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Supplementary Information for

An integrative skeletal and paleogenomic analysis of prehistoric stature variation suggests relatively reduced health for early European farmers

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- Figures S1 to S12
- Tables S1 to S21
- Legend for Dataset S1
- SI References

Other supplementary materials for this manuscript include the following:

- Dataset S1

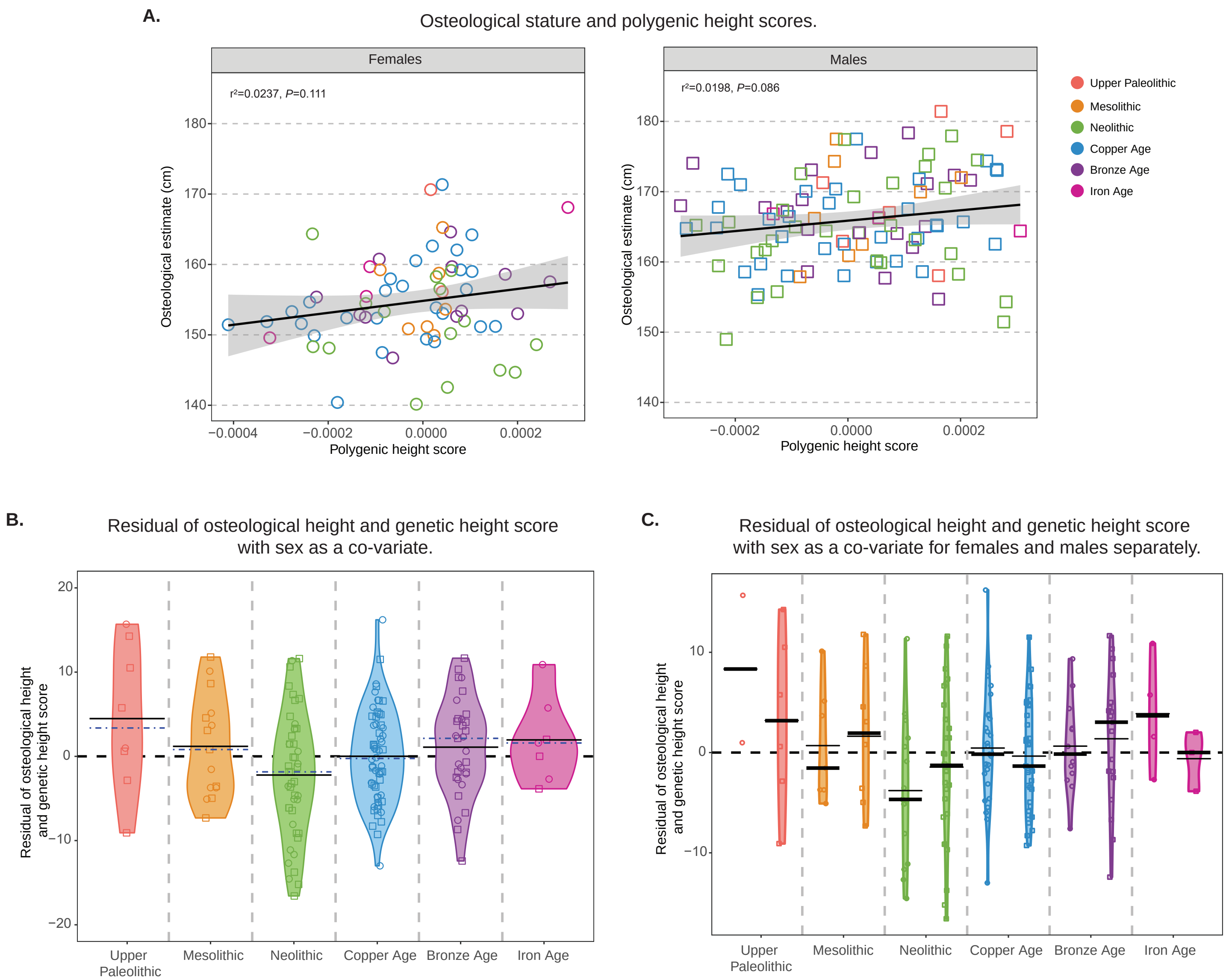


Fig S1. Linear regressions and residuals of osteological height and genetic height score with sex as a co-variate without deamination filtering. **A)** The relationship between polygenic height score and estimated osteological stature (cm) for females and males. **B)** Residuals of the relationship between polygenic height score and osteological height with sex as a co-variate for all individuals, by cultural period. Mean and median are represented by the black and blue dashed lines, respectively. **C)** Residuals of the relationship between polygenic height score and osteological height with sex as a co-variate for females and males plotted separately. Mean is represented by a thin line and median by the rectangle. Females are represented by circles and males by squares. Full results in Table S3.

