

XI. Anthropometry, Body Composition and Resting Metabolic Profiles_z

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1) Anthropometric measurements

Height (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	170.0	5.6	266	167.3	6.1	331	164.5	5.2	297	161.3	5.2	267	158.1	6.7	43	165.6	6.5	1204
Female	156.1	5.1	294	154.0	4.9	285	151.9	5.0	286	147.4	5.2	275	144.3	5.7	34	152.2	6.1	1174
Total	162.7	8.8	560	161.2	8.7	616	158.3	8.1	583	154.3	8.7	542	152.0	9.3	77	159.0	9.2	2378

Weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	67.7	10.2	266	65.9	9.2	331	63.2	8.3	297	58.9	8.4	267	56.0	10.2	43	63.7	9.7	1204
Female	54.4	9.4	294	53.6	7.7	284	52.6	7.3	286	50.8	7.7	275	44.9	7.2	34	52.6	8.3	1173
Total	60.7	11.8	560	60.2	10.5	615	58.0	9.4	583	54.8	9.0	542	51.1	10.5	77	58.3	10.6	2377

Body mass index (kg/m²)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	23.4	3.0	266	23.5	2.7	331	23.3	2.8	297	22.6	2.8	267	22.4	3.6	43	23.2	2.9	1204
Female	22.3	3.7	294	22.6	3.1	284	22.7	2.8	286	23.4	3.4	275	21.5	2.7	34	22.7	3.3	1173
Total	22.8	3.4	560	23.1	2.9	615	23.0	2.8	583	23.0	3.1	542	22.0	3.2	77	23.0	3.1	2377

Trochanterion height (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	83.4	4.0	266	81.7	4.3	330	80.3	3.6	296	79.4	3.3	267	78.6	4.7	43	81.1	4.1	1202
Female	76.5	3.6	294	74.9	3.3	285	74.3	3.4	286	72.7	3.3	275	72.3	3.1	34	74.6	3.7	1174
Total	79.8	5.1	560	78.6	5.1	615	77.4	4.6	582	76.0	4.7	542	75.8	5.2	77	77.9	5.1	2376

Iliocrystal height (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	98.4	4.4	266	96.7	4.5	330	95.0	3.9	296	94.1	3.6	267	92.9	5.2	43	95.9	4.5	1202

Female	90.6	3.8	294	89.0	3.6	285	88.3	3.8	286	86.2	3.7	275	85.1	3.7	34	88.5	4.1	1174
Total	94.3	5.6	560	93.1	5.6	615	91.7	5.1	582	90.1	5.4	542	89.4	6.0	77	92.2	5.7	2376

Waist circumference at midway (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	82.6	8.4	266	83.9	7.9	331	84.3	8.2	297	82.9	8.9	267	80.8	11.4	43	83.3	8.5	1204
Female	72.7	9.3	294	74.3	8.4	285	76.3	8.1	286	79.4	10.3	275	74.3	7.6	34	75.6	9.3	1174
Total	77.4	10.1	560	79.5	9.4	616	80.4	9.0	583	81.1	9.8	542	77.9	10.4	77	79.5	9.7	2378

Waist circumference at umbilicus (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	84.6	8.3	266	85.8	7.8	331	86.2	8.2	297	84.7	8.8	267	83.2	11.0	43	85.3	8.4	1204
Female	78.8	10.2	294	81.1	9.4	285	83.6	9.1	286	86.1	10.5	275	79.2	8.0	34	82.2	10.1	1174
Total	81.5	9.8	560	83.6	8.9	616	84.9	8.7	583	85.4	9.7	542	81.4	10.0	77	83.8	9.4	2378

Hip circumference (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	94.4	5.3	266	93.4	4.9	330	92.0	4.7	296	90.0	4.7	267	88.8	5.9	43	92.4	5.2	1202
Female	92.1	6.1	294	91.3	4.9	285	90.2	4.8	286	89.7	5.5	275	86.2	5.3	34	90.7	5.5	1174
Total	93.2	5.9	560	92.4	5.0	615	91.1	4.8	582	89.8	5.1	542	87.7	5.7	77	91.5	5.4	2376

