Social inequality in walking speed in early old age in the Whitehall II study

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Running title: Social inequality in walking speed

Background. We investigated social inequalities in walking speed in early old age.

Methods. Walking speed was measured by 8 ft (2.44 m) timed test in 6345 individuals, mean (SD) age 61.1 (6.0) years. Current or last known Civil Service employment grade defined socioeconomic position.

Results. Mean (SD) walking speed was 1.36 (0.29) m/s in men and 1.21 (0.30) in women. Average age- and ethnicity-adjusted walking speed was approximately 13% higher in the highest employment grade compared to the lowest. Based on the relative index of inequality (RII), the difference in walking speed across the social hierarchy was 0.15 m/s (95% CI 0.12-0.18) in men and 0.17 (0.12-0.22) in women, corresponding to an age-related difference of 18.7 (13.6-23.8) years in men and 14.9 (9.9-19.9) years in women. The RII for slow walking speed (logistic model for lowest sex-specific quartile versus others) adjusted for age, sex and ethnicity was 3.40 (2.64-4.36). Explanatory factors for the social gradient in walking speed included SF-36 physical functioning, labor market status, financial insecurity, height and BMI. Demographic, psychosocial, behavioral, biological and health factors in combination accounted for 40% of social inequality in walking speed.

Conclusions. Social inequality in walking speed is substantial in early old age, and reflects many factors beyond the direct effects of physical health.

Life expectancy has increased dramatically in recent decades, but the extent of this health gain is dependent on socioeconomic position. [1] Disability-free life expectancy appears not to be increasing as fast as life-expectancy in rich countries, with the prospect that large segments of such populations will experience a considerable period of functional limitation in their later decades. [2-4]In the USA, there is a steep inverse social gradient in self-reported functional limitation above age 55 across the full range of income. [5] In the UK, occupational status is strongly predictive of reported disability and severe limitation in physical functioning after retirement age.[6]

Walking speed is a simple performance-based measure of physical functioning. Low walking speed predicts mortality in older persons.[7] In a battery of three tests – standing balance, chair rises and walking speed over eight feet – the walking speed test was most closely related to future disability in previously non-disabled older people.[8]

We measured walking speed in the Whitehall II study of British civil servants for the first time when participants were aged 50 to 74 years. Between these ages, inequalities in self-reported physical health became wider in the cohort.[9] Our cross-sectional analysis has the following objectives. First, to describe age, sex and social differences in walking speed. Second, to identify psychosocial, behavioral, biological and health correlates of walking speed and third, to investigate the extent to which such correlates account for the observed social inequalities in walking speed.

Methods

Participants

The Whitehall II study is a longitudinal study of 10,308 male and female civil servants (initially aged 35-55) based in London and set up in 1985. The response rate was 73%.[10] We analyzed the seventh phase (2002-4, n=6914) of the study, when 6483 participants attended the research clinic (n=5742) or were visited at home by a nurse (n=741). The analysis is based on 6345 individuals who completed the walking speed test (97.9% of the eligible sample). The participation rate was 64.9%, taking account of 537 deaths by the mid-point of the clinic phase. Attrition between phases 1 and 7 was higher in lower employment grades (high grades 26.3%, intermediate grades 32.2%, low grades 53.1%). Small proportions of the sample defined themselves of South Asian (n=291, 4.6%), Afro-Caribbean (n=166, 2.6%) or other non-European ethnicity (n=93, 1.5%), with the rest of the cohort being of European origin.

Walking speed

Walking speed was measured by a trained nurse over a clearly marked eight foot walking course using a standardized protocol.[11] Participants wore either low-heeled close-fitting footwear or walked barefoot. Prior to the test, participants were shown the walking course and asked to "walk to the other end of the course at your usual walking pace, just as if you were walking down the street to go the shops. Walk all the way past the other end of the tape before you stop". The starting position was standing with both feet together at the start of the course. Participants were asked to begin walking when properly positioned. The stopwatch was started as the participant's foot hit the floor across the starting line. Nurses walked behind and to the side of the participant and stopped timing when the participant's foot hit the floor after the end of the walking course.

