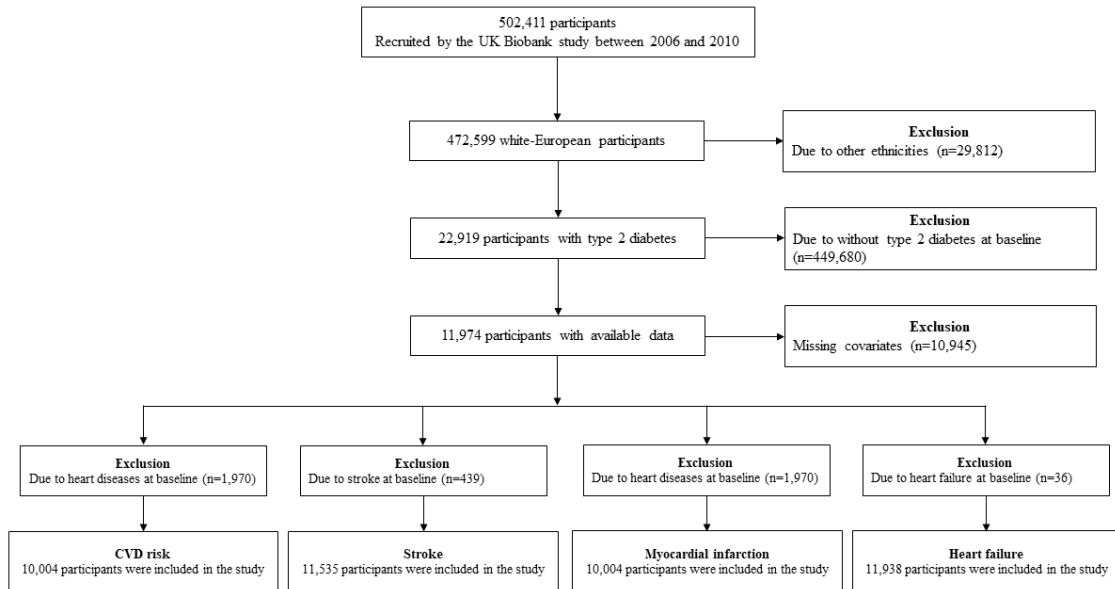1   **Supplementary Materials**

2   **Supplementary Table S1** Summary of Balance for Matched Data

Variables	Means Treated	Means Control	Std. mean differences	Variance ratios	eCDF statistics mean
Distance	0.1060	0.0849	0.1616	2.2068	0.0018
Age	60.3244	60.3240	0.0001	1.0433	0.0036
Sex	0.3272	0.3226	0.0100	-	0.0047
Deprivation index	-0.0538	-0.1806	0.0362	1.0377	0.0102
Education	2031.3716	2041.7819	-0.0026	1.0080	0.0168
Smoking status	0.6785	0.6694	0.0126	1.0611	0.0082
Processed meat	1.8437	1.8366	0.0063	1.1276	0.0106
Alcohol intake	3.7752	3.7127	0.0368	1.1453	0.0227
Total physical activity	1.2665	1.3216	-0.0624	1.0600	0.0184
Total sedentary time	5.4552	5.4176	0.0140	1.2131	0.0108
Type 2 diabetes duration	1.4953	1.1013	0.0701	1.0707	0.0068
Body mass index	28.9761	28.6962	0.0422	1.7430	0.0469