Thigh circumference at midway (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	50.2	4.0	266	49.0	3.6	331	47.6	3.7	296	45.8	3.8	267	44.9	4.8	43	48.1	4.2	1203
Female	48.9	4.3	294	47.8	4.0	285	46.8	3.6	286	45.2	4.1	275	43.2	3.8	34	47.1	4.3	1174
Total	49.5	4.2	560	48.4	3.9	616	47.2	3.7	582	45.5	4.0	542	44.1	4.5	77	47.6	4.3	2377

Thigh circumference at 10 cm above knee (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	45.4	3.6	266	44.6	3.4	331	43.5	3.4	296	42.2	3.5	267	41.9	4.5	43	43.9	3.7	1203
Female	44.3	3.8	294	43.8	3.7	285	43.0	3.3	286	42.0	3.8	275	40.3	3.5	34	43.2	3.8	1174
Total	44.8	3.8	560	44.2	3.6	616	43.3	3.4	582	42.1	3.6	542	41.2	4.2	77	43.6	3.8	2377

Galf circumference (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	36.9	2.8	266	36.2	2.6	331	35.3	2.5	296	33.9	2.5	267	33.2	3.0	43	35.5	2.9	1203
Female	34.8	2.7	294	34.2	2.6	285	33.5	2.3	286	32.6	2.4	275	31.3	2.6	34	33.7	2.7	1174
Total	35.8	3.0	560	35.3	2.8	616	34.4	2.6	582	33.2	2.5	542	32.4	3.0	77	34.6	2.9	2377

Upper-arm circumference (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
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	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	29.3	2.6	266	28.9	2.2	331	28.3	2.2	297	27.1	2.3	267	26.3	2.8	43	28.3	2.5	1204
Female	26.9	3.0	294	27.2	2.6	285	27.4	2.6	286	27.0	2.9	275	24.9	2.4	34	27.1	2.8	1174
Total	28.1	3.1	560	28.1	2.6	616	27.8	2.5	583	27.0	2.6	542	25.7	2.7	77	27.7	2.7	2378

Sagittal abdominal diameter (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	20.9	2.8	266	21.4	2.6	331	21.6	2.9	297	21.2	3.0	267	20.9	3.6	43	21.3	2.9	1204
Female	18.1	3.2	294	19.1	3.1	285	20.2	3.0	286	21.4	3.6	275	19.7	2.7	34	19.7	3.4	1174
Total	19.4	3.3	560	20.4	3.1	616	20.9	3.0	583	21.3	3.3	542	20.4	3.2	77	20.5	3.2	2378

2) Thickness of subcutaneous fat and muscle

(Ultrasound scanner, ECHOPAL; Hitachi Medical Corp.)

Thickness of subcutaneous fat at anterior upper-arm (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	3.0	1.3	266	2.9	1.2	331	2.8	1.1	297	2.6	1.0	267	2.6	0.9	43	2.8	1.1	1204
Female	4.4	2.2	294	4.1	1.6	285	4.3	1.7	286	4.1	1.6	275	3.0	1.0	34	4.2	1.8	1174
Total	3.8	2.0	560	3.4	1.5	616	3.5	1.6	583	3.3	1.5	542	2.7	1.0	77	3.5	1.7	2378

Thickness of musculus biceps brachii and brachialis (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	26.4	4.8	266	25.9	4.2	331	24.8	4.1	297	23.2	4.0	267	21.3	5.2	43	25.0	4.5	1204
Female	19.9	4.2	294	20.0	3.4	285	19.2	3.8	286	18.1	3.4	275	16.3	2.9	34	19.2	3.8	1174
Total	23.0	5.5	560	23.2	4.8	616	22.0	4.8	583	20.6	4.5	542	19.1	4.9	77	22.1	5.1	2378

Thickness of subcutaneous fat at forearm (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	3.2	1.1	266	3.3	1.2	331	3.2	1.0	297	3.1	1.0	267	3.1	1.2	43	3.2	1.1	1204
Female	3.9	1.4	294	3.9	1.5	285	4.0	1.6	286	3.7	1.5	275	2.9	1.0	34	3.8	1.5	1173
Total	3.6	1.3	560	3.6	1.4	616	3.6	1.4	582	3.4	1.3	542	3.0	1.1	77	3.5	1.4	2377

