ONLINE SUPPLEMENTAL MATERIAL

eMethods: Summary of the population-based registries

The conscription database	Nearly all Danish men have had to register with the military board for a physical and mental examination of fitness to serve when turning 18 years old or shortly thereafter (median age 19 years).[25] In connection with the registration, all examinees complete a health questionnaire, in which they report chronic diseases that could preclude military service, *e.g.*, asthma, epilepsy or spinal osteochondrosis, but not obesity.[26] The Draft Board verifies such reports with health care providers, and men deemed ineligible for military service are excused from the draft at this point (15%).[27] Information obtained at the examination is registered and stored in regional and national databases.[24] Using the conscription research database covering the Fifth Military Conscription District in Denmark (700,000 inhabitants),[24] we identified all persons from the 1955 birth cohort who later appeared before the draft board in Northern Denmark (n=6,502). For each examinee, we obtained height and weight measurements from the physical examination and cognitive test score and years of education from the mental examination.
The Danish National Registry of Patients	The Danish National Registry of Patients records information on patients discharged from all Danish non-psychiatric hospitals since 1 January 1977 and from all emergency room and outpatient specialty clinic visits since 1995.[29] Each hospital discharge or outpatient visit is recorded in the registry with one primary diagnosis and one or more secondary diagnoses classified according to the *International*

Classification of Diseases, 8th revision (ICD-8) until the end of 1993 and the 10th revision (ICD-10) thereafter.[29]

The Aarhus University Prescription Database

Pharmacies in Denmark are equipped with electronic accounting systems, which are primarily used to secure reimbursement from the National Health Service. For each redeemed prescription, the patient's central personal registration number, the type and amount of drug prescribed according to the Anatomical Therapeutic Chemical (ATC) classification system and the date of drug dispensation are transferred electronically from the pharmacies to a prescription research database at Aarhus university.[30] Using the Aarhus University Prescription Database, we identified prospectively recorded prescriptions for antidiabetic drugs between 1 January 1989 and 31 December 2010.

The Danish Civil Registration System

This registry has recorded all changes in vital status and migration for the entire Danish population since 1968, with daily electronic updates.[23]

eTable 1. The association between cognitive test score in young adulthood and the combined outcome before age 55 years, stratified on years of education and body mass index

	33-year risk, % (95% CI)	33-year risk difference, % (95% CI)	Hazard ratio (95% CI)
Education			
Very short			
Very high score	20.4 (10.3, 38.1)	0	1
High score	18.9 (13.9, 25.4)	-1.6 (-15.8, 12.6)	0.95 (0.42, 2.13)
Moderate score	24.4 (20.6, 28.8)	4.0 (-9.7, 17.6)	1.27 (0.59, 2.73)
Low score	29.0 (26.2, 32.0)	8.5 (-4.8, 21.8)	1.54 (0.73, 3.26)
Short			
Very high score	19.0 (12.1, 29.2)	0	1
High score	19.1 (15.6, 23.3)	0.1 (-9.2, 9.3)	0.98 (0.60, 1.65)
Moderate score	21.7 (18.8, 24.9)	2.6 (-6.3, 11.6)	1.15 (0.69, 1.89)
Low score	20.6 (17.5, 24.1)	1.5 (-7.5, 10.6)	1.09 (0.66, 1.80)
Moderate			
Very high score	16.8 (14.1, 20.0)	0	1
High score	20.8 (18.1, 23.9)	4.0 (-0.1, 8.1)	1.26 (0.99, 1.60)
Moderate score	21.7 (18.1, 25.9)	4.9 (0.0, 9.7)	1.30 (0.99, 1.70)
Low score	25.0 (18.1, 33.9)	8.2 (-0.2, 16.7)	1.55 (1.04, 2.32)
Long			
Very high score	14.7 (12.3, 17.5)	0	1
High score	14.7 (11.1, 19.3)	-0.1 (-4.8, 4.7)	1.00 (0.71, 1.41)
Moderate score	21.6 (13.8, 32.8)	6.7 (0.3, 16.5)	1.53 (0.92, 2.55)
Low score	22.2 (9.0, 48.9)	7.4 (-12.2, 27.0)	1.52 (0.56, 4.12)
Body mass index			
Normal weight			
Very high score	15.2 (13.4, 17.3)	0	1
High score	18.1 (16.1, 20.2)	2.8 (-0.1, 5.6)	1.17 (0.98, 1.41)
Moderate score	20.5 (18.4, 22.8)	5.2 (2.3, 8.1)	1.37 (1.15, 1.64)
Low score	23.7 (21.5, 26.1)	8.5 (5.4, 11.5)	1.62 (1.36, 1.93)
Underweight			
Very high score	13.9 (8.2, 23.2)	0	1
High score	16.0 (9.9, 25.1)	2.0 (-8.5, 12.5)	1.33 (0.63, 2.78)
Moderate score	16.7 (10.2, 26.5)	2.7 (-8.2, 13.6)	1.22 (0.56, 2.63)
Low score	23.3 (15.7, 33.7)	9.4 (-2.2, 21.1)	1.78 (0.87, 3.64)
Overweight			
Very high score	26.5 (18.7, 36.9)	0	1
High score	28.0 (21.7, 35.7)	1.7 (-9.5, 13.0)	1.03 (0.64, 1.66)