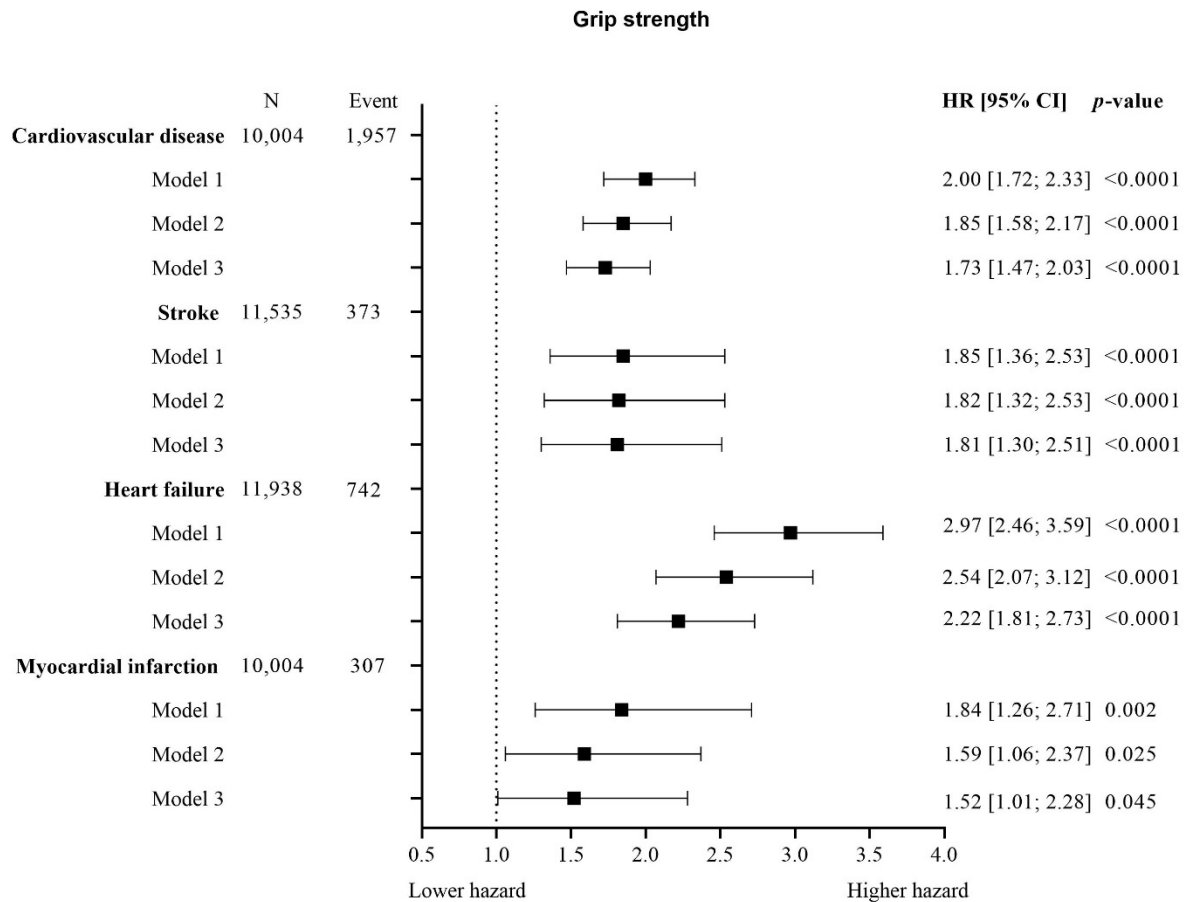3   eCDF, Empirical cumulative distribution function; Std, Standardised

```
┌─────────────────────────────────────────────┐
│        502,411 participants                  │
│ Recruited by the UK Biobank study between 2006 and 2010 │
└─────────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────┐        ┌──────────────────────────────────┐
│ 472,599 white-European participants│───────▶│             Exclusion             │
└──────────────────────────────────┘        │ Due to other ethnicities (n=29,812)│
                     │                        └──────────────────────────────────┘
                     ▼
┌──────────────────────────────────┐        ┌──────────────────────────────────┐
│ 22,919 participants with type 2 diabetes│──▶│             Exclusion             │
└──────────────────────────────────┘        │ Due to without type 2 diabetes at baseline │
                     │                        │ (n=449,680)                       │
                     ▼                        └──────────────────────────────────┘
┌──────────────────────────────────┐        ┌──────────────────────────────────┐
│ 11,974 participants with available data│──▶│             Exclusion             │
└──────────────────────────────────┘        │ Missing covariates (n=10,945)     │
                     │                        └──────────────────────────────────┘
```

Exclusion Due to heart diseases at baseline (n=1,970)	Exclusion Due to stroke at baseline (n=439)	Exclusion Due to heart diseases at baseline (n=1,970)	Exclusion Due to heart failure at baseline (n=36)
CVD risk 10,004 participants were included in the study	**Stroke** 11,535 participants were included in the study	**Myocardial infarction** 10,004 participants were included in the study	**Heart failure** 11,938 participants were included in the study