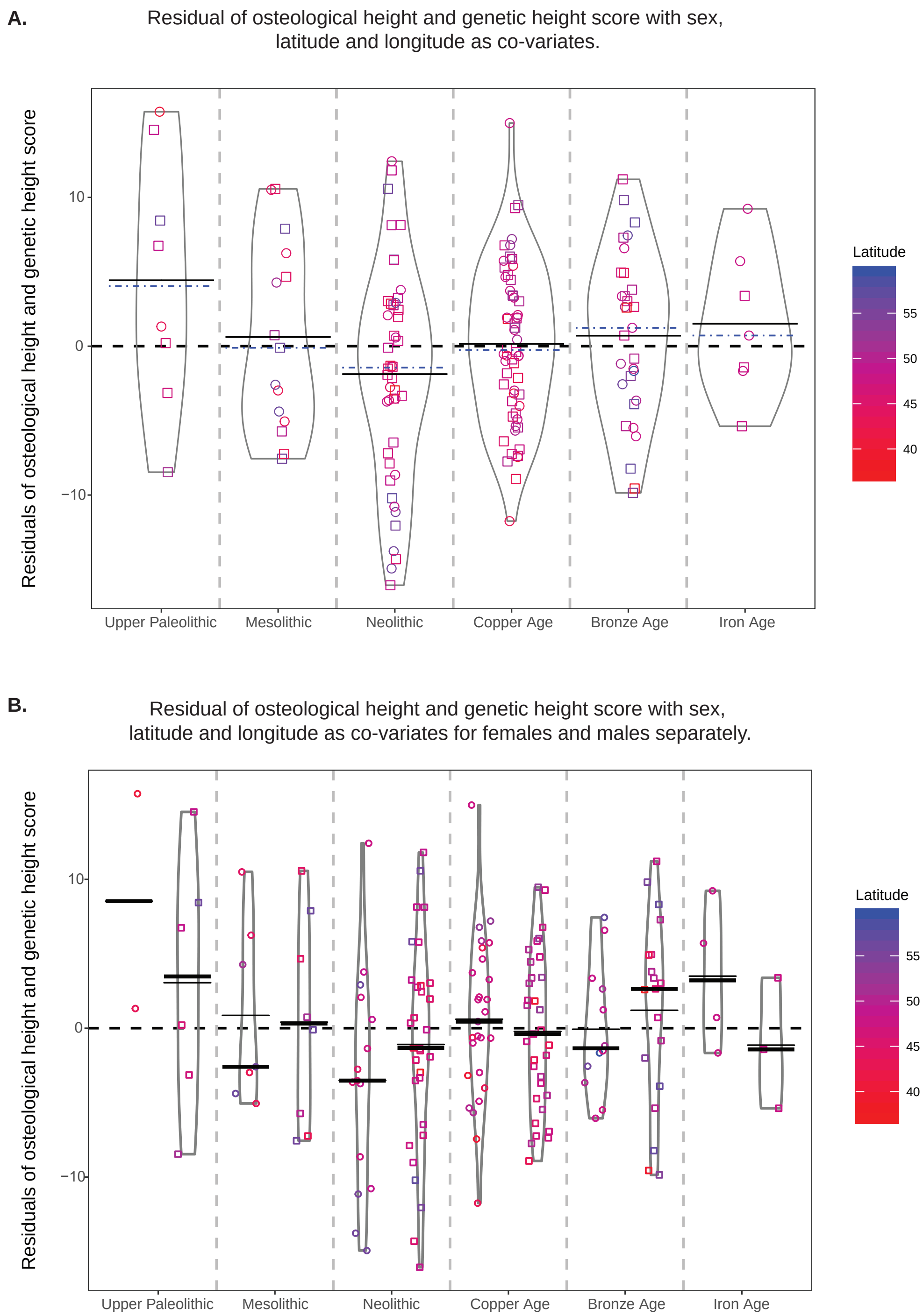


Fig. S2. Residuals of osteological height and genetic height score with sex, latitude and longitude as co-variates. Latitude and longitude were included as co-variates in the main linear model to assess replicability of the main results. **A**) For females and males combined, pre-Neolithic individuals (average residual = +1.94 ± 7.2 cm) were ~3.82 cm taller than expected relative to Neolithic individuals (average residual = -1.88 ± 7.1 cm; P=0.043). The average osteological vs. genetic height score residual then increased steadily in the Copper Age (+2.03 cm relative to the Neolithic), Bronze Age (+2.59 cm), and Iron Age (+3.39 cm). Post-Neolithic individuals were +2.22 cm taller on average relative to Neolithic