Three tests were conducted and the fastest walk was used in the analysis. Pairwise correlations between measurements were between 0.92 and 0.95. The difference between the fastest walk speed and the mean of the two other measurements (mean (SD) men 0.119 (0.096), women 0.117 (0.092) m/s) was unrelated to employment grade in men and weakly related in women (mean age-adjusted difference 0.017 m/s (0.18xSD) smaller in low versus high grade).

Employment grade

Socioeconomic position was measured as current or last known employment grade. Self-reported grade title was classified into six levels, defining a clear hierarchy of salary and pension entitlement.[10]

Health status and other covariates

Prevalent coronary heart disease (non-fatal myocardial infarction or angina pectoris: CHD) was identified by self-report or electrocardiogram with confirmation from medical records. Prevalent diabetes was defined by self-report (doctor diagnosis and/or diabetic medication) or research clinic oral glucose tolerance test (1999 WHO classification). Longstanding illnesses were identified by self-report and coded to ICD-10. Musculoskeletal disorders were defined as diseases of the musculoskeletal system and connective tissue including arthropathies, osteoporosis with and without fracture, and fibromyalgia (M00-M99) plus complications of internal orthopedic prosthetic devices (T84) and falls (W00-W19). Chronic respiratory illness included bronchitis, emphysema, chronic obstructive pulmonary disease, bronchiectasis and asthma (J40 -J47). Self-reported peripheral arterial disease (I73) was rare (men n=9, women n=4) and not included in the analysis. The physical function scale is one of eight component scales derived from the UK version of the SF-36 questionnaire. [12] Height, weight and waist

circumference were measured in standardized fashion with participants dressed in a cloth gown and underclothes. [13] Lung function was measured by portable flow spirometry. The highest of three measurements was used to define forced expiratory volume in one second (FEV1) and forced vital capacity (FVC).

Labor market status was derived from responses to questions on employment, retirement and disability. Social network score was based on number and frequency of contacts with relatives and friends. Quality of the nominated closest relationship was defined in three components: practical, confiding and negative aspects of support received. Time urgency/impatience score was based on three items from the Framingham type A questionnaire (upset waiting, agitated or irritated by slow people, agitated or irritated when queuing). These items loaded uniquely onto a single factor in principal components analysis with orthogonal rotation. Financial insecurity (none/minor/major) was computed from items about difficulties paying bills and affording food or clothing for the family. Physical activity measurement was based on recording activities in the past four weeks in four categories (sport, gardening, home improvements and housework) which were assigned standard energy expenditure levels.[14] Exercise intensity was categorized into three groups: light, <3 cal/kg/h; moderate, 3-6 cal/kg/h; vigorous, >6 cal/kg/h. All measures were administered at phase 7 except time urgency/impatience (phase 1).

Statistical methods

Participants were assigned to one of five age-groups (50-54, 55-59, 60-64, 65-69, 70-73 years) and one of four BMI groups (15.1-20, 20.1-25, 25.1-30, 30.1-57.1 kg/m^2). A two-level indicator (50-59, 60-73 years) was used to examine differences between younger and older participants. A small, quadratic, deviation from a linear association between age in years and walking speed was

observed in women. ANOVA was used to test group differences and trends in mean walking speed for the selected covariates. Mean walking speed by employment grade (Figure 1B) was estimated by linear regression using dummy variables for each sex-grade combination with adjustment for age (linear and quadratic terms), ethnicity and test location (clinic or home), together with sex interaction terms for age and ethnicity.

Quartiles of sex-specific walking speed were used to create binary indicators for the fastest and slowest 25% of walkers, versus the remainder of the sample. Fast walking may be subject to motivational influence while slow walking is relevant to loss of function. The relative index of inequality for grade (RII) was computed based on six levels of employment grade. [15] The RII method uses all observations to summarize inequality and takes account of differing distributions of men and women across grades. Each participant was assigned a grade score between zero (highest socioeconomic position) and one (lowest position), based on the proportion of the sample in each grade category. The score was used in a linear or logistic regression model to estimate the RII: the mean difference in walking speed or the odds ratio of being a slow walker between the extremes of the grade hierarchy (bottom versus top). The base model included the grade score and terms for sex, age (linear and quadratic), ethnicity and test location together with the sex interaction terms for age and ethnicity. The difference in mean walking speed according to socioeconomic position, expressed in years of age, was calculated as the ratio of regression coefficients for grade score (RII) and age, controlling for ethnicity and test location. The variance of the ratio of regression coefficients was calculated from their respective regression coefficients and variances using a standard formula.