4

5   **Supplementary Figure S1** Flowchart of participants

6

Distribution of Propensity Scores

Unmatched Treated Units

Matched Treated Units

Matched Control Units

Unmatched Control Units

0.0   0.2   0.4   0.6   0.8   1.0

Propensity Score

7
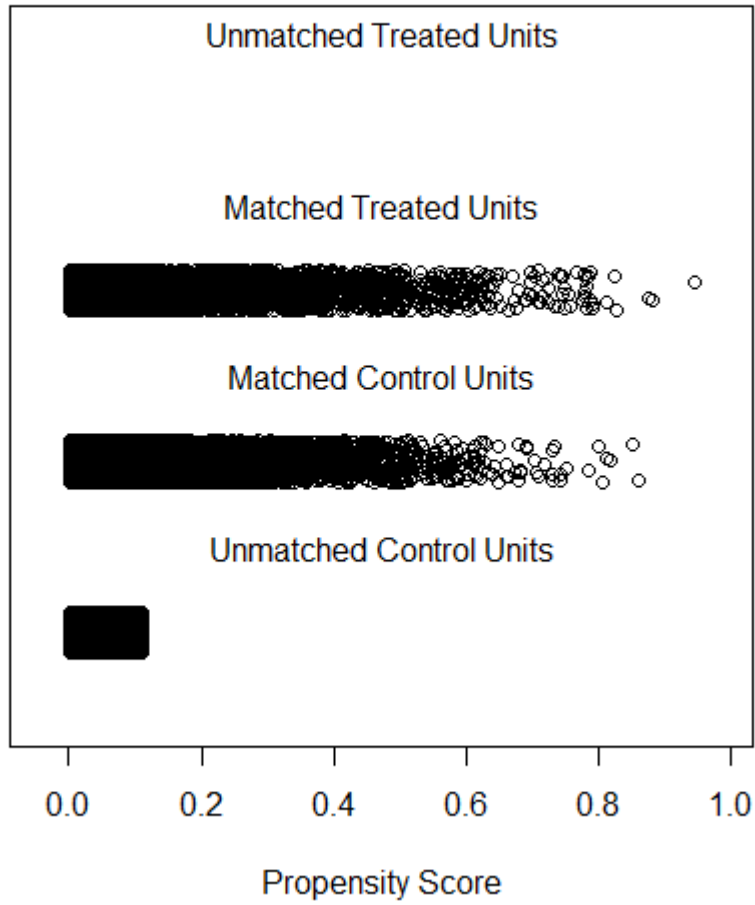
Supplementary Figure S2 Distribution of propensity scores

Grip strength

	N	Event		HR [95% CI]	p-value
Cardiovascular disease	10,004	1,957			
Model 1				2.00 [1.72; 2.33]	<0.0001
Model 2				1.85 [1.58; 2.17]	<0.0001
Model 3				1.73 [1.47; 2.03]	<0.0001
Stroke	11,535	373			
Model 1				1.85 [1.36; 2.53]	<0.0001
Model 2				1.82 [1.32; 2.53]	<0.0001
Model 3				1.81 [1.30; 2.51]	<0.0001
Heart failure	11,938	742			
Model 1				2.97 [2.46; 3.59]	<0.0001
Model 2				2.54 [2.07; 3.12]	<0.0001
Model 3				2.22 [1.81; 2.73]	<0.0001
Myocardial infarction	10,004	307			
Model 1				1.84 [1.26; 2.71]	0.002
Model 2				1.59 [1.06; 2.37]	0.025
Model 3				1.52 [1.01; 2.28]	0.045

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Lower hazard   Higher hazard