Thickness of musculus brachioradialis (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	19.9	3.2	266	18.4	2.9	331	17.9	3.1	297	16.6	3.3	267	15.2	2.9	43	18.1	3.3	1204
Female	15.8	2.9	294	14.9	2.7	285	14.7	2.9	286	14.1	2.7	275	13.1	2.7	34	14.8	2.9	1173
Total	17.8	3.7	560	16.8	3.3	616	16.3	3.4	582	15.4	3.3	542	14.3	3.0	77	16.5	3.5	2377

Thickness of subcutaneous fat at right of umbilicus (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	16.7	6.8	266	15.9	5.7	331	14.5	5.1	297	13.3	5.2	267	12.2	4.4	43	15.0	5.8	1204
Female	20.6	9.8	294	22.2	8.4	285	23.2	8.0	286	22.0	8.7	275	15.0	5.2	34	21.8	8.8	1174

Total	18.7	8.7	560	18.8	7.7	616	18.8	7.9	583	17.7	8.4	542	13.5	5.0	77	18.4	8.2	2378
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Thickness of musculus rectus abdominis at right of umbilicus (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	11.2	1.9	266	10.7	1.9	331	9.9	1.9	297	9.2	1.7	267	8.6	1.6	43	10.2	2.0	1204
Female	8.8	1.8	294	8.1	1.5	285	7.7	1.6	286	7.3	1.8	275	6.7	1.7	34	7.9	1.8	1174
Total	9.9	2.2	560	9.5	2.2	616	8.8	2.0	583	8.2	2.0	542	7.8	1.9	77	9.1	2.2	2378

Thickness of subcutaneous fat at thigh (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	6.3	2.0	265	6.0	1.9	331	5.6	1.9	295	5.5	1.7	267	5.8	2.0	43	5.8	1.9	1201
Female	10.6	2.8	294	10.0	2.7	285	9.0	2.7	286	8.3	3.1	275	7.2	2.6	34	9.4	3.0	1174
Total	8.5	3.2	559	7.8	3.0	616	7.3	2.9	581	6.9	2.9	542	6.4	2.4	77	7.6	3.1	2375

Thickness of musculus rectus femoris at thigh (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	32.6	6.0	265	31.0	6.3	331	28.8	6.3	295	25.3	5.9	267	23.7	6.6	43	29.3	6.8	1201
Female	29.8	6.8	294	27.0	5.8	285	25.4	5.6	286	21.9	5.3	275	19.6	5.4	34	25.9	6.6	1173
Total	31.2	6.6	559	29.1	6.4	616	27.1	6.2	580	23.5	5.9	542	21.9	6.4	77	27.6	6.9	2374

Thickness of subcutaneous fat at anterior calf (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	2.4	0.7	266	2.3	0.8	330	2.2	0.8	296	2.2	0.7	267	2.2	0.8	43	2.3	0.8	1202
Female	3.6	1.4	294	3.4	1.4	285	3.1	1.3	286	3.1	1.2	275	2.6	1.2	34	3.3	1.3	1174
Total	3.0	1.3	560	2.8	1.2	615	2.6	1.2	582	2.6	1.1	542	2.4	1.0	77	2.8	1.2	2376

Thickness of musculus tibialis anterior (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	26.5	3.0	266	26.4	3.1	331	25.3	3.3	296	23.6	2.9	267	23.3	3.9	43	25.4	3.4	1203
Female	22.5	2.8	294	22.1	2.8	285	22.0	2.7	286	20.8	2.9	275	20.5	2.7	34	21.8	2.8	1174
Total	24.4	3.5	560	24.4	3.7	616	23.7	3.4	582	22.2	3.2	542	22.0	3.7	77	23.6	3.6	2377

