

V. Bone Analysis

Bone mineral weight and density by dual energy X-ray absorptiometry (DXA)

- Whole body bone mineral weight
- Whole body bone mineral density
- Head bone mineral weight
- Head bone mineral density
- Left arm bone mineral weight
- Left arm bone mineral density
- Right arm bone mineral weight
- Right arm bone mineral density
- Left rib cage bone mineral weight
- Left rib cage bone mineral density
- Right rib cage bone mineral weight
- Right rib cage bone mineral density
- Thoracic spine bone mineral weight
- Thoracic spine bone mineral density
- Lumbar spine bone mineral weight
- Lumbar bone mineral density
- Pelvic bone mineral weight
- Pelvic bone mineral density
- Left leg bone mineral weight
- Left leg bone mineral density
- Right leg bone mineral weight
- Right leg bone mineral density
- Lumbar spine 2-4 bone mineral density
- Right and left femoral neck bone mineral density
- Right and left trochanter region bone mineral density
- Right and left Ward's triangle bone mineral density

Bone mineral density

1. Dual energy X-ray absorptiometry (DXA) (Hologic QDR-4500)

Whole body bone mineral weight (g)

	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	2365.4	320.6	277	2332.3	308.7	285	2254.5	327.5	274	2116.0	320.6	279	1977.7	315.3	72	2249.7	339.0	1187
Female	1972.1	260.8	291	1747.3	286.3	274	1574.9	237.2	281	1400.1	215.8	276	1242.6	224.6	80	1648.1	340.8	1202
Total	2163.9	351.5	568	2045.6	417.5	559	1910.4	443.8	555	1760.0	450.6	555	1590.8	456.9	152	1947.0	453.9	2389

Head bone mineral weight (g)

	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	511.6	83.4	278	501.7	79.7	287	489.3	87.0	274	464.6	95.1	282	443.1	87.6	73	488.8	88.8	1194
Female	545.8	92.0	293	474.3	100.3	275	424.2	85.2	281	384.1	77.7	276	351.3	75.4	81	451.1	109.3	1206
Total	529.2	89.5	571	488.3	91.3	562	456.3	92.0	555	424.8	95.7	558	394.8	93.3	154	469.8	101.4	2400

Head bone mineral density (g/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	2.042	0.279	278	2.049	0.282	287	2.023	0.309	274	1.958	0.345	282	1.913	0.331	73	2.012	0.309	1194
Female	2.335	0.338	293	2.070	0.383	275	1.881	0.325	281	1.757	0.307	276	1.647	0.289	81	1.990	0.408	1206

Total	2.192	0.343	571	2.060	0.335	562	1.951	0.324	555	1.859	0.342	558	1.773	0.336	154	2.001	0.362	2400
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Left arm bone mineral weight (g)

	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	174.0	25.0	278	173.7	24.2	287	168.8	26.5	274	158.9	25.6	282	147.6	28.7	73	167.6	26.7	1194
Female	121.9	16.7	293	109.8	19.4	275	99.0	16.4	281	86.9	15.0	276	76.4	16.0	81	102.7	22.2	1206
Total	147.3	33.6	571	142.4	38.8	562	133.4	41.3	555	123.2	41.7	558	110.2	42.4	154	135.0	40.7	2400

Left arm bone mineral density (g/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	0.778	0.052	278	0.776	0.056	287	0.767	0.061	274	0.746	0.064	282	0.724	0.073	73	0.764	0.061	1194
Female	0.677	0.042	293	0.634	0.052	275	0.596	0.047	281	0.565	0.044	276	0.547	0.046	81	0.614	0.064	1206
Total	0.726	0.069	571	0.706	0.090	562	0.681	0.101	555	0.656	0.106	558	0.631	0.107	154	0.689	0.098	2400

Right arm bone mineral weight (g)

	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	185.6	27.2	278	184.7	25.9	287	178.7	27.8	274	167.2	26.6	282	153.8	29.8	73	177.5	28.6	1194
Female	130.2	17.8	293	117.0	20.0	275	106.0	17.2	281	92.9	16.0	276	81.4	16.0	81	109.7	23.4	1206
Total	157.1	35.9	571	151.6	41.0	562	141.9	43.0	555	130.4	43.2	558	115.7	43.2	154	143.4	42.8	2400