individuals (P=0.067). Mean is in black and median is the blue dashed line. **B**) Females and males represented separately across cultural periods. Latitude gradient (north to south) is indicated. Mean is represented by a thin line and median by the rectangle. Females are represented by circles and males by squares. Full results in Table S7.

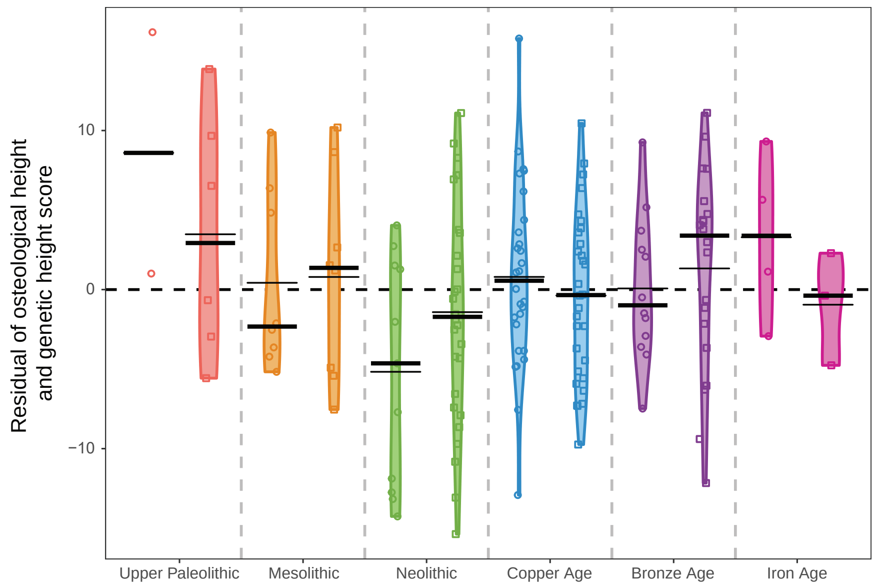


Fig. S3. Residuals of osteological height and genetic height score with sex as a co-variate. Females (circles) and males (squares) are plotted side by side based on the residuals of the relationship between polygenic height score and osteological height with sex as a co-variate. Mean is represented by the thin line and median by the rectangle. Full results in Table S6.