Thickness of subcutaneous fat at upper-arm (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	6.1	2.0	266	5.9	1.9	331	5.5	1.7	296	5.4	1.7	266	5.5	1.6	43	5.7	1.8	1202
Female	9.9	2.8	294	9.8	2.7	285	9.7	2.5	286	9.1	2.6	275	8.1	2.2	34	9.6	2.7	1174
Total	8.1	3.1	560	7.7	3.0	616	7.6	3.0	582	7.3	2.9	541	6.7	2.3	77	7.6	3.0	2376

Thickness of musculus triceps brachi (mm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	24.9	4.9	266	24.2	5.2	331	22.7	4.9	295	20.5	4.9	266	19.7	5.6	43	23.0	5.3	1201

Female	20.0	5.2	294	19.8	4.2	285	19.5	4.7	286	18.6	4.8	275	15.3	3.3	34	19.3	4.8	1174
Total	22.4	5.6	560	22.1	5.3	616	21.1	5.1	581	19.5	4.9	541	17.8	5.2	77	21.2	5.4	2375

Thickness of subcutaneous fat at subscapula (mm)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	8.5	3.0	265	8.0	2.7	331	7.6	2.5	296	7.2	2.4	266	6.9	2.8	43	7.8	2.7	1201
Female	10.0	5.0	294	9.8	3.8	284	9.8	3.7	286	9.4	3.7	275	7.1	3.0	34	9.7	4.1	1173
Total	9.3	4.3	559	8.8	3.4	615	8.7	3.3	582	8.3	3.3	541	7.0	2.9	77	8.7	3.6	2374

Thickness of musculus latissimus dorsi at subscapula (mm)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	5.6	1.5	265	4.9	1.3	331	4.8	1.4	296	4.7	1.5	266	4.2	1.5	43	5.0	1.5	1201
Female	4.2	1.4	294	4.1	1.1	284	4.1	1.2	286	4.1	1.4	275	3.9	1.2	34	4.1	1.3	1173
Total	4.8	1.6	559	4.5	1.3	615	4.5	1.4	582	4.4	1.5	541	4.1	1.3	77	4.5	1.4	2374

Thickness of subcutaneous fat at posterior mid-thigh (mm)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	5.6	1.8	266	5.3	1.7	331	5.1	1.8	296	5.0	1.6	266	5.4	1.8	43	5.3	1.8	1202
Female	9.5	3.3	294	8.7	3.3	285	8.0	3.2	286	7.5	3.5	275	7.6	3.9	34	8.4	3.4	1174
Total	7.7	3.4	560	6.8	3.1	616	6.5	2.9	582	6.3	3.0	541	6.4	3.1	77	6.8	3.1	2376

Thickness of subcutaneous fat at posterior calf (mm)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	4.5	1.3	266	4.3	1.3	331	4.0	1.2	295	3.8	1.3	266	4.1	1.4	43	4.2	1.3	1201
Female	6.7	1.6	294	6.3	1.9	285	5.7	1.9	286	5.4	2.0	274	4.9	2.0	34	6.0	1.9	1173
Total	5.7	1.8	560	5.2	1.9	616	4.8	1.8	581	4.6	1.8	540	4.4	1.7	77	5.1	1.9	2374

Thickness of musculus gastrocnemius and soleus (mm)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	58.9	6.0	264	56.9	5.9	330	55.2	6.2	295	52.2	6.1	266	50.5	7.6	43	55.7	6.6	1198
Female	52.3	6.3	294	50.3	5.5	284	49.8	5.4	286	48.0	5.4	272	47.2	6.0	34	50.0	5.9	1170
Total	55.5	7.0	558	53.9	6.6	614	52.5	6.4	581	50.0	6.1	538	49.1	7.1	77	52.9	6.9	2368

3) Abdominal fat distribution

(CT Scan, SCT-6800TX; Shimadzu, Fat Scan; N2 Corp.)

