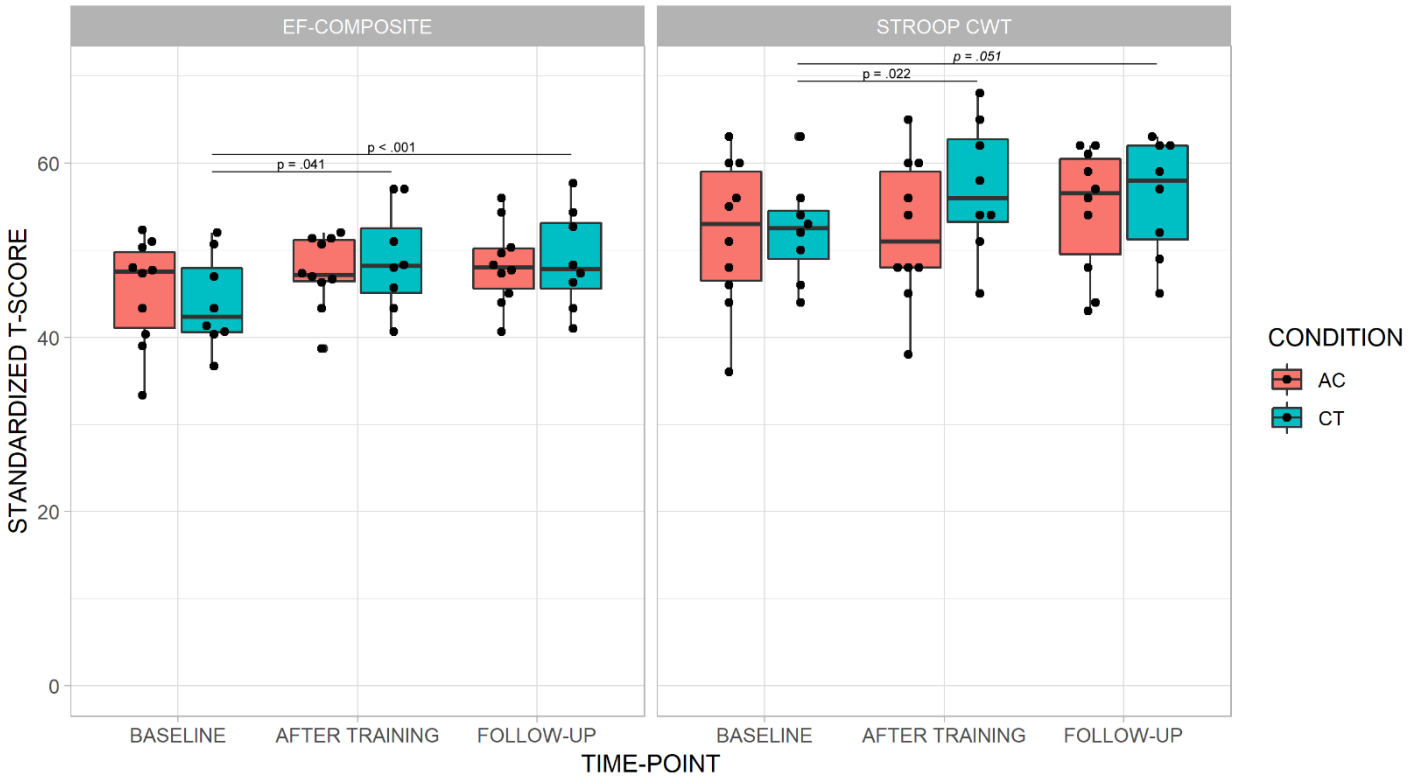
All scans were acquired on a Discovery* MR750 3.0T MRI scanner (General Electric, Milwaukee) with a 32-channel head coil at the Amsterdam UMC, VU University (Amsterdam, the Netherlands).

Resting-state fMRI: 272 volumes (~10 minutes) of T2*-weighted echo-planar images (EPI's) with the following parameters: TR = 2200 ms, TE = 28 ms, flip angle = 80° , 42 axial slices (3.3 x 3.3 x 3.3 mm, matrix size 64 x 64). Sequential ascending acquisition according the hypophysis – fastigium (HYFA) line. High-order shimming (HOS) was performed to compensate for inhomogeneity in the magnetic field. Two reference scans in opposite phase-encode directions are acquired prior to the resting-state acquisition to correct for susceptibility induced distortions during post-processing: TR = 8000 ms, TE = 60 ms. The field-of-view, position, orientation and matrix dimensions are identical to the resting-state scan.

Diffusion-weighted MRI: Single Spin Echo multi-shell DWI with 73 diffusion weighted images (25 x b = 1000 s/mm^2, 24 x b = 2000 s/mm^2, 24 x b = 3000 s/mm^2) and seven non-diffusion weighted (b = 0 s/mm^2). TR = shortest (6000-7000 ms), TE = shortest (80-90 ms), 56 axial slices (2.5 x 2.5 x 2.5 mm, matrix size 128 x 128). Interleaved ascending acquisition according the hypophysis – fastigium (HYFA) line. High-order shimming (HOS) was performed to compensate for inhomogeneity in the magnetic field. Two reference scans in opposite phase-encode directions are acquired prior to the diffusion-weighted image to correct for susceptibility induced distortions during post-processing: TR = 8000 ms, TE = 60 ms. The field-of-view, position, orientation and matrix dimensions are identical to the diffusion-weighted image

Structural MRI: 3D sagittal MP-RAGE T1-weighted sequence according to ADNI-3 protocol with the following parameters: TI = 900 ms, TE = min full echo, flip angle = 8° 168 slices (1 x 1 x 1 mm, matrix size 256 x 256). 3D Cube sagittal Phase sensitive inversion recovery (PSIR) with the following parameters: TI = 650 ms , TR = 3000 ms, TE = minimum, 168 slices (1 x 1 x 1 mm, matrix size 256 x 256).

Additional figure 1: *effect of cognitive training compared with an active control condition in a proof-of-concept.*



Additional figure 1 Change on median neuropsychological performance on left: an executive function composite score (consisting of standardized scores of the Stroop color word test card III corrected for card II, the Trail making test part B corrected for part A and the Controlled Oral Word Association Test) and right: the Stroop color word test card III corrected for card II. Significant differences are shown with the corresponding p value. Abbreviations: AC = active control condition; CT = cognitive training; EF = executive function; Stroop CWT = Stroop color word test.

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