9

Supplementary Figure S3 Association between grip strength and incidence of CVD, stroke, myocardial infarction and heart failure in people with type 2 diabetes
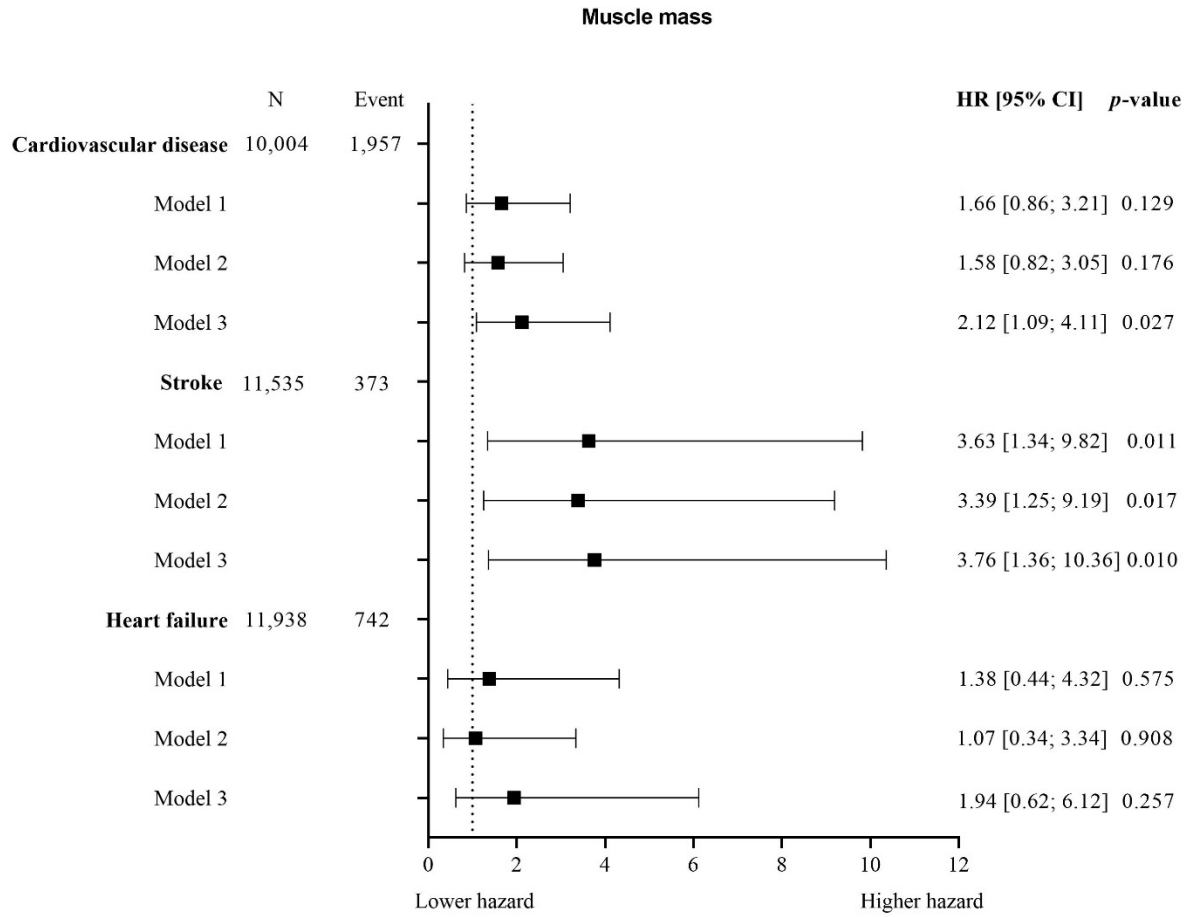
Data are presented as HRs and their 95% CI. Non-sarcopenia was the reference group (HR = 1.00). Model 1 (Minimally adjusted model) included age, sex, deprivation index, and education. Model 2 (Fully adjusted model) was further adjusted for model 1 but also included processed meat, smoking status, alcohol intake, total sedentary time, total physical activity and type 2 diabetes duration. Model 3 (Sensitivity analysis) was adjusted as in model 2 but also included body mass index.

Walking pace

	N	Event		HR [95% CI]	p-value
Cardiovascular disease	10,004	1,957			
Model 1				2.07 [1.78; 2.41]	<0.0001
Model 2				1.92 [1.64; 2.24]	<0.0001
Model 3				1.78 [1.52; 2.09]	<0.0001
Stroke	11,535	373			
Model 1				1.87 [1.37; 2.54]	<0.0001
Model 2				1.84 [1.33; 2.55]	<0.0001
Model 3				1.82 [1.31; 2.54]	<0.0001
Heart failure	11,938	742			
Model 1				3.07 [2.54; 3.70]	<0.0001
Model 2				2.63 [2.15; 3.22]	<0.0001
Model 3				2.30 [1.87; 2.83]	<0.0001
Myocardial infarction	10,004	307			
Model 1				1.86 [1.26; 2.73]	0.002
Model 2				1.59 [1.06; 2.38]	0.025
Model 3				1.52 [1.01; 2.28]	0.045