Right arm bone mineral density (g/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	0.802	0.060	278	0.800	0.059	287	0.789	0.067	274	0.763	0.068	282	0.738	0.079	73	0.785	0.067	1194
Female	0.695	0.045	293	0.648	0.056	275	0.610	0.049	281	0.574	0.048	276	0.555	0.047	81	0.628	0.069	1206
Total	0.747	0.075	571	0.725	0.095	562	0.698	0.107	555	0.670	0.111	558	0.642	0.111	154	0.706	0.104	2400

Left rib cage bone mineral weight (g)

	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	84.2	16.4	277	82.1	13.9	286	79.0	13.7	274	72.7	14.1	281	68.7	14.2	73	78.8	15.3	1191
Female	68.5	12.3	293	61.4	13.1	275	56.3	11.2	281	52.2	10.2	276	49.3	11.3	81	59.0	13.4	1206
Total	76.1	16.5	570	71.9	17.0	561	67.5	16.9	555	62.6	16.0	557	58.5	16.0	154	68.9	17.5	2397

Left rib cage bone mineral density (g/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	0.629	0.066	277	0.627	0.066	286	0.622	0.070	274	0.600	0.066	281	0.580	0.073	73	0.617	0.069	1191
Female	0.591	0.057	293	0.540	0.062	275	0.508	0.052	281	0.485	0.048	276	0.472	0.048	81	0.528	0.069	1206
Total	0.610	0.064	570	0.585	0.077	561	0.564	0.084	555	0.543	0.082	557	0.523	0.082	154	0.572	0.082	2397

Right rib cage bone mineral weight (g)

	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	85.7	18.1	277	84.7	15.9	286	82.4	16.3	274	76.6	17.3	281	72.4	17.5	72	81.7	17.4	1190
Female	71.1	13.5	293	65.9	14.5	275	63.0	13.9	281	58.8	12.4	276	53.9	13.2	80	64.1	14.5	1205
Total	78.2	17.5	570	75.5	17.9	561	72.6	18.0	555	67.8	17.5	557	62.7	17.9	152	72.8	18.3	2395

Right rib cage bone mineral density (g/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	0.627	0.064	277	0.624	0.064	286	0.620	0.068	274	0.602	0.070	281	0.590	0.072	72	0.617	0.068	1190
Female	0.589	0.056	293	0.541	0.060	275	0.515	0.051	281	0.495	0.047	276	0.482	0.050	80	0.532	0.065	1205
Total	0.607	0.063	570	0.583	0.075	561	0.567	0.080	555	0.549	0.080	557	0.533	0.082	152	0.574	0.079	2395

Thoracic spine bone mineral weight (g)

	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	112.0	22.3	278	117.3	25.9	286	118.4	25.7	274	111.4	27.8	282	106.5	24.4	73	114.3	25.7	1193
Female	96.6	17.5	293	86.8	19.6	275	78.6	15.6	281	73.9	15.9	276	67.6	15.5	81	83.0	19.5	1206
Total	104.1	21.4	571	102.3	27.6	561	98.2	29.1	555	92.8	29.5	558	86.0	28.0	154	98.6	27.6	2399

Thoracic spine bone mineral density (g/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	0.828	0.110	277	0.867	0.126	286	0.880	0.130	274	0.867	0.137	282	0.865	0.137	73	0.861	0.128	1192
Female	0.856	0.106	293	0.776	0.114	275	0.710	0.101	281	0.671	0.093	276	0.646	0.100	81	0.747	0.127	1206
Total	0.842	0.108	570	0.822	0.129	561	0.793	0.144	555	0.770	0.153	558	0.750	0.162	154	0.803	0.140	2398

Lumbar spine bone mineral weight (g)

	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	58.1	12.2	277	59.2	13.6	285	60.6	14.9	274	57.1	16.1	282	55.7	16.3	73	58.6	14.5	1191
Female	55.9	10.8	293	46.3	11.7	275	39.2	10.4	281	35.3	9.6	276	32.7	10.7	81	43.5	13.4	1206
Total	57.0	11.5	570	52.9	14.2	560	49.7	16.7	555	46.3	17.2	558	43.6	17.8	154	51.0	15.8	2397

Lumbar bone mineral density (g/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	0.964	0.139	278	0.984	0.158	285	1.012	0.177	274	0.998	0.192	282	1.023	0.223	73	0.991	0.172	1192
Female	1.048	0.135	293	0.921	0.154	275	0.835	0.137	281	0.803	0.125	276	0.802	0.140	81	0.897	0.168	1206
Total	1.007	0.143	571	0.953	0.159	560	0.923	0.181	555	0.902	0.189	558	0.907	0.214	154	0.944	0.177	2398