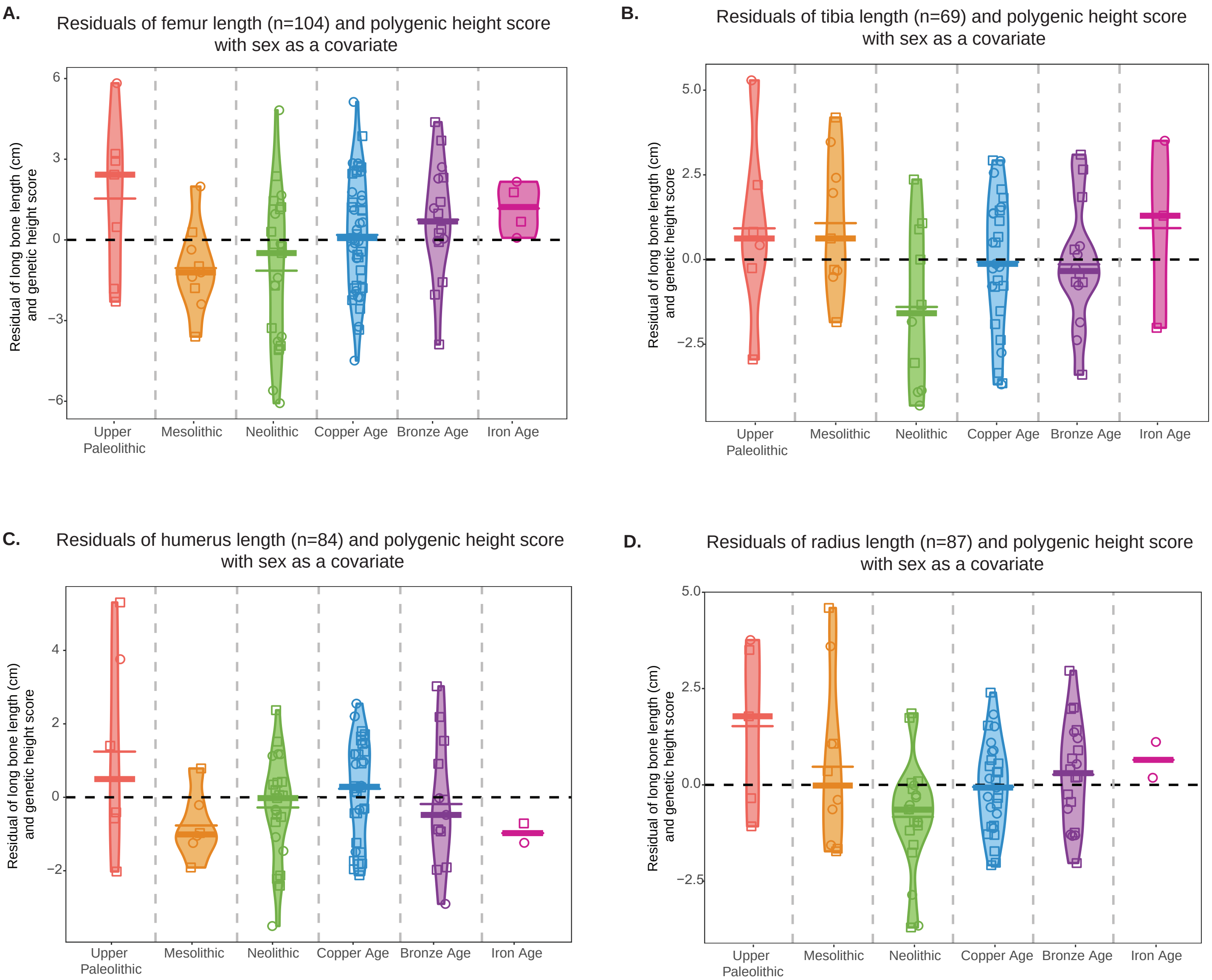


Fig. S4. Replicability of the residuals of osteological height and genetic height score with sex as a co-variate using long bone lengths. Residuals of the relationship between polygenic height score and long bone lengths for the femur (**A**), tibia (**B**), humerus (**C**) and radius (**D**) with sex as a co-variate for all individuals, by cultural period. Mean is represented by the thin line and median by the rectangle. Females are represented by circles and males by squares. Full results in Table S8.