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Lower hazard   Higher hazard
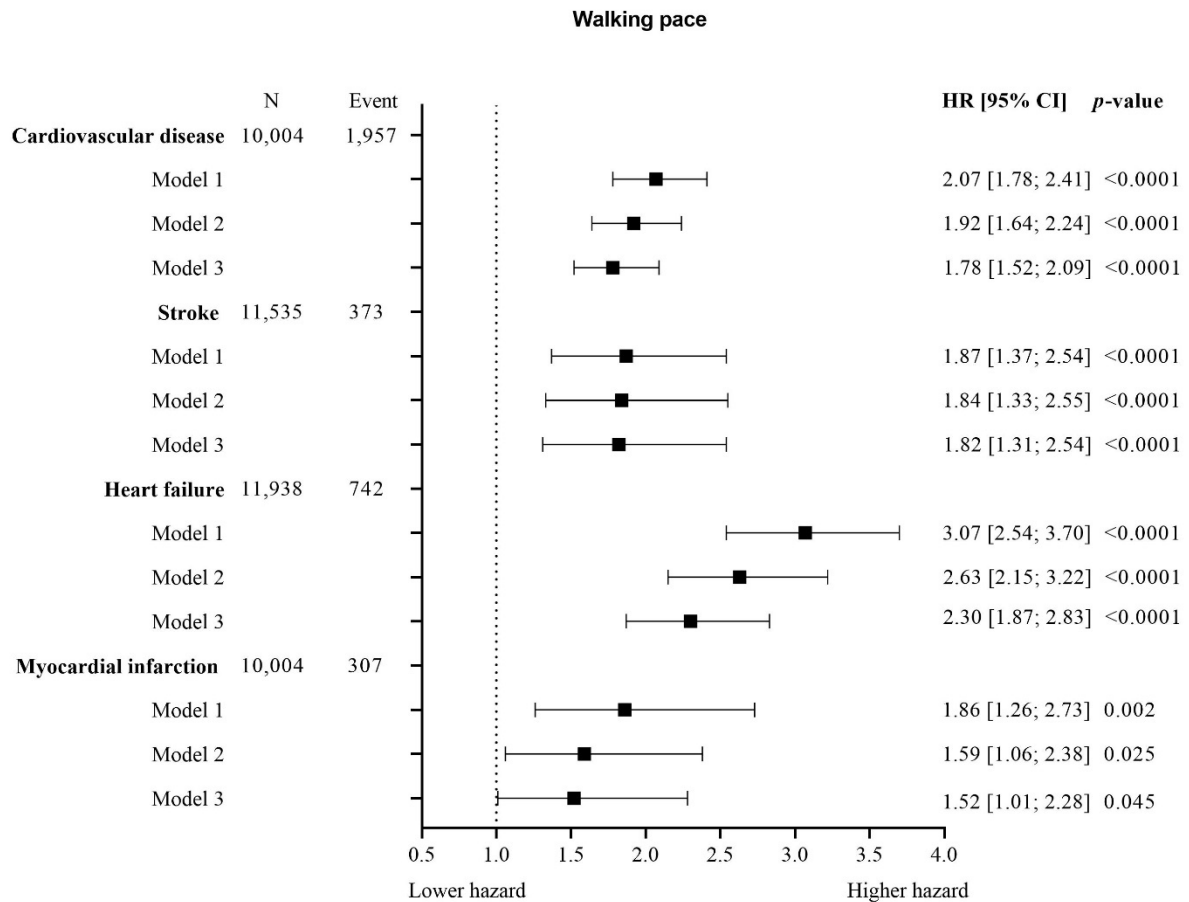
18

19 **Supplementary Figure S4** Association between walking pace and incidence of CVD, stroke,

20 myocardial infarction and heart failure in people with type 2 diabetes

21 Data are presented as HRs and their 95% CI. Non-sarcopenia was the reference group (HR =

22 1.00). Model 1 (Minimally adjusted model) included age, sex, deprivation index, and

23 education. Model 2 (Fully adjusted model) was further adjusted for model 1 but also included

24 processed meat, smoking status, alcohol intake, total sedentary time, total physical activity and

25 type 2 diabetes duration. Model 3 (Sensitivity analysis) was adjusted as in model 2 but also

26 included body mass index.

Muscle mass

	N	Event		HR [95% CI]	*p*-value
Cardiovascular disease	10,004	1,957			
Model 1				1.66 [0.86; 3.21]	0.129
Model 2				1.58 [0.82; 3.05]	0.176
Model 3				2.12 [1.09; 4.11]	0.027
Stroke	11,535	373			
Model 1				3.63 [1.34; 9.82]	0.011
Model 2				3.39 [1.25; 9.19]	0.017
Model 3				3.76 [1.36; 10.36]	0.010
Heart failure	11,938	742			
Model 1				1.38 [0.44; 4.32]	0.575
Model 2				1.07 [0.34; 3.34]	0.908
Model 3				1.94 [0.62; 6.12]	0.257

0   2   4   6   8   10   12
Lower hazard   Higher hazard

Supplementary Figure S5 Association between muscle mass and incidence of CVD, stroke and heart failure in people with type 2 diabetes

Data are presented as HRs and their 95% CI. Non-sarcopenia was the reference group (HR = 1.00). Model 1 (Minimally adjusted model) included age, sex, deprivation index, and education. Model 2 (Fully adjusted model) was further adjusted for model 1 but also included processed meat, smoking status, alcohol intake, total sedentary time, total physical activity and type 2 diabetes duration. Model 3 (Sensitivity analysis) was adjusted as in model 2 but also included body mass index.