

**Supplementary Table 1. Baseline characteristics according to the categories of muscle mass changes in men (n = 24,623)**

Variable	Muscle mass change ( $\Delta$ ) (kg)					$\rho$ for trend	
	Overall	$\Delta \geq 2.5$	$\Delta$ increased $2.5 > \Delta \geq 1.5$	None	$\Delta$ decreased $1.5 \leq \Delta < 2.5$		$2.5 \leq \Delta$
Number	24,623	520 (2.11)	1,491 (6.06)	6,550 (26.6)	6,449 (26.19)	3,810 (15.47)	1,959 (7.96)
Serum uric acid (mg/dL)	6.25 $\pm$ 1.21	6.23 $\pm$ 1.36	6.31 $\pm$ 1.22	6.22 $\pm$ 1.20	6.24 $\pm$ 1.19	6.25 $\pm$ 1.22	6.38 $\pm$ 1.21
Normouricemia	18,202 (73.92)	382 (73.46)	1,084 (72.70)	4,866 (74.29)	4,822 (74.77)	2,806 (73.65)	1,366 (69.73)
Hyperuricemia	6,421 (26.08)	138 (26.54)	407 (27.30)	1,684 (25.71)	1,627 (25.23)	1,004 (26.35)	593 (30.27)
Age (yr)	38.58 $\pm$ 6.49	38.19 $\pm$ 6.27	38.80 $\pm$ 6.48	38.95 $\pm$ 6.59	38.83 $\pm$ 6.42	37.98 $\pm$ 6.38	36.65 $\pm$ 6.27
BMI (kg/m <sup>2</sup> )	24.76 $\pm$ 2.76	25.96 $\pm$ 2.90	25.39 $\pm$ 2.80	24.94 $\pm$ 2.72	24.72 $\pm$ 2.70	24.54 $\pm$ 2.74	24.76 $\pm$ 3.01
Obesity	10,532 (42.77)	311 (59.81)	781 (52.38)	2,795 (42.67)	2,609 (40.46)	1,462 (38.37)	809 (41.30)
SMI (%)	43.04 $\pm$ 2.93	43.36 $\pm$ 3.38	43.17 $\pm$ 2.93	43.1 $\pm$ 2.92	43.03 $\pm$ 2.85	42.91 $\pm$ 2.94	42.69 $\pm$ 3.09
FMI (%)	23.70 $\pm$ 5.07	23.36 $\pm$ 5.62	23.60 $\pm$ 5.10	23.5 $\pm$ 5.00	23.69 $\pm$ 4.95	23.89 $\pm$ 5.10	24.32 $\pm$ 5.38
WHR	0.89 $\pm$ 0.04	0.89 $\pm$ 0.05	0.90 $\pm$ 0.04	0.89 $\pm$ 0.04	0.89 $\pm$ 0.04	0.89 $\pm$ 0.04	0.89 $\pm$ 0.04
SBP (mmHg)	113.93 $\pm$ 10.41	116.49 $\pm$ 10.76	114.79 $\pm$ 10.73	114.28 $\pm$ 10.56	113.66 $\pm$ 10.41	113.79 $\pm$ 10.39	114.15 $\pm$ 10.22
HEPA	3,769 (15.31)	103 (19.81)	260 (17.44)	599 (15.59)	1,008 (15.39)	512 (13.44)	300 (15.31)
Alcohol intake (g)	10 [4-23]	11 [4-25]	10 [4-25]	10 [4-24]	10 [4-21]	10 [4-21]	10 [4-23]
Current smoker	6,166 (25.10)	149 (28.71)	407 (27.37)	961 (25.06)	1,568 (24.36)	965 (25.38)	509 (26.01)
Highest education	21,878 (88.85)	453 (87.12)	1,321 (88.60)	3,413 (88.79)	5,829 (88.99)	3,397 (89.16)	1,757 (89.69)
Calcium (mg/dL)	9.59 $\pm$ 0.29	9.52 $\pm$ 0.30	9.52 $\pm$ 0.29	9.56 $\pm$ 0.29	9.58 $\pm$ 0.29	9.63 $\pm$ 0.28	9.67 $\pm$ 0.29
Phosphorus (mg/dL)	3.50 $\pm$ 0.42	3.44 $\pm$ 0.43	3.47 $\pm$ 0.43	3.49 $\pm$ 0.42	3.48 $\pm$ 0.41	3.52 $\pm$ 0.43	3.56 $\pm$ 0.42
ALP (md/dL)	61.62 $\pm$ 14.23	61.03 $\pm$ 14.71	61.24 $\pm$ 14.48	61.25 $\pm$ 13.89	61.14 $\pm$ 13.93	61.94 $\pm$ 14.54	63.01 $\pm$ 14.92
LDL-C (mg/dL)	133.31 $\pm$ 30.67	132.06 $\pm$ 30.31	131.62 $\pm$ 31.64	132.3 $\pm$ 30.00	133.14 $\pm$ 30.33	134.01 $\pm$ 30.53	133.57 $\pm$ 30.92
eGFR (mL/min/1.73 m <sup>2</sup> )	98.31 $\pm$ 14.73	99.24 $\pm$ 14.71	99.48 $\pm$ 15.85	98.62 $\pm$ 14.50	98.63 $\pm$ 14.82	97.94 $\pm$ 14.48	97.61 $\pm$ 14.65
hs-CRP (mg/dL)	0.05 [0.03-0.10]	0.06 [0.03-0.11]	0.05 [0.03-0.11]	0.05 [0.03-0.10]	0.05 [0.03-0.10]	0.05 [0.03-0.10]	0.06 [0.03-0.11]
HOMA-IR (%)	1.66 $\pm$ 1.07	2.21 $\pm$ 1.47	1.89 $\pm$ 1.28	1.75 $\pm$ 1.10	1.66 $\pm$ 1.05	1.53 $\pm$ 0.98	1.58 $\pm$ 1.06
Energy intake (kcal)	1,429.5 [1,097.6-1,802.6]	1,448.4 [1,132.2-1,892.1]	1,449.1 [1,116.2-1,827.0]	1,433.7 [1,113.2-1,808.8]	1,429.1 [1,099.0-1,790.3]	1,428.9 [1,107.7-1,813.2]	1,436.9 [1,081.8-1,832.1]
Total protein (g)	7.40 $\pm$ 0.35	7.30 $\pm$ 0.35	7.30 $\pm$ 0.33	7.34 $\pm$ 0.35	7.37 $\pm$ 0.34	7.41 $\pm$ 0.34	7.52 $\pm$ 0.37
Calcium intake (mg)	240.2 [151.6-358.6]	252.8 [151.4-368.4]	249.2 [161.8-372.6]	243.9 [155.9-357.7]	237.5 [151.6-354.5]	238.4 [149.2-355.8]	244.1 [150.8-366.2]
Vitamin C intake (mg)	45.9 [25.1-75.6]	51.0 [25.1-79.2]	47.1 [25.3-80.3]	47.3 [26.1-76.8]	45.3 [25.4-74.2]	45.8 [25.0-76.6]	45.2 [23.0-75.5]