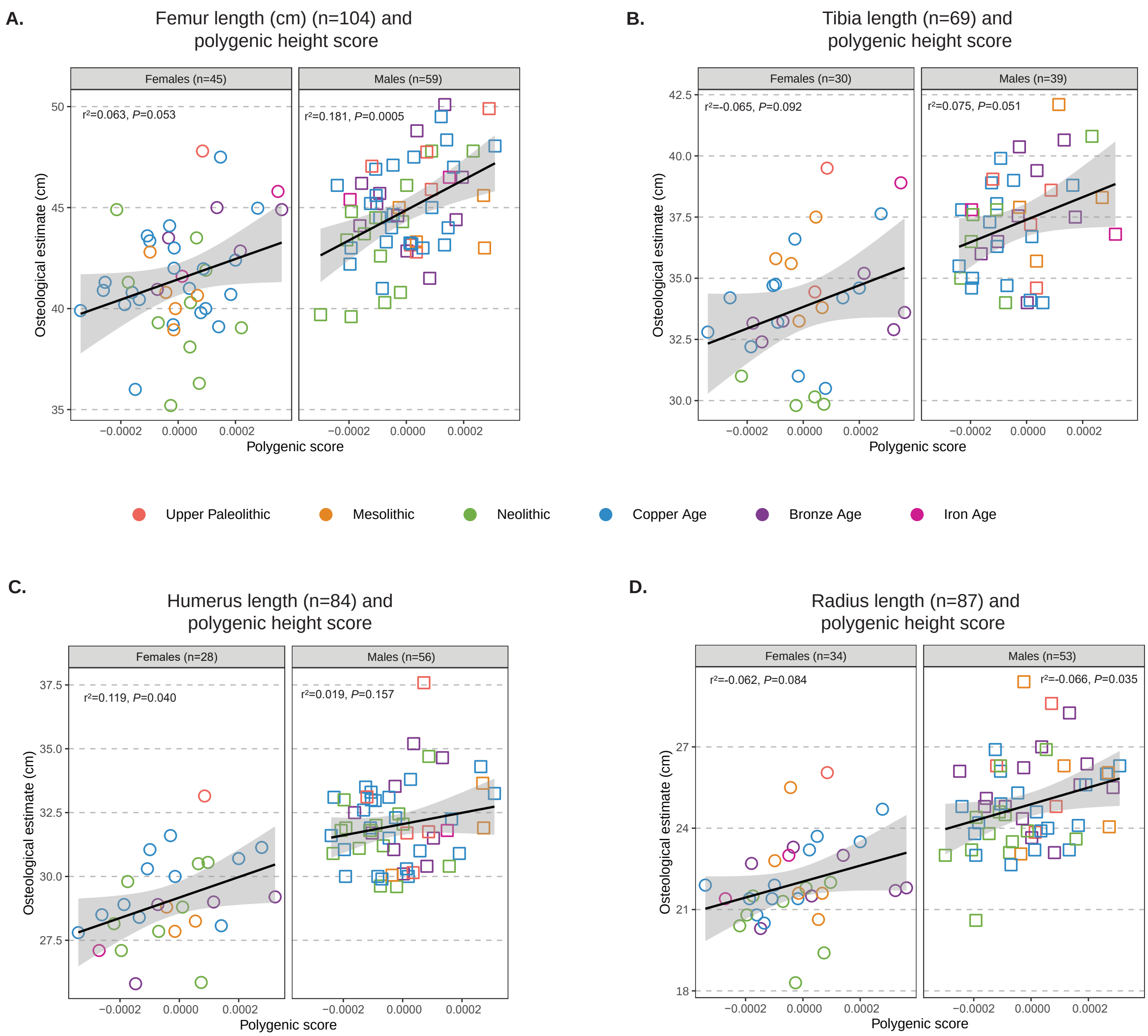


Fig. S5. Linear regressions of osteological height and genetic height score using long bone lengths. The relationship between polygenic height score and long bone length (cm) for females and males for the femur (**A**), tibia (**B**), humerus (**C**) and radius (**D**) by cultural period. Females are represented by circles and males by squares.

A.

B.