For both the linear and logistic regression models, the effect on the RII of including risk factors of interest, singly or in groups, into the base model was assessed by calculating the attenuation (percentage reduction) in the mean difference in walking speed (linear model) or log odds ratio for slow walking (logistic model). This analysis included 5701 participants (89.9% of the sample) with complete data. Due to missing spirometry data, models including lung function were run separately in a smaller complete cases analysis (n=4266, 67.2% of the sample).

Results

The mean (SD) age of the sample was 61.1 (6.0) years. Under one third of participants were female (n=1856, 29.3%). Mean body mass index was in the overweight category (26.7 kg/m^2). There were few current smokers (n=725, 12.1%) and less than half of participants reported they engaged in any vigorous physical activity (n=2487, 40.0%). Around one tenth of participants had diagnosed or screen-detected CHD (n=703, 11.1%) or diabetes (n=535, 8.4%). The mean (SD) SF-36 physical function scale score (range 0-100) was 84.5 (18.3). Musculoskeletal disorders and chronic respiratory illnesses were reported by 18.2% (n=1146) and 4.6% (n=290) of participants respectively.

Mean (SD) walking speed was higher in men (1.36 (0.29) m/s) than women (1.21 (0.30) m/s, difference P<0.001) (3.04 (0.64), 2.71 (0.67) mile/h respectively). Adjusting for grade, ethnicity and test location, mean walking speed declined with age, the difference being more marked in women (figure 1A). Mean walking speed was directly related to employment grade, with a similar relative difference in men and women of some 13% between highest and lowest grade

(figure 1B). A similar grade effect was obtained if the mean of the two slower walking speed measurements was used instead of the fastest.

The social difference in walking speed, based on the RII was equivalent to 18.7 (95% CI: 13.6-23.8) years of age in men, and 14.9 (9.9-19.9) years in women with adjustment for ethnicity and test location. Controlling additionally for height, the respective social differences were 18.5 (13.1-24.0) and 14.4 (8.9-19.8). The age equivalent social difference among European participants only was similar in men (18.8 years) and slightly less in women (13.7 years). Social inequalities in mean speed, and odds of fast or slow walking did not differ between younger and older participants (all interactions P>0.3). Among men, the odds ratio for fast walking using the RII tended to be greater in magnitude in older versus younger participants (odds ratio (95% CI) 0.38 (0.24-0.58) versus 0.47 (0.32-0.69)). The RII for slow walking, based on a logistic model adjusted for age, sex and ethnicity was 3.40 (2.64-4.36).

Mean walking speed according to demographic and psychosocial factors, health and physical functioning, height and adiposity, and behavioral factors is reported in table 1. Care should be taken in interpreting the test statistics for trend and heterogeneity in consideration of multiple comparisons. Mean walking speed varied according to ethnicity. Adjustment for height reduced ethnic differences by about 5%. There were few ethnic minority participants in higher employment grades and no further analysis of ethnic differences was conducted. Higher mean walking speed was associated with married/cohabiting versus single status, working versus retired labor market status, financial security versus insecurity, high level of practical support (women only) and low level of negative aspects of support from closest person (men only). Mean walking speed was lower in those with CHD and diabetes, self-reports of musculoskeletal

disorders and chronic respiratory illness (women only). Mean walking speed was directly related to lung function and SF-36 physical function. Self-reported musculoskeletal conditions were strongly associated with SF36 physical functioning. Mean SF-36 physical function quartile scores (range 0-3) for presence versus absence of self-report were 1.18 v. 2.08 in men and 0.88 v. 1.83 in women (both sexes, difference P<0.001). Higher mean walking speed was associated with height, low BMI, never smoking, levels of moderate and vigorous exercise in both sexes, and light exercise in women only. Time urgency/impatience was associated with faster walking and inversely associated with slower walking in women only (sex*impatience interaction P=0.11 for fastest quartile, P=0.008 for slowest quartile)(data not shown).