Pelvic bone mineral weight (g)

	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	232.0	52.6	278	226.2	50.3	285	215.5	49.2	274	196.4	46.8	281	179.1	42.3	73	215.2	51.8	1191
Female	199.7	42.0	292	166.9	37.5	274	145.4	31.2	281	122.0	27.2	276	105.7	29.5	81	155.5	46.4	1204
Total	215.5	50.1	570	197.2	53.5	559	180.0	54.0	555	159.5	53.4	557	140.5	51.5	154	185.1	57.5	2395

Male	93.0	13.0	277	94.3	15.0	286	97.0	16.3	274	96.0	18.0	282	97.0	19.7	73	95.2	16.0	1192
Female	101.5	12.3	293	89.5	15.2	275	81.8	13.9	281	78.5	12.3	276	76.4	13.4	82	87.2	16.2	1207
Total	97.4	13.3	570	92.0	15.3	561	89.3	16.9	555	87.4	17.7	558	86.1	19.6	155	91.2	16.6	2399

Right femoral neck bone mineral density (g/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	0.749	0.109	278	0.757	0.107	287	0.737	0.111	274	0.700	0.107	281	0.652	0.099	73	0.731	0.112	1193
Female	0.719	0.106	293	0.675	0.092	273	0.635	0.096	281	0.601	0.391	274	0.537	0.089	82	0.650	0.212	1203
Total	0.734	0.108	571	0.717	0.108	560	0.685	0.116	555	0.651	0.289	555	0.591	0.110	155	0.690	0.174	2396

Right trochanter region bone mineral density (g/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	0.669	0.101	278	0.694	0.110	287	0.684	0.107	274	0.659	0.116	281	0.604	0.113	73	0.672	0.111	1193
Female	0.632	0.095	293	0.595	0.099	273	0.555	0.089	281	0.517	0.210	274	0.458	0.091	82	0.568	0.139	1203
Total	0.650	0.100	571	0.646	0.116	560	0.619	0.117	555	0.589	0.183	555	0.527	0.125	155	0.620	0.136	2396

Right Ward's triangle bone mineral density (g/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	0.594	0.129	278	0.580	0.127	287	0.543	0.136	274	0.480	0.123	281	0.432	0.102	73	0.542	0.137	1193
Female	0.615	0.132	293	0.536	0.120	273	0.470	0.126	281	0.413	0.549	274	0.342	0.112	82	0.499	0.296	1203
Total	0.605	0.131	571	0.558	0.126	560	0.506	0.136	555	0.447	0.397	555	0.384	0.116	155	0.520	0.232	2396

Left femoral neck bone mineral density (g/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	0.762	0.116	278	0.765	0.107	287	0.750	0.105	274	0.708	0.108	279	0.668	0.098	73	0.742	0.112	1191
Female	0.726	0.102	293	0.680	0.095	274	0.642	0.093	281	0.579	0.085	273	0.547	0.136	81	0.650	0.114	1202
Total	0.744	0.110	571	0.723	0.110	561	0.695	0.113	555	0.644	0.117	552	0.604	0.133	154	0.696	0.122	2393

Left trochanter region bone mineral density (g/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	0.679	0.105	278	0.705	0.110	287	0.695	0.111	274	0.669	0.120	279	0.616	0.114	73	0.683	0.114	1191
Female	0.633	0.093	293	0.601	0.102	274	0.567	0.092	281	0.513	0.080	273	0.474	0.108	81	0.572	0.106	1202
Total	0.655	0.102	571	0.654	0.118	561	0.630	0.121	555	0.592	0.129	552	0.541	0.132	154	0.627	0.123	2393

Left Ward's triangle bone mineral density (g/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	0.606	0.130	278	0.572	0.131	287	0.537	0.114	274	0.483	0.121	279	0.432	0.113	73	0.543	0.134	1191
Female	0.617	0.130	293	0.539	0.117	274	0.467	0.119	280	0.376	0.100	273	0.336	0.102	81	0.490	0.151	1201
Total	0.612	0.130	571	0.556	0.126	561	0.502	0.122	554	0.430	0.123	552	0.382	0.117	154	0.516	0.145	2392