<u>**Online supplement**</u>

Additional information on the methods

Study design

The present study is embedded within the Rotterdam Study (RS), a population based cohort study aimed at assessing the occurrence and risk factors of chronic diseases in the elderly.[1] The study was initiated in 1990 (RS-I), when all inhabitants aged ≥55 of the suburb Ommoord, in Rotterdam, were invited to participate. This study was extended in 2000 (RS-II) and another time in 2006 (RS-III), this last time inviting all inhabitants aged ≥45. At baseline and every 3 to 4 years of follow-up participants undergo a home interview and medical examinations at the research centre, including spirometry. During these examinations, the Mini-Mental State Examination (MMSE, a measure of global cognition) was assessed.[1] From March 2009 onwards, gait assessment has been implemented in the core protocol.[2] The home interview included standardized questionnaires on smoking including cumulative smoking history and history of falls in the past 12 months. The present study comprises all participants from the first two cohorts (RS-I and RS-II) who completed gait assessment and spirometry successfully until December 2011. The Rotterdam Study has been approved by the medical ethics committee according to the Population Study Act Rotterdam Study, executed by the Ministry of Health, Welfare and Sports of the Netherlands. A written informed consent was obtained from all participants.

Table E1: Associations between COPD GOLD groups ABCD, lung function and gait.

	COPD GOLD A	COPD GOLD B	COPD GOLD C	COPD GOLD D
Global Gait	**0.26 (0.05; 0.46)**	-0.19 (-0.42; 0.04)	0.02 (-0.56; 0.61)	**-0.48 (-0.92; -0.05)**
Rhythm	-0.06 (-0.26; 0.13)	-0.21 (-0.43; 0.01)	**-0.73 (-1.29; -0.17)**	**-0.83 (-1.25; -0.41)**
Variability	0.11 (-0.11; 0.32)	0.08 (-0.17; 0.32)	0.32 (-0.30; 0.93)	0.15 (-0.31; 0.61)
Phases	**0.30 (0.09; 0.51)**	-0.10 (-0.33; 0.14)	0.33 (-0.26; 0.93)	-0.08 (-0.53; 0.37)
Pace	0.12 (-0.06; 0.29)	-0.18 (-0.38; 0.02)	-0.24 (-0.75; 0.27)	**-0.40 (-0.78; -0.02)**
Tandem[a]	0.02 (-0.19; 0.24)	-0.07 (-0.31; 0.17)	0.17 (-0.44; 0.78)	0.04 (-0.41; 0.50)
Turning	0.08 (-0.14; 0.30)	-0.01 (-0.26; 0.24)	-0.01 (-0.64; 0.62)	-0.01 (-0.48; 0.47)
Base of Support	0.11 (-0.11; 0.32)	-0.04 (-0.28; 0.20)	0.26 (-0.36; 0.88)	-0.13 (-0.59; 0.34)

Values represent differences in z-scores of gait (95% Confidence Interval). Values in bold survived thresholds of nominal significance (p < 0.05). A lower value of gait represents worse gait. All analyses were adjusted for age, sex, height, primary education, pack-years and use of analgesics.

[a] Additionally adjusted for the step count and step size within the tandem walk.

COPD was defined as $FEV_1/FVC < 70\%$ and categorized according to the updated Global Initiative for Chronic Obstructive Lung Disease (GOLD) GOLD group categorization 2013 into COPD A (low risk, less symptoms), COPD B (low risk, more symptoms), COPD C (high risk, less symptoms) and COPD D (high risk, more symptoms). Abbreviations: COPD= Chronic Obstructive Pulmonary Disease; FVC = forced vital capacity (FVC)

References

1. Hofman A, Darwish Murad S, van Duijn CM, et al. The Rotterdam Study: 2014 objectives and design update. Eur J Epidemiol 2013;**28**(11):889-926.
2. Hofman A, van Duijn CM, Franco OH, et al. The Rotterdam Study: 2012 objectives and design update. Eur J Epidemiol 2011;**26**(8):657-86.