**SUPPLEMENTARY MATERIAL**

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| **Supplementary Table 1** |
| Within-group differences from baseline in the Mini-Mental State Examination (MMSE), Alzheimer’s Disease Assessment Scale - Cognitive subscale (ADAS-Cog), and Verbal Fluency (VF) and differences in exercise effect according to dementia type. |
|  | **Within-group difference** |  | **Interactiona** |
| **Measure** | **Exercise** | **Control** |  |  |  |
|  | **n** | **Mean (SE)** | **n** | **Mean (SE)** |  | **Mean (95% CI)** | ***p*** |
| **MMSE** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| AD | 30 | –2.55 (0.66) | 33 | –1.39 (0.64) |  | –1.40 (–3.68 to 0.88) | 0.229 |
| Non-AD | 51 | –0.39 (0.51) | 52 | –0.63 (0.5) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| AD | 28 | –4.38 (0.68) | 27 | –2.19 (0.68) |  | –1.70 (–4.08 to 0.67) | 0.160 |
| Non-AD | 47 | –0.98 (0.52) | 49 | –0.49 (0.51) |  |  |  |
| **VF** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| AD | 30 | –0.78 (0.52) | 32 | –0.61 (0.51) |  | 0.59 (–1.22 to 2.41) | 0.522 |
| Non-AD | 50 | –0.71 (0.40) | 50 | 0.05 (0.40) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| AD | 27 | –1.44 (0.54) | 27 | –1.52 (0.54) |  | 0.41 (–1.48 to 2.31) | 0.669 |
| Non-AD | 47 | –0.57 (0.41) | 46 | –0.23 (0.42) |  |  |  |
| **ADAS-Cog** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| AD | 30 | 3.77 (1.76) | 32 | 3.76 (1.72) |  | 1.50 (–4.60 to 7.59) | 0.632 |
| Non-AD | 54 | 0.23 (1.32) | 50 | 1.71 (1.36) |  |  |  |
| Values are from linear mixed effects models of the complete sample (n = 186) adjusted for age, sex, and antidepressants.aDifference in exercise effect between participants with AD and non-AD.CI, confidence interval; n, number of participants with complete data; SE, standard error |

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| **Supplementary Table 2** |
| Within-group differences from baseline in the Mini-Mental State Examination (MMSE), Alzheimer’s Disease Assessment Scale - Cognitive subscale (ADAS-Cog), and Verbal Fluency (VF) and differences in exercise effect according to cognitive function at baseline. |
|  | **Within-group difference** |  | **Interactiona** |
| **Measure** | **Exercise** | **Control** |  |  |  |
|  | **n** | **Mean (SE)** | **n** | **Mean (SE)** |  | **Mean (95% CI)** | ***p*** |
| **MMSE** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| Lower (≤ 14) | 35 | –1.75 (0.62) | 47 | –0.64 (0.54) |  | –1.60 (–3.85 to 0.65) | 0.165 |
| Higher (≥ 15) | 46 | –0.78 (0.54) | 38 | –1.26 (0.60) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| Lower (≤ 14) | 33 | –3.62 (0.63) | 41 | –0.87 (0.56) |  | –2.86 (–5.18 to –0.54) | 0.016 |
| Higher (≥ 15) | 42 | –1.17 (0.56) | 35 | –1.27 (0.61) |  |  |  |
| **VF** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| Lower (≤ 5) | 34 | 0.54 (0.47) | 38 | 1.09 (0.44) |  | –0.23 (–1.93 to 1.47) | 0.793 |
| Higher (≥ 6) | 46 | –1.64 (0.40) | 44 | -1.32(0.41) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| Lower (≤ 5) | 31 | 0.03 (0.49) | 33 | 0.16 (0.47) |  | –0.04 (–1.80 to 1.73) | 0.968 |
| Higher (≥ 6) | 43 | -1.56 (0.41) | 40 | –1.46 (0.43) |  |  |  |
| **ADAS-Cog** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| Lower (≥ 31) | 38 | 1.34 (1.56) | 44 | 1.97 (1.46) |  | 0.50 (–5.40 to 6.41) | 0.868 |
| Higher (≤ 30) | 46 | 2.04 (1.43) | 38 | 3.18 (1.57) |  |  |  |
| Values are from linear mixed effects models of the complete sample (n = 186) adjusted for age, sex, and antidepressant use as fixed effects.aDifference in exercise effect between participants with lower and higher cognitive function at baseline. CI, confidence interval; n, number of participants with complete data; SE, standard error |

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| **Supplementary Table 3** |
| Within-group differences from baseline in the Mini-Mental State Examination (MMSE), Alzheimer’s Disease Assessment Scale - Cognitive subscale (ADAS-Cog), and Verbal Fluency (VF) and differences in exercise effect according to sex. |
|  | **Within-group difference** |  | **Interactiona** |
| **Measure** | **Exercise** | **Control** |  |  |  |
|  | **n** | **Mean (SE)** | **n** | **Mean (SE)** |  | **Mean (95% CI)** | ***p*** |
| **MMSE** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| Women | 60 | –1.26 (0.48) | 67 | –1.11 (0.46) |  | 0.61 (–2.08 to 3.29) | 0.659 |
| Men | 21 | –1.00 (0.82) | 18 | –0.25 (0.88) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| Women | 56 | –2.36 (0.49) | 60 | ­–1.36 (0.48) |  | 0.79 (–2.00 to 3.58) | 0.581 |
| Men | 19 | –1.92 (0.85) | 16 | –0.14 (0.92) |  |  |  |
| **VF** |  |  |  |  |  |  |  |
| *4 months* |  |  |  |  |  |  |  |
| Women | 60 | –0.57 (0.37) | 65 | –0.09 (0.36) |  | 0.15 (–1.96 to 2.25) | 0.892 |
| Men | 20 | –1.25 (0.64) | 17 | –0.62 (0.69) |  |  |  |
| *7 months* |  |  |  |  |  |  |  |
| Women | 55 | –0.54 (0.38) | 57 | –0.71 (0.38) |  | 1.38 (–0.78 to 3.53) | 0.213 |
| Men | 19 | –1.91 (0.66) | 16 | –0.71 (0.70) |  |  |  |
| **ADAS-Cog** |  |  |  |  |  |  |  |
| 4 months |  |  |  |  |  |  |  |
| Women | 62 | 0.58 (1.23) | 64 | 3.14 (1.21) |  | –6.27 (–13.18 to 0.63) | 0.077 |
| Men | 22 | 4.13 (2.07) | 18 | 0.42 (2.27) |  |  |  |
| Values are from linear mixed effects models of the complete sample (n = 186) adjusted for age, sex, and antidepressant use as fixed effects.aDifference in exercise effect between women and men. CI, confidence interval; n, number of participants with complete data; SE, standard error |