Intra-abdominal fat area at umbilicus by CT (cm²)

	40 - 49yr			50 - 59yr			60 - 69yr			70 - 79yr			80yr -			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	78.6	36.8	263	89.1	43.1	329	98.5	47.9	296	92.0	49.6	267	91.9	64.0	43	89.9	45.9	1198
Female	40.6	28.6	292	57.4	35.7	282	66.0	34.4	285	81.8	42.4	273	72.6	40.5	34	61.5	38.5	1166
Total	58.6	37.8	555	74.5	42.9	611	82.5	44.9	581	86.9	46.3	540	83.4	55.4	77	75.8	44.7	2364

Subcutaneous fat area at umbilicus by CT (cm²)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	119.3	57.8	263	115.8	50.2	329	115.4	47.2	296	106.5	45.8	267	101.7	46.7	43	113.9	50.4	1198
Female	150.3	81.4	292	163.0	67.5	282	164.7	61.8	285	164.8	68.7	273	121.9	49.5	34	159.5	70.2	1166
Total	135.7	72.8	555	137.5	63.3	611	139.6	60.1	581	136.0	65.3	540	110.6	48.7	77	136.4	65.1	2364

Waist circumference at umbilicus by CT (cm)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	85.3	8.5	262	86.0	8.2	330	86.4	8.3	296	85.0	9.1	267	83.7	11.3	43	85.6	8.6	1198
Female	81.2	10.2	292	84.2	9.2	282	85.5	8.7	285	87.3	10.3	273	82.1	8.6	34	84.4	9.8	1166
Total	83.1	9.6	554	85.1	8.7	612	86.0	8.5	581	86.1	9.7	540	83.0	10.1	77	85.0	9.3	2364

4) Body composition

1. Body composition by DXA

(Dual energy x-ray absorptiometry, QDR-4500A; Hologic)

Head fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	1.007	0.088	258	1.008	0.089	323	0.979	0.089	289	0.952	0.087	258	0.913	0.083	40	0.985	0.092	1168
Female	0.861	0.081	287	0.879	0.076	283	0.867	0.074	279	0.857	0.082	261	0.804	0.058	32	0.864	0.079	1142
Total	0.930	0.111	545	0.948	0.105	606	0.924	0.099	568	0.905	0.097	519	0.865	0.091	72	0.925	0.105	2310

Head lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	3.986	0.315	258	3.975	0.325	323	3.874	0.335	289	3.748	0.322	258	3.604	0.321	40	3.890	0.341	1168
Female	3.494	0.296	287	3.501	0.281	283	3.393	0.269	279	3.318	0.289	261	3.135	0.223	32	3.421	0.296	1142
Total	3.727	0.392	545	3.754	0.386	606	3.638	0.388	568	3.532	0.374	519	3.396	0.365	72	3.658	0.396	2310

Left arm fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.770	0.268	258	0.768	0.262	323	0.742	0.257	289	0.737	0.228	258	0.721	0.238	40	0.754	0.254	1168
Female	1.032	0.438	287	1.070	0.347	283	1.074	0.328	279	1.070	0.365	261	0.858	0.342	32	1.055	0.373	1142
Total	0.908	0.390	545	0.909	0.340	606	0.905	0.337	568	0.904	0.347	519	0.782	0.295	72	0.903	0.352	2310

Left arm lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	3.104	0.440	258	2.995	0.405	323	2.816	0.361	289	2.601	0.338	258	2.368	0.418	40	2.866	0.439	1168
Female	1.850	0.314	287	1.797	0.249	283	1.755	0.247	279	1.683	0.245	261	1.566	0.282	32	1.767	0.275	1142
Total	2.443	0.732	545	2.435	0.688	606	2.295	0.615	568	2.139	0.546	519	2.011	0.540	72	2.323	0.661	2310

Right arm fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.753	0.281	258	0.738	0.252	323	0.723	0.251	289	0.717	0.242	258	0.705	0.258	40	0.732	0.257	1168
Female	1.009	0.441	287	1.044	0.347	283	1.050	0.328	279	1.064	0.374	261	0.846	0.311	32	1.036	0.375	1142
Total	0.887	0.395	545	0.881	0.337	606	0.884	0.334	568	0.892	0.360	519	0.767	0.289	72	0.882	0.355	2310

