

Supplementary Table 1 Descriptive statistics of participants and the remainder of the cohort

Characteristic	Participants			Remainder of cohort		
	N	mean	SD	N	mean	SD
Age (yrs)	626	9.8	0.3	6997	9.9	0.3
Height (m)	602	1.4	0.1	6745	1.4	0.1
BMI	602	17.3	2.6	6745	17.8	2.9
Fat mass (Kg)	593	8.1	4.6	6649	8.6	5.2
Lean mass (Kg)	593	24.1	2.9	6649	24.6	3.3
	N	%		N	%	
Maternal social class	I	49	8.9	542	5.7	
	II	191	34.8	2,951	31.3	
	III †	238	43.4	4,036	42.7	
	III ‡	27	4.9	756	8.0	
	IV	36	6.6	947	10.0	
	V	8	1.5	212	2.2	
Total	549			9444		

Comparison of age, gender, height, body composition and maternal social class between the study population and ALSPAC as a whole. Age, gender, height and body composition are based on attendees to the first research clinic for the whole cohort (age 9.8 years). Maternal social class is based on questionnaire data at 32 weeks gestation. †=non-manual ‡=manual

Supplemental Table 2 Association between physical activity and bone strength indices

Outcome	g-band	Sex	Model 1					Model 2						
			R ²	β	95% CI		p	p(int.)	R ²	β	95% CI		p	p(int.)
Buckling Ratio	Low	M	0.05	0.078	-0.029	0.186	0.154		0.06	0.081	-0.027	0.189	0.141	
		F	0.06	-0.037	-0.139	0.065	0.474		0.06	-0.032	-0.136	0.072	0.542	
		All	0.05	0.017	-0.057	0.090	0.659	0.115	0.06	0.022	-0.052	0.096	0.561	0.132
	Medium	M	0.04	0.001	-0.078	0.080	0.976		0.05	0.003	-0.076	0.082	0.944	
		F	0.06	-0.046	-0.111	0.020	0.169		0.06	-0.045	-0.114	0.024	0.200	
		All	0.05	-0.027	-0.078	0.023	0.283	0.358	0.06	-0.023	-0.074	0.028	0.380	0.414
	High	M	0.04	0.001	-0.070	0.073	0.970		0.05	0.004	-0.068	0.076	0.905	
		F	0.06	-0.035	-0.092	0.022	0.225		0.06	-0.034	-0.093	0.024	0.250	
		All	0.05	-0.022	-0.066	0.023	0.338	0.431	0.06	-0.018	-0.063	0.027	0.433	0.472
CSMI (cm ⁴)	Low	M	0.16	-0.035	-0.128	0.059	0.468		0.37	-0.045	-0.126	0.037	0.281	
		F	0.22	-0.014	-0.072	0.044	0.627		0.41	0.002	-0.050	0.054	0.940	
		All	0.53	-0.023	-0.075	0.029	0.384	0.690	0.64	-0.026	-0.071	0.020	0.268	0.482
	Medium	M	0.16	0.044	-0.024	0.112	0.201		0.37	0.039	-0.021	0.098	0.202	
		F	0.22	-0.009	-0.047	0.028	0.621		0.41	-0.015	-0.049	0.019	0.386	
		All	0.53	0.013	-0.022	0.049	0.461	0.146	0.64	0.002	-0.029	0.034	0.893	0.037
	High	M	0.18	0.072	0.010	0.133	0.023		0.38	0.054	0.000	0.108	0.049	
		F	0.22	0.022	-0.010	0.054	0.176		0.41	0.010	-0.019	0.039	0.509	
		All	0.53	0.042	0.011	0.073	0.009	0.135	0.64	0.023	-0.004	0.051	0.099	0.060
SSI	Low	M	0.15	-0.043	-0.135	0.049	0.357		0.36	-0.054	-0.134	0.026	0.187	
		F	0.21	-0.019	-0.084	0.045	0.552		0.38	-0.002	-0.060	0.056	0.936	
		All	0.50	-0.030	-0.084	0.024	0.274	0.681	0.61	-0.033	-0.081	0.015	0.173	0.488
	Medium	M	0.15	0.045	-0.022	0.112	0.186		0.36	0.039	-0.020	0.097	0.192	
		F	0.21	-0.008	-0.049	0.034	0.716		0.38	-0.013	-0.052	0.025	0.491	
		All	0.50	0.014	-0.023	0.051	0.451	0.166	0.61	0.003	-0.030	0.035	0.877	0.047
	High	M	0.17	0.070	0.010	0.131	0.023		0.37	0.053	0.000	0.106	0.049	
		F	0.21	0.028	-0.008	0.063	0.129		0.38	0.015	-0.018	0.047	0.377	
		All	0.50	0.044	0.012	0.076	0.007	0.218	0.61	0.025	-0.003	0.054	0.085	0.117

Table showing results from regression analysis between buckling ratio, cross-sectional moment of inertia (CSMI), strength-strain index (SSI) and physical activity within three bands of impact in 272 males and 403 females. (Low= 0.5 – 2.1g; Medium= 2.1 – 4.2g; High= 4.2g+). β coefficient represents SD change in outcome per doubling in activity. Model 1 is adjusted for age, gender and height. Model 2 is additionally adjusted for fat mass and lean mass. p(int.) represents a p-value for interaction of gender and activity.