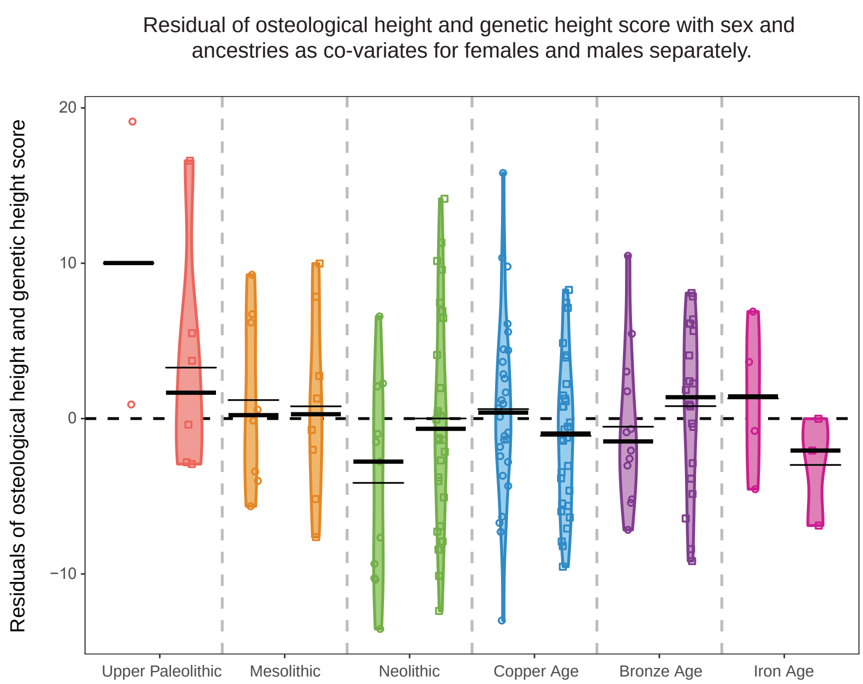


Fig. S6. Residuals of osteological height and genetic height score with sex and ancestries as co-variates. Genetic ancestries based on four MDS clusters are included as co-variates in the main linear model. **A**) Females and males combined, mean is in black and median is the blue dashed line. **B**) Females and males represented separately, with mean as the thin line and median as the rectangle. Females are represented by circles and males by squares. Full results in Table S9.

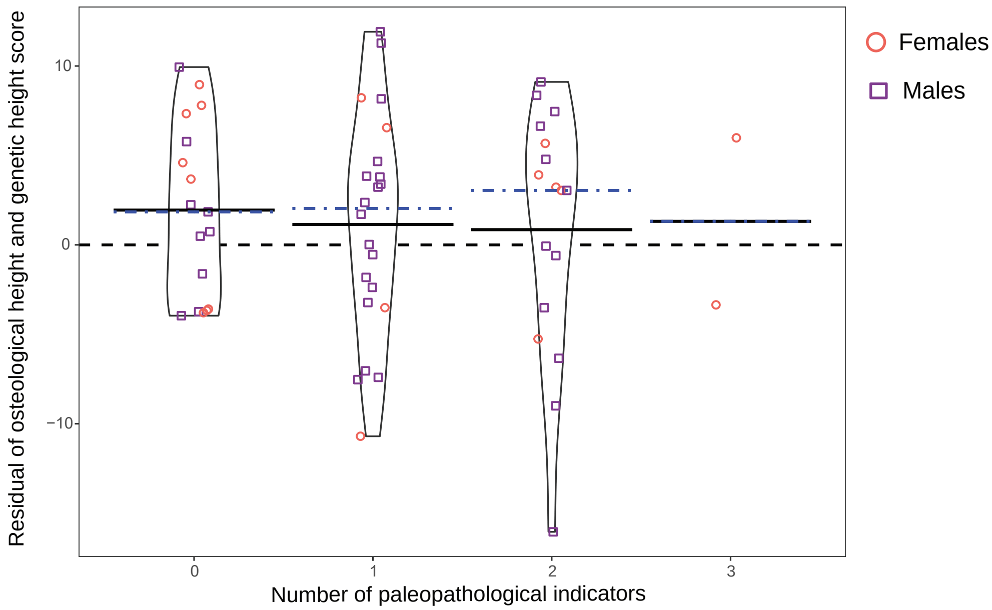


Fig. S7. Residuals of osteological height and genetic height score with sex as a co-variate for individuals with 1, 2, 3 paleopathological indicators of stress (n=58 individuals). Residuals of osteological height and genetic height score with sex as a co-variate for 58 individuals who could be assessed for all three non-specific stress indicators. Individuals with 1, 2, 3 paleopathological indicators of stress are represented for females (circles) and males (squares). The mean is represented by the black line and the median the blue dashed line. Full results in Table S11.