Moderate score	34.3 (27.8, 41.7)	8.1 (-3.1, 19.4)	1.26 (0.80, 1.99)
Low score	33.1 (27.1, 40.1)	6.8 (-4.1, 17.7)	1.20 (0.76, 1.88)
Obesity			
Very high score	33.3 (14.0, 66.3)	0	1
High score	36.8 (19.6, 62.1)	3.7 (-29.0, 36.5)	1.24 (0.36, 4.25)
Moderate score	58.3 (39.9, 77.8)	26.2 (-5.9, 58.4)	2.41 (0.79, 7.33)
Low score	55.0 (40.5, 70.7)	23.0 (-6.7, 52.6)	2.14 (0.74, 6.19)

[a] Analyses stratified on education were adjusted for body mass index and analyses stratifies on body mass index were adjusted for education.

eTable 2. The association between a one standard deviation decrease in cognitive test score in young adulthood and type 2 diabetes, cardiovascular morbidity, and/or death before 55 years of age[a]

	Hazard ratio (95% confidence interval)[b]		
	Main analysis[c]	Secondary analyses[c]	
	Crude	Adjusted for education	Adjusted for education and BMI
Combined outcome	1.23 (1.17, 1.29)	1.18 (1.10, 1.26)	1.16 (1.08, 1.24)
Individual outcomes			
Type 2 diabetes	1.34 (1.21, 1.50)	1.26 (1.09, 1.45)	1.18 (1.02, 1.36)
Hypertension	1.20 (1.11, 1.31)	1.16 (1.04, 1.30)	1.14 (1.01, 1.27)
Myocardial infarction	1.21 (1.04, 1.40)	1.08 (0.88, 1.32)	1.07 (0.88, 1.30)
Stroke	1.22 (1.05, 1.42)	1.12 (0.92, 1.38)	1.12 (0.91, 1.38)
Venous thromboembolism	1.42 (1.13, 1.77)	1.10 (0.81, 1.48)	1.07 (0.79, 1.45)
Death	1.27 (1.17, 1.39)	1.25 (1.11, 1.40)	1.24 (1.11, 1.39)

[a] Among the 1955 birth cohort that appeared for military examination in Northern Denmark and who survived until their 22nd year birthday.
[b] The standard deviation (=10.76 score points) of cognitive test score was analyzed as a continuous variable.
[c] The main analyses treated years of education and BMI as intermediates, whereas the secondary analysis treated them as confounders.

eFigure: Directed acyclic graph of the association between cognitive test score and myocardial infarction or premature death. “Lifestyle” represents health promoting behavior such as diet, smoking, excess alcohol consumption, and exercise. “Later life risk factors” include conditions such as hypercholesterolemia, hypertension, diabetes, and the metabolic syndrome.