dds of being a slow walker were three fold higher at the bottom of the social hierarchy compared to the top (table 2). Individual demographic and psychosocial factors accounted for <10% of the social gradient and together they explained 16%. Time urgency/impatience, allowing for the sex interaction, did not contribute to the gradient and was omitted. Prevalent CHD, diabetes, musculoskeletal and respiratory conditions, and differences in SF36 physical functioning accounted for one fifth of the gradient in mean walking speed. Differences in height and degree of obesity, and health behaviors each explained small proportions of the social gradient. Over half the social gradient remained unexplained when all covariates were included in the model. SF36 physical functioning was the largest single contributor to the gradients in both mean walking speed and slow walking. The independent contribution of physical functioning was modest when estimated by omitting the term from the full model (for mean speed 7.4% attenuation, for slow walking 4.0%). Models (n=4362) with terms for lung function (FEV1, FVC) only, obtained an attenuation of the RII of 13.4% and 10.7% compared to the base model for mean speed and slow walking respectively. The estimated independent contribution of lung

function to the gradient was 3.7% and 2.4% for mean speed and slow walking respectively compared to the full models with lung function terms (40.9% and 27.2% attenuation respectively).

Discussion

Walking speed in early old age is highly sensitive to socioeconomic position and to demographic, psychosocial, health, anthropometric and behavioral factors. This cross-sectional study revealed a steep and stepwise social gradient in mean walking speed in men and women, equivalent to approximately 17 years of age-related difference. More than half of the large inequality in slow walking remained unexplained after simultaneous adjustment for several important determinants of physical functioning in older people.[16]

Previous studies of socioeconomic position and physical performance involved participants in later old age, typically above 70 years. [17-19] We have studied a younger, high functioning group within the civil service hierarchy. The employment grade classification identifies strong gradients in educational attainment and income. [10;20] Consistent with theoretical perspectives on the health effects of these correlated dimensions of socioeconomic status, we found evidence for a diverse set of influences on physical performance, indexed by walking speed.[21] Among these, financial insecurity accounted for a substantial proportion of the social difference in mean walking speed. This finding adds to parallel observations of the effects of financial insecurity on self-rated health and longstanding illness.[22]

Social integration and support are important psychosocial influences on quality of life and health in older people. [23;24] Here, the effect of social network size was not evident, while quality of the nominated closest relationship was modestly related to walking speed. Neither of these factors helped to explain social inequality in walking speed. Psychosocial factors may play a role in the observed attenuating effect of marriage/cohabitation on the social gradient in slow walking. A high level of social ties has been shown to be protective of future physical function in older people.[25] In our cross-sectional study we were unable to identify this effect or the alternative, the impact of prior functional status on social integration.

Social inequality in walking speed around age 60 has social and biological origins earlier in life. Adult height, reflecting childhood nutrition and other early circumstances, is associated with higher employment grade and it accounted for almost one tenth of social inequalities in slow walking. The influence of long-term behavioral patterns is evident in the explanatory effects of smoking and BMI for the gradient. Social patterning of health behaviors, for example differential rates of quitting smoking, can be traced to childhood circumstances.[26] Disparities in incidence of chronic disease are among the important consequences of the long-term social gradient in risk profile.[13;27] In this young healthy group prevalent CHD and diabetes account for small proportions of the slow walking gradient. Peripheral arterial disease may emerge as an additional explanatory factor but clinical disease at this phase was rare.[28] Lung function was strongly linked to walking speed in our sample. It contributed to the gradient in slow walking above the adjustments for physical functioning, self-reported respiratory illness, smoking status and physical activity (10.3%, data not shown).