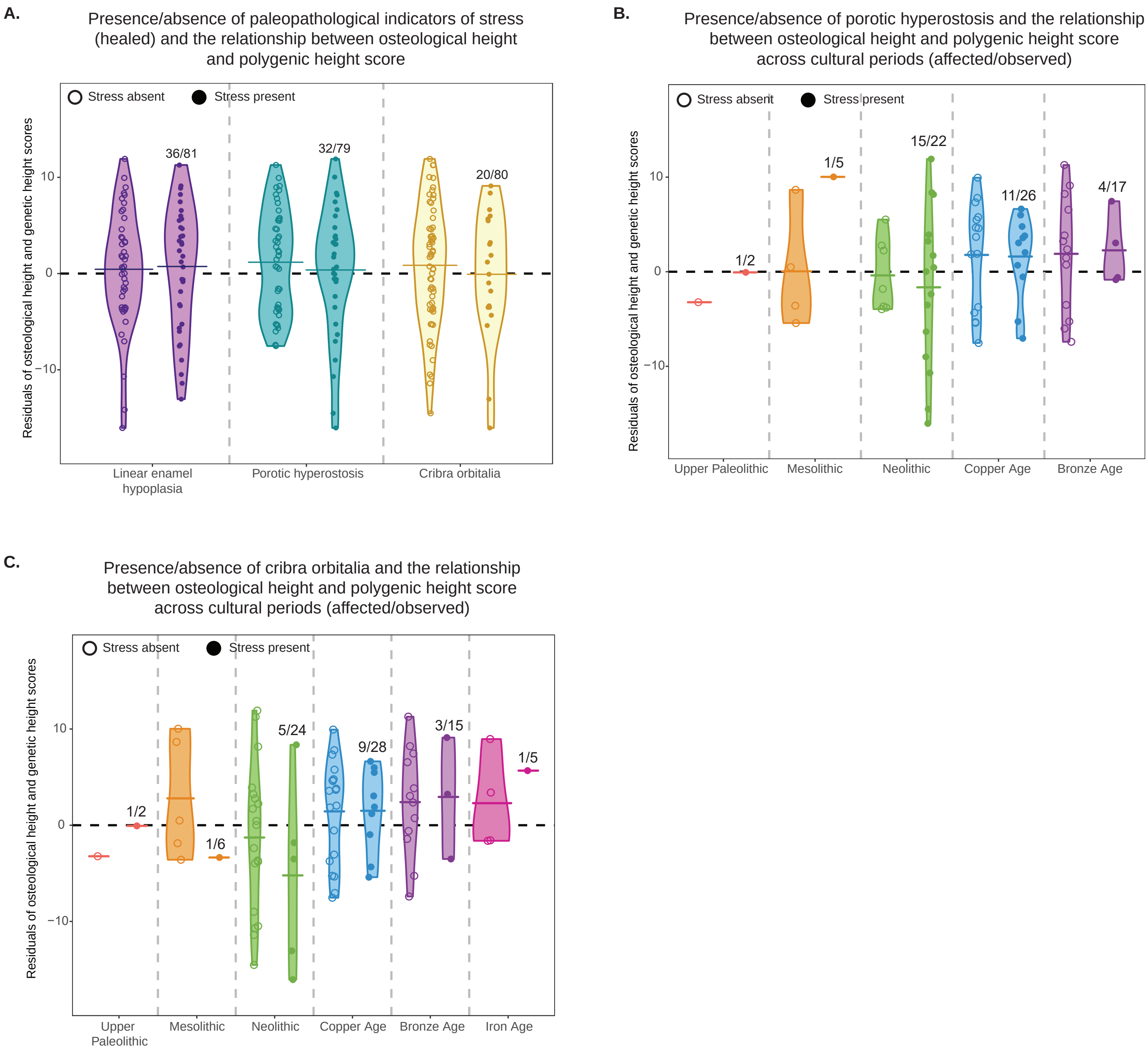


Fig. S8. Residuals of osteological height and genetic height score with sex as a co-variate for individuals with healed cribra orbitalia and healed porotic hyperostosis. **A**) Residuals of osteological height and genetic height score with sex as a co-variate are compared to individuals with healed cribra orbitalia and healed porotic hyperostosis. The data is also represented across cultural periods for porotic hyperostosis (**B**) and cribra orbitalia (**C**). Means are represented by the thin lines. Numbers above the bars indicate number of individuals. Full results in Tables S12 and S13.

