Supplementary Table Legends

Suppl. Table 1
Descriptive statistics of relevant parameters measured for the available samples for phases 1 and 2 of the EMAS cohort. Data are expressed as means $\pm$ SD (number of subjects).

Suppl. Table 2
Multiple regression analysis modelling the PASE (Physical Activity Scale for the Elderly) index, as well as BMD (bone mineral density), SOS (ultrasound speed of sound), and BUA (bone ultrasound attenuation) for heel bone ultrasound assessment as continuous dependent variables, using hormonal, anthropometric, and lifestyle parameters as independent variables, as indicated, including INSL3. **std.b** is the standardized beta coefficient for the model with its t value and significance (p value). **excl**. indicates a parameter excluded in the final optimal model. This analysis is essentially similar to that in Table 1, except that cFT now replaces T and SHBG as informative parameters.

Suppl. Table 1

	Phase 1	Phase 2
Age (years)	58.5±10.6 (927)	63.0±10.5 (2325)
INSL3 (ng/ml)	1.03±0.50 (927)	0.99±0.50 (2283)
T (nmol/l)	16.04±5.43 (927)	16.38±6.05 (2325)
cFT (pmol/l)	291.6±85.3 (927)	284.2±90.2 (2283)
SHBG (nmol/l)		44.44±20.10 (2283)
LH (IU/l)	5.92±3.69 (926)	6.29±4.74 (2282)
FSH (IU/l)		8.51±9.33 (2242)
T/LH ratio	3.40±1.83 (926)	3.49±3.94 (2282)
BMI (kg/m²)	27.81±3.83 (923)	27.85±4.24 (2231)
WC (cm)	98.3±10.4 (926)	99.8±11.5 (2253)
smoking (%)	19.9 (918)	17.6 (2288)

Suppl. Table 2 – Multiple Regression Analysis – Bone parameters

	PASE (10.6%)			BMD (3.9%)			SOS (0.2%)			BUA (4.7%)		
	std. β	t	*p*-value	std. β	t	*p*-value	std. β	t	*p*-value	std. β	t	*p*-value
age	-0.326	-14.14	<0.001	-0.086	-3.38	<0.001	-0.049	-2.12	0.034	excl.	excl.	excl.
INSL3	excl.	excl.	excl.	0.066	2.50	0.012	excl.	excl.	excl.	0.066	2.53	0.011
cFT	excl.	excl.	excl.	0.059	2.25	0.024	excl.	excl.	excl.	0.058	2.22	0.026
LH	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.
FSH	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	excl.	-0.072	-2.99	0.003
smoking	-0.100	4.29	<0.001	-0.059	2.52	0.012	excl.	excl.	excl.	-0.088	-3.83	<0.001
alcohol	excl.	excl.	excl.	0.049	2.16	0.031	excl.	excl.	excl.	0.045	1.96	0.050
BMI	-0.072	-3.16	0.002	0.120	5.13	<0.001	excl.	excl.	excl.	0.145	6.20	<0.001