Musculoskeletal conditions and other lower limb disorders are reflected in the SF-36 physical functioning score, which was strongly correlated with walking speed. This variable accounted for the largest proportion of social inequality in mean walking speed and in slow walking. Physical performance is the final common pathway of many cumulative processes, including sedentary lifestyle, physiologic impairments and disease, all of which are related to low socioeconomic position. However, prevalent chronic disease, lung function and physical functioning together explained a modest proportion of the gradient, emphasizing that social inequality in walking speed only partially reflects direct influences of physical health. Similarly, in the first Whitehall study, the socioeconomic gradient in reported severe limitation in physical functioning after retirement age was largely unexplained by the presence of chronic disease.[6]

Social inequality in mean walking speed was calculated as the equivalent in years of age-related decline. This best-available estimate assumes the cross-sectional relation between age and walking speed is a valid estimate of the decline in walking speed in the aging cohort, and will be tested when longitudinal data become available. Further, this cross-sectional study does not shed light on changes in social inequality in walking speed with age. We found that absolute social differences in mean walking speed were similar in younger and older participants, although the RII for fast walking tended to be larger among older men. This may herald widening relative inequality in physical functioning with age, as we show with self-report [9], or may reflect a cohort effect. Our findings are based on a sample of current or former office workers. The completion rate of the walking speed test among those who participated at phase 7 was high. Overall, the phase 7 participation rate was acceptable (65%), however loss to follow up was related to social position. This selective loss may result in an underestimate of the walking speed gradient, since non-participants are less healthy than participants.[29] The magnitude of this underestimation

cannot be estimated with any certainty. Generalizing to the whole population including manual workers, it is likely that greater social inequality in walking speed would be observed. A history of manual work is associated with poor physical functioning in old age [18] and the social distribution of chronic disease tends to increase the social gradient in physical functioning among older people.[30]

In conclusion, we conducted a large study of social inequality in walking speed using a timed 8 foot test in early old age. We anticipated that traits of time urgency and impatience might contribute to the relation between socioeconomic position and walking speed. This was not the case. However, the impact of financial insecurity is consistent with a motivational influence on the 'objective' walking speed measure and its social gradient. The striking inverse association between socioeconomic position and walking speed is established by the sixth decade, equivalent to 17 years of age-related difference. Contemporaneously measured demographic, psychosocial, biological, behavioral and health factors, reflecting socially patterned exposures over the life course, accounted for approximately one third of the observed social inequality in walking speed. Further studies will take account of additional factors relevant to physical functioning and its age-related decline, particularly cardiovascular risk factors and cognitive function. [31;32]

Table 1 Mean Walking Speed (m/s) According to Selected Characteristics of the Sample

	MEN (N=4489)				WOMEN (N=1856)			
	N	mean	SD	Test P	N	mean	SD	Test P
Demographic and psychosocial								
Ethnicity								
White	4201	1.37	0.28		1594	1.23	0.30	
South Asian	178	1.14	0.31		113	1.04	0.25	
Black	58	1.24	0.29		108	1.05	0.26	
Other	52	1.22	0.32	<0.001	41	1.10	0.26	<0.001
Marital status								
Married/cohabiting	3706	1.37	0.28		1057	1.22	0.29	
Single/divorced/widowed	757	1.33	0.29	0.003	779	1.19	0.31	0.017
Labor market status								
working	2394	1.40	0.27		781	1.30	0.28	
retired	1864	1.31	0.28		924	1.14	0.29	
unemployed	155	1.34	0.34		101	1.24	0.29	
long term sick/not working	58	1.10	0.36	<0.001	41	0.96	0.34	<0.001
Financial insecurity								
never/rarely	3159	1.38	0.28		1150	1.24	0.29	
seldom	806	1.32	0.29		384	1.17	0.28	
sometimes/always	452	1.30	0.30	<0.001*	279	1.16	0.33	<0.001*
Social network scale								
tertile 1	1072	1.35	0.29		425	1.22	0.31	
tertile 2	1479	1.36	0.28		671	1.23	0.30	
tertile 3	1766	1.37	0.28	0.14*	652	1.20	0.29	0.11*
Practical support (closest person)								
tertile 1	849	1.35	0.28		583	1.23	0.30	
tertile 2	1247	1.37	0.28		455	1.22	0.29	
tertile 3	2256	1.36	0.29	0.85*	729	1.20	0.30	0.015*
Confiding support (closest person)								
tertile 1	1386	1.35	0.27		581	1.21	0.29	
tertile 2	1119	1.38	0.29		512	1.21	0.29	
tertile 3	1845	1.36	0.29	0.56*	673	1.22	0.31	0.50*
Negative support (closest person)								
tertile 1	716	1.37	0.29		305	1.20	0.32	
tertile 2	2104	1.38	0.28		791	1.22	0.28	
tertile 3	1526	1.34	0.29	<0.001*	668	1.21	0.30	0.86*
Health and physical functioning								
Angina or MI								
no	3969	1.37	0.28		1673	1.22	0.30	
yes	520	1.28	0.31	<0.001	183	1.09	0.29	<0.001
Diabetes								
no	4134	1.37	0.28		1676	1.22	0.30	
yes	355	1.28	0.31	<0.001	180	1.09	0.30	<0.001
FEV1								
low	819	1.30	0.29		367	1.10	0.27	
2nd quartile	822	1.37	0.27		381	1.18	0.27	
3rd quartile	827	1.41	0.28		373	1.26	0.28	
high	852	1.42	0.27	<0.001*	379	1.36	0.29	<0.001*
SF36 physical functioning								
low	988	1.22	0.30		381	0.96	0.28	
2nd quartile	464	1.34	0.25		445	1.21	0.25	
3rd quartile	767	1.39	0.27		481	1.28	0.26	
high	2201	1.42	0.27	<0.001*	512	1.34	0.27	<0.001*
Musculoskeletal disorders								
no	3761	1.37	0.28		1402	1.24	0.28	
yes	703	1.31	0.31	<0.001	443	1.11	0.32	<0.001
Chronic respiratory illness								
no	4279	1.36	0.29		1740	1.21	0.30	
yes	185	1.34	0.28	0.42	105	1.13	0.32	0.005