Supplementary Table 1. Continued

Variable	Muscle mass change ( $\Delta$ ) (kg)					$\rho$ for trend		
	Overall	$\Delta \geq 2.5$	$\Delta$ increased $2.5 > \Delta \geq 1.5$	None $1.5 > \Delta \geq 0.5$	$\Delta$ decreased $0.5 \leq \Delta < 1.5$		$1.5 \leq \Delta < 2.5$	$2.5 \leq \Delta$
Total fat intake (g)	27.3 [18.0–40.4]	29.3 [18.8–42.7]	28.2 [18.2–42.5]	27.1 [17.7–39.5]	26.8 [17.9–40.1]	27.3 [18.2–40.7]	28.7 [18.9–43.0]	0.033
Fiber intake (g)	2.8 [1.9–4.1]	2.9 [1.9–4.2]	2.9 [1.9–4.3]	2.9 [2.0–4.2]	2.8 [1.9–4.0]	2.8 [1.8–4.1]	2.8 [1.8–4.0]	0.003

Values are presented as number (%), mean  $\pm$  standard deviation, or median [interquartile range].

BMI, body mass index; SMI, skeletal muscle mass index; FMI, fat mass index; WHR, waist-to-hip ratio; SBP, systolic blood pressure; HEPA, health-enhancing physical activity; ALP, alkaline phosphatase; LDL-C, low-density lipoprotein cholesterol; eGFR, estimated glomerular filtration rate; hs-CRP, high sensitivity C-reactive protein; HOMA-IR, homeostasis model assessment of insulin resistance.