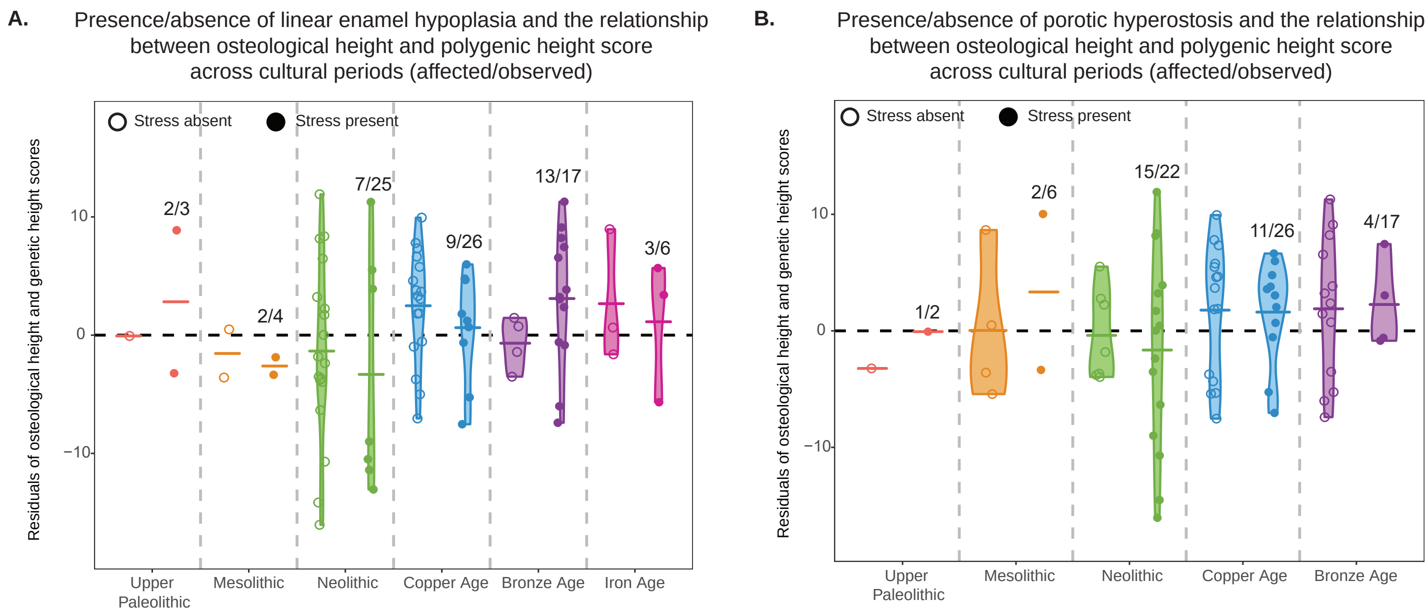


Fig. S9. Residuals of osteological height and genetic height score with sex as a co-variate for individuals with linear enamel hypoplasia and porotic hyperostosis across cultural periods. Comparison of the residuals generated from the main linear model to individuals with paleopathological indicators across cultural periods for linear enamel hypoplasia (**A**) and porotic hyperostosis (**B**). Means are represented by the thin lines. Numbers above the bars indicate number of individuals. Full results in Table S14.

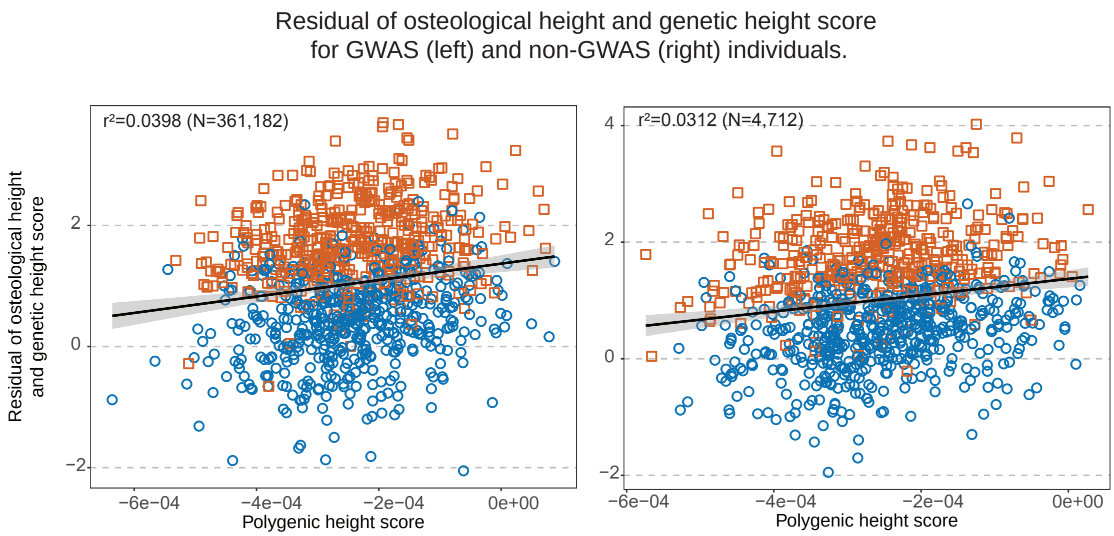
