

# The association of regular exercise behavior with cognitive functioning

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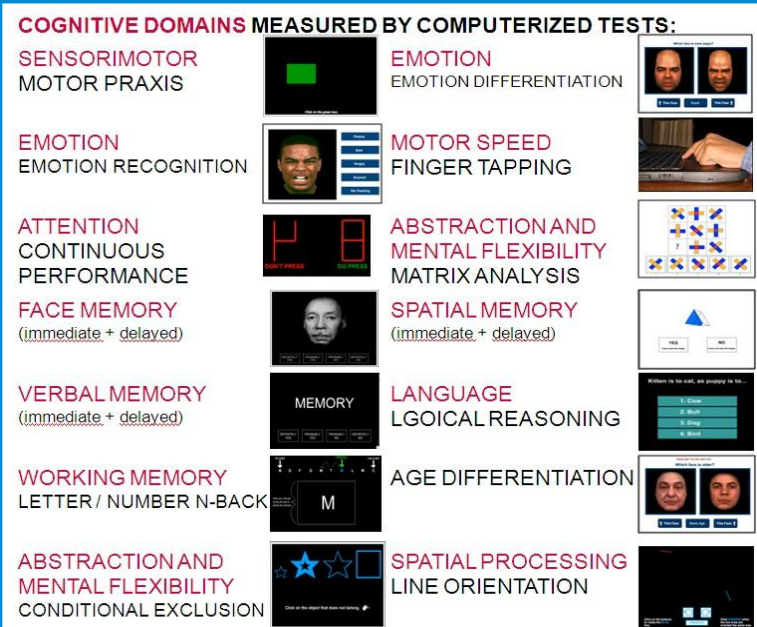
## Background

Cognitive functioning has been suggested to benefit from physical exercise, but empirical results are mixed. Sources of heterogeneity include sample differences with respect to age, sex, type of exercise intervention and intensity, and possibly also outcome measures of cognition.

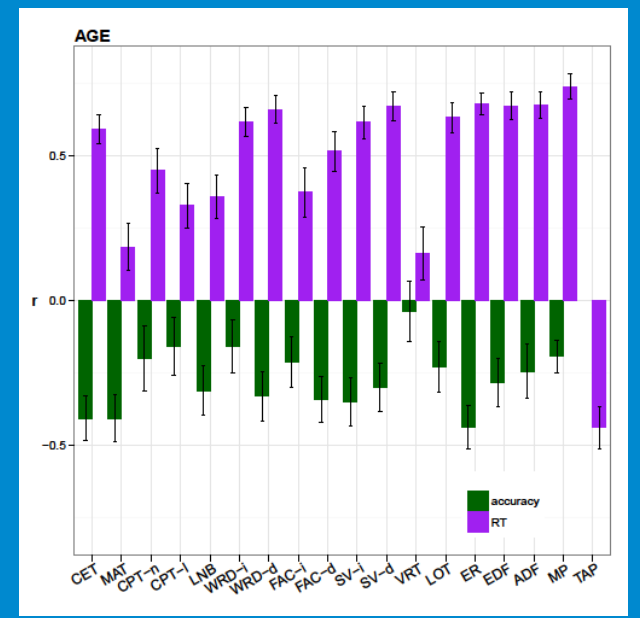
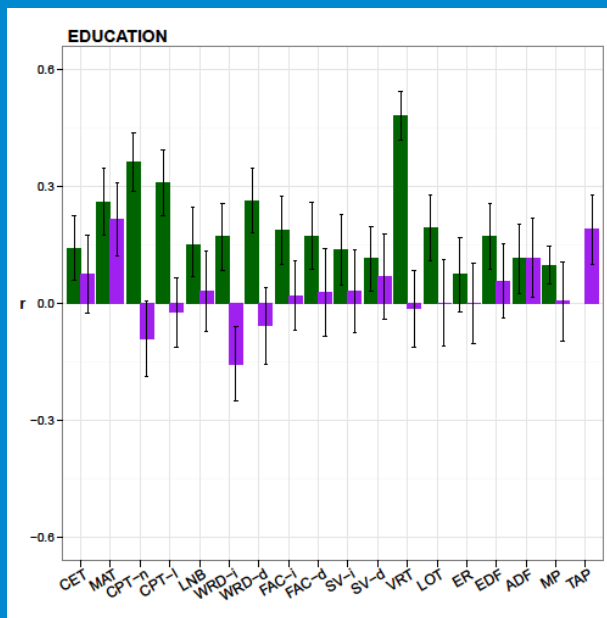
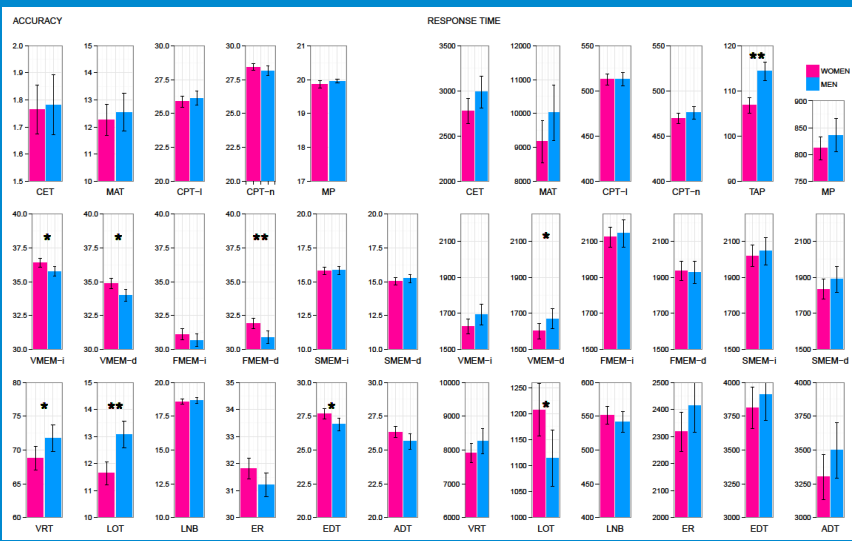
Participants (222 males and 308 females) aged 12 to 86 years old (mean 41.69), were recruited from the Netherlands Twin Register.