Right arm lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	3.353	0.472	258	3.244	0.441	323	3.048	0.378	289	2.790	0.366	258	2.495	0.446	40	3.094	0.478	1168
Female	2.044	0.349	287	1.986	0.273	283	1.937	0.281	279	1.839	0.252	261	1.703	0.294	32	1.947	0.303	1142
Total	2.663	0.773	545	2.656	0.730	606	2.502	0.649	568	2.312	0.570	519	2.143	0.552	72	2.527	0.700	2310

Trunk fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	7.490	2.949	258	7.554	2.736	323	7.358	2.598	289	6.979	2.531	258	6.844	2.925	40	7.340	2.720	1168
Female	7.443	3.099	287	8.188	2.783	283	8.607	2.522	279	8.663	2.761	261	6.676	2.131	32	8.169	2.834	1142
Total	7.465	3.026	545	7.850	2.774	606	7.971	2.634	568	7.826	2.778	519	6.769	2.586	72	7.750	2.807	2310

Trunk lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	26.404	3.328	258	25.846	2.954	323	24.624	2.644	289	23.021	2.712	258	21.410	3.219	40	24.891	3.241	1168
Female	19.532	2.536	287	18.914	1.974	283	18.180	1.925	279	17.329	2.067	261	15.953	1.737	32	18.445	2.315	1142
Total	22.785	4.518	545	22.609	4.294	606	21.459	3.970	568	20.159	3.729	519	18.985	3.803	72	21.704	4.284	2310

Left leg fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	2.261	0.731	258	2.168	0.634	323	2.038	0.650	289	2.008	0.580	258	2.069	0.704	40	2.118	0.658	1168
Female	3.066	0.812	287	2.876	0.750	283	2.712	0.705	279	2.608	0.782	261	2.245	0.743	32	2.805	0.786	1142
Total	2.685	0.872	545	2.498	0.775	606	2.369	0.757	568	2.310	0.751	519	2.147	0.722	72	2.457	0.801	2310

Left leg lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	8.528	1.201	258	8.104	1.128	323	7.694	0.931	289	7.136	0.898	258	6.513	1.217	40	7.828	1.187	1168
Female	6.009	0.973	287	5.698	0.767	283	5.551	0.718	279	5.213	0.638	261	4.998	0.699	32	5.610	0.839	1142
Total	7.201	1.662	545	6.981	1.547	606	6.641	1.357	568	6.169	1.237	519	5.840	1.266	72	6.731	1.513	2310

Right leg fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	2.162	0.723	258	2.072	0.632	323	1.982	0.627	289	1.966	0.585	258	2.006	0.675	40	2.044	0.647	1168
Female	3.006	0.795	287	2.836	0.749	283	2.689	0.719	279	2.598	0.778	261	2.289	0.805	32	2.773	0.780	1142

Total 2.606 0.870 545 2.429 0.787 606 2.329 0.760 568 2.284 0.758 519 2.132 0.744 72 2.404 0.803 2310

Right leg lean weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	8.691	1.213	258	8.248	1.139	323	7.837	0.970	289	7.280	0.917	258	6.712	1.187	40	7.978	1.203	1168
Female	6.097	0.979	287	5.819	0.793	283	5.646	0.736	279	5.303	0.712	261	5.048	0.737	32	5.707	0.865	1142
Total	7.325	1.697	545	7.114	1.567	606	6.761	1.395	568	6.286	1.284	519	5.972	1.306	72	6.855	1.546	2310

Total fat weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	14.4	4.8	258	14.3	4.3	323	13.8	4.2	289	13.4	4.0	258	13.3	4.7	40	14.0	4.4	1168
Female	16.4	5.2	287	16.9	4.6	283	17.0	4.2	279	16.9	4.6	261	13.7	4.0	32	16.7	4.7	1142
Total	15.5	5.1	545	15.5	4.6	606	15.4	4.5	568	15.1	4.7	519	13.5	4.3	72	15.3	4.7	2310

Lean body weight (kg)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	54.1	6.5	258	52.4	5.9	323	49.9	5.0	289	46.6	5.0	258	43.1	6.4	40	50.5	6.4	1168
Female	39.0	5.1	287	37.7	3.9	283	36.5	3.8	279	34.7	3.8	261	32.4	3.7	32	36.9	4.5	1142
Total	46.1	9.5	545	45.5	8.9	606	43.3	8.1	568	40.6	7.4	519	38.3	7.6	72	43.8	8.8	2310

