



# Do common genes explain the association between lack of exercise and negative affectivity?



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## Introduction

A lack of regular exercise is significantly associated with negative affectivity (i.e., higher scores for anxiety, depression and neuroticism).

Is this caused by *common genes* that influence exercise behavior as well as negative affectivity?

## Sample

- Monozygotic (MZ) and dizygotic (DZ) twins from the Netherlands Twin Registry.
- Measurements took place in 1997 and 2002.

### Number of twin pairs

	Males		Females		Opposite Sex	Total
	MZ	DZ	MZ	DZ		
1997	463	372	739	503	740	2817
2002	420	253	979	574	686	2885

## Measures

- Exercise: no/yes (criterion: a minimum of 60 minutes of at least 4 METs weekly) measured in 1997 and 2002
- Depression: Beck's Depression Inventory (dichotomized) measured in 1997
- Anxious depression: Young Adult Self Report (dichotomized) measured in 2002
- Anxiety: Spielberger Trait Anxiety Inventory measured in 2002
- Neuroticism: Eysenck Personality Questionnaire measured in 2002

## Statistical analyses

- Cross-trait cross-twin correlations in Mplus (polychoric and polyserial correlations)

## Results

### Cross-trait cross-twin correlations of lack of exercise with four measures of negative affectivity

	Male pairs		Female pairs		Opposite sex pairs
	MZ	DZ	MZ	DZ	
Lack of exercise first twin with:					
Depression co-twin	0.27	0.08	0.18*	0.05	0.14
Anxious depression co-twin	0.25*	0.23	0.19*	0.02	0.09
Anxiety co-twin	0.13	0.26*	0.14*	0.01	0.01
Neuroticism co-twin	0.18*	0.22	0.13*	0.00	0.04

\*p<0.01

## Conclusion

The rather systematic pattern of cross-correlations suggests that there might be dominant or additive genetic effects explaining the association between lack of exercise and negative affectivity in females, whereas in males additive genetic and shared environmental effects play a role. The low opposite sex correlations confirm a sex difference in the nature of the association. Further biometric analyses are needed to investigate this in more detail.