Exercise intensity was derived from responses on interviews, defined as the average energy expenditure per week (MET hours per week, sample mean = 14.81).

The Dutch Computerized neurocognitive battery provides measures of cognitive performance (accuracy and RT) on *Abstraction and mental flexibility, Attention, Working memory, (Verbal, Face and Spatial) Episodic memory, Language ability, Spatial processing, Sensorimotor processing speed, Motor speed, and Emotion.*



## Effects of sex, education and age

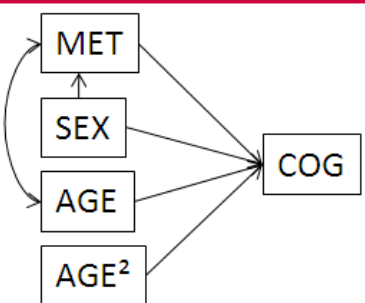


## Effects of regular exercise behavior

In general, participants who exercised regularly performed better on the cognitive tasks than participants who did not, but effects differed across cognitive tasks and whether effects were measured on accuracy or reaction time.

Within the exercisers group, correlations between exercise intensity and cognitive performance accuracy ranged from -0.004 (verbal reasoning) to 0.143 (attention), and from 0 (attention speed) to 0.168 (motor speed).

After controlling for effects of sex and age, there was a significant effect of regular leisure time exercise on attention accuracy.



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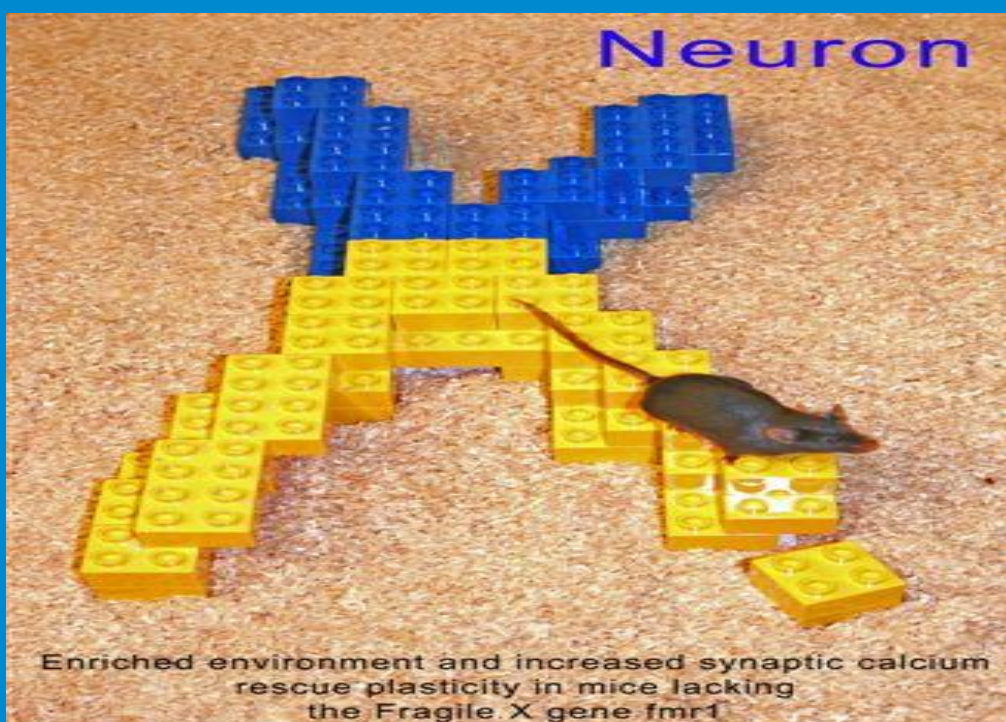
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## Conclusies

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