Percent body fat (%)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	20.7	4.4	258	21.1	4.4	323	21.4	4.5	289	21.9	4.6	258	22.9	5.2	40	21.3	4.5	1168
Female	29.1	5.0	287	30.5	5.0	283	31.4	4.6	279	32.2	5.3	261	29.3	4.7	32	30.7	5.1	1142
Total	25.1	6.3	545	25.5	6.6	606	26.3	6.8	568	27.1	7.1	519	25.8	5.9	72	26.0	6.7	2310

2. Body fluid volume by multi-frequency impedance method

(Bioimpedance measuring device, 4000C; XITRON)

Extracellular fluid (L)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	16.6	2.1	265	16.4	2.0	328	15.8	1.9	291	14.8	1.8	259	14.3	2.3	43	15.9	2.1	1186
Female	12.4	1.7	293	12.3	1.4	281	12.0	1.4	284	11.5	1.4	268	10.5	1.5	34	12.0	1.5	1160
Total	14.4	2.9	558	14.5	2.7	609	13.9	2.5	575	13.1	2.3	527	12.6	2.7	77	14.0	2.7	2346

Intracellular fluid (L)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	22.5	3.5	265	21.4	3.1	328	19.5	2.9	291	17.0	2.6	259	15.2	3.1	43	20.0	3.8	1186
Female	14.4	2.4	293	13.8	1.9	281	13.2	2.0	284	11.9	1.6	268	10.6	1.8	34	13.3	2.3	1160
Total	18.3	5.0	558	17.9	4.6	609	16.4	4.0	575	14.4	3.3	527	13.1	3.4	77	16.7	4.6	2346

5) Resting metabolic profiles

(Respiratory metabolism measuring device, Vmax; SENSOR MEDICS)

Resting energy expenditure (kcal/24 h)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	1541.3	259.1	251	1485.4	247.0	301	1366.5	202.1	275	1263.1	193.5	236	1132.4	206.7	39	1408.4	254.6	1102
Female	1215.7	225.6	276	1170.9	188.0	262	1127.9	166.4	267	1086.5	156.2	243	1014.4	165.0	29	1148.4	193.3	1077
Total	1370.8	291.6	527	1339.0	271.3	563	1248.9	220.4	542	1173.5	196.4	479	1082.1	197.6	68	1279.9	261.0	2179

Oxygen intake on resting (L/min)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.22	0.04	251	0.21	0.04	301	0.19	0.03	275	0.18	0.03	236	0.16	0.03	39	0.20	0.04	1102
Female	0.17	0.03	276	0.17	0.03	262	0.16	0.03	267	0.15	0.02	243	0.14	0.03	29	0.16	0.03	1077
Total	0.20	0.04	527	0.19	0.04	563	0.18	0.03	542	0.17	0.03	479	0.15	0.03	68	0.18	0.04	2179

Carbon dioxide excretion on resting (L/min)

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.19	0.03	251	0.18	0.03	301	0.17	0.02	275	0.16	0.02	236	0.14	0.02	39	0.17	0.03	1102
Female	0.15	0.02	276	0.14	0.02	262	0.14	0.02	267	0.13	0.02	243	0.12	0.02	29	0.14	0.02	1077
Total	0.17	0.03	527	0.16	0.03	563	0.15	0.03	542	0.14	0.02	479	0.13	0.02	68	0.16	0.03	2179

Respiratory exchange ratio on resting

	40 – 49yr			50 – 59yr			60 – 69yr			70 – 79yr			80yr –			Total		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Male	0.87	0.08	251	0.86	0.08	301	0.88	0.08	275	0.88	0.08	236	0.89	0.08	39	0.87	0.08	1102
Female	0.85	0.07	276	0.86	0.08	262	0.87	0.08	267	0.85	0.08	243	0.86	0.09	29	0.86	0.08	1077
Total	0.86	0.08	527	0.86	0.08	563	0.87	0.08	542	0.86	0.08	479	0.88	0.09	68	0.86	0.08	2179