Table 1 cont.

Height and adiposity								
Height (m)								
quartile 1	1112	1.29	0.29		463	1.13	0.28	
quartile 2	1069	1.36	0.27		438	1.19	0.30	
quartile 3	1167	1.38	0.27		487	1.22	0.27	
quartile 4	1137	1.41	0.30	<0.001*	462	1.29	0.32	<0.001*
Body mass index (kg/m2)								
15.1-20	103	1.40	0.28		93	1.28	0.30	
20.1-25	1517	1.39	0.30		637	1.29	0.29	
25.1-30	2153	1.36	0.27		658	1.19	0.28	
30.1-57.1	704	1.29	0.30	<0.001*	460	1.11	0.29	<0.001*
Health behaviors								
Smoking status								
never smoker	1926	1.39	0.29		917	1.23	0.30	
ex-smoker	1835	1.34	0.27		575	1.21	0.30	
current smoker	542	1.31	0.28	<0.001	183	1.19	0.29	0.27
Light exercise								
quartile 1	1041	1.35	0.30		445	1.17	0.32	
quartile 2	1140	1.37	0.28		438	1.21	0.30	
quartile 3	1082	1.37	0.29		462	1.24	0.28	
quartile 4	1154	1.36	0.28	0.53*	459	1.23	0.30	0.002*
Moderate exercise								
quartile 1	1089	1.33	0.30		436	1.13	0.31	
quartile 2	1123	1.36	0.27		462	1.21	0.28	
quartile 3	1126	1.38	0.29		460	1.23	0.29	
quartile 4	1101	1.37	0.28	<0.001*	458	1.28	0.29	<0.001*
Vigorous exercise								
None	2537	1.34	0.29		1197	1.17	0.29	
tertile 1	630	1.39	0.27		201	1.30	0.30	
tertile 2	606	1.41	0.29		191	1.24	0.28	
tertile 3	644	1.39	0.27	<0.001*	215	1.35	0.29	<0.001*

*** Test P value for trend if marked with asterisk, otherwise for difference or heterogeneity**

Financial insecurity, difficulties paying bills or affording food/clothes (sometimes/often)

Angina or MI, confirmed angina pectoris or non-fatal myocardial infarction

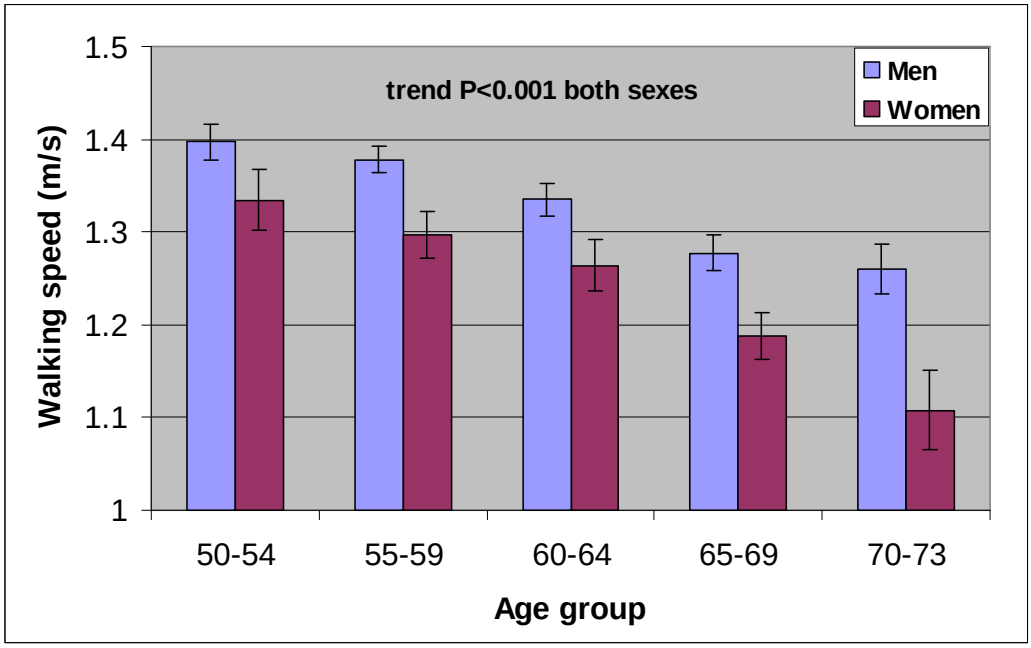
Self-report or screen detected (75g oral glucose tolerance test) diabetes

FEV_1, forced expiratory volume in 1 s

SF-36, Short Form 36 physical function scale score (range 0-100)

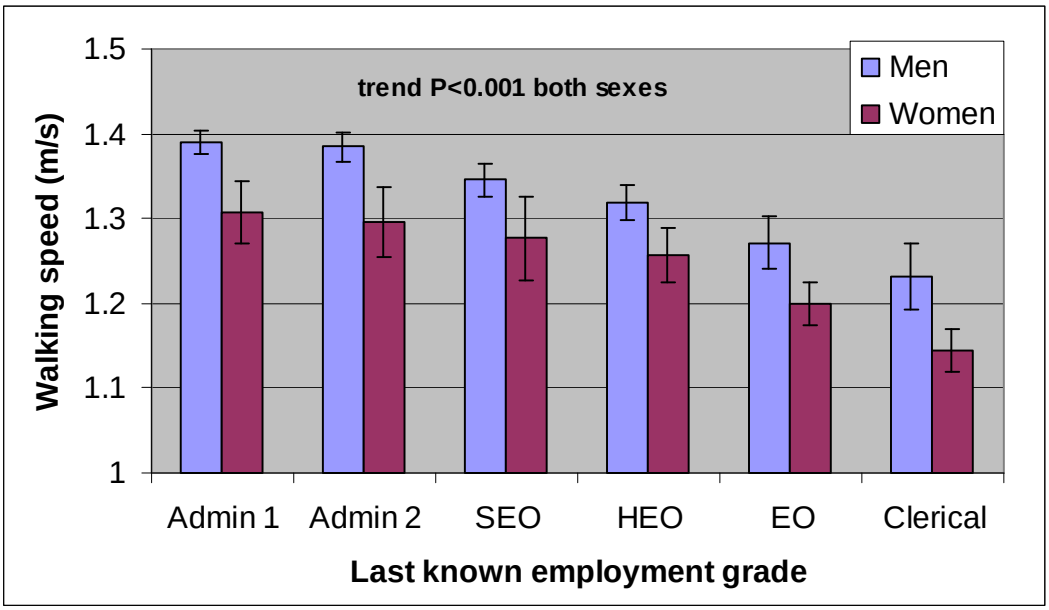
Amount of exercise in MET-h at 3 exercise intensity levels: light, <3 cal/kg/h; moderate, 3-6 cal/kg/h; vigorous, >6 cal/kg/h

Figure 1A Mean Walking Speed With 95% Confidence Interval by Age and Sex. Adjusted for Employment Grade and Ethnicity.



Interaction between sex and age (p=0.03)
Regression model controls for test location (clinic or home).

Figure 1B Mean Walking Speed With 95% Confidence Interval by Employment Grade and Sex. Adjusted for Age and Ethnicity.



No interaction between sex and grade (p=0.76).
The sample size in each group, highest to lowest grade, was for men: 1377, 1079, 801, 675, 374, 183; and for women: 235, 188, 174, 301, 435, 523
Walking speed adjusted to age 61. Model controls for test location (clinic or home).
Admin 1, high-ranking administrative personnel; Admin 2, adminstrative personnel; SEO, senior executive officer; HEO, higher executive officer; EO, executive officer

Table 2. Relative Index of Inequality (95% CI) for Mean Walking Speed and Slow Walking (Lowest Sex-Specific Quartile) and Explanatory Models. Complete cases analysis, N=5701

	Mean walking speed			Slow walking		
	RII	95%CI	% attenuation	RII	95%CI	% attenuation
Base model	0.145	(0.12-0.17)	REF	3.11	(2.4-4.1)	REF
Demographic and psychosocial						
+ Marital/cohabitation status	0.141	(0.11-0.17)	2.7%	2.92	(2.2-3.8)	5.6%
+ Labor market status	0.133	(0.11-0.16)	8.1%	2.88	(2.2-3.8)	6.8%
+ Financial insecurity	0.131	(0.10-0.16)	9.5%	2.84	(2.2-3.7)	7.8%
+ Closest person support	0.146	(0.11-0.17)	-1.0%	3.12	(2.4-4.1)	-0.3%
+ All above	0.121	(0.09-0.15)	16.4%	2.58	(2.0-3.4)	16.3%
Health and physical functioning						
+ Myocardial Infarct/angina	0.144	(0.12-0.17)	0.7%	3.09	(2.4-4.0)	0.4%
+ Type 2 diabetes	0.142	(0.11-0.17)	2.0%	3.04	(2.3-4.0)	1.8%
+ SF-36 physical function	0.116	(0.09-0.14)	20.2%	2.65	(2.0-3.5)	14.1%
+ Musculoskeletal disorders	0.147	(0.19-0.17)	-1.1%	3.19	(2.4-4.2)	-2.2%
+ Chronic respiratory illness	0.146	(0.12-0.17)	-0.4%	3.12	(2.4-4.1)	-0.5%
+ All above	0.114	(0.09-0.14)	21.5%	2.63	(2.0-3.5)	14.7%
Height and adiposity						
+ height	0.132	(0.10-0.16)	9.3%	2.84	(2.2-3.7)	8.1%
+ BMI	0.135	(0.10-0.16)	7.0%	2.96	(2.3-3.9)	4.3%
+ both	0.124	(0.10-0.15)	14.7%	2.74	(2.1-3.6)	11.0%
Health behaviors						
+ Smoking status	0.138	(0.11-0.17)	5.0%	2.98	(2.3-3.9)	3.7%
+ Physical activity	0.142	(0.11-0.17)	2.3%	2.99	(2.3-3.9)	3.5%
+ both	0.135	(0.11-0.16)	6.9%	2.87	(2.2-3.8)	6.9%
ALL	0.087	(0.06-0.12)	39.8%	2.18	(1.6-2.9)	31.4%

Mean walking speed: the linear regression model estimates the relative index of inequality (RII) in m/s, i.e. the difference in mean speed across the grade hierarchy. Coefficients are shown as positive values, with lowest socioeconomic position as reference.
Slow walking speed: the logistic regression model estimates the RII as an odds ratio for occupying the slowest sex-specific quartile, across the grade hierarchy with highest socioeconomic position as reference
Base models control for sex, age (linear and quadratic effects), ethnicity and test location and allow age and ethnicity effects to differ by sex
Closest person support, practical, confiding, negative support from closest person
BMI, body mass index (weight in kilograms divided by height in meters squared)
Physical activity, light moderate and vigorous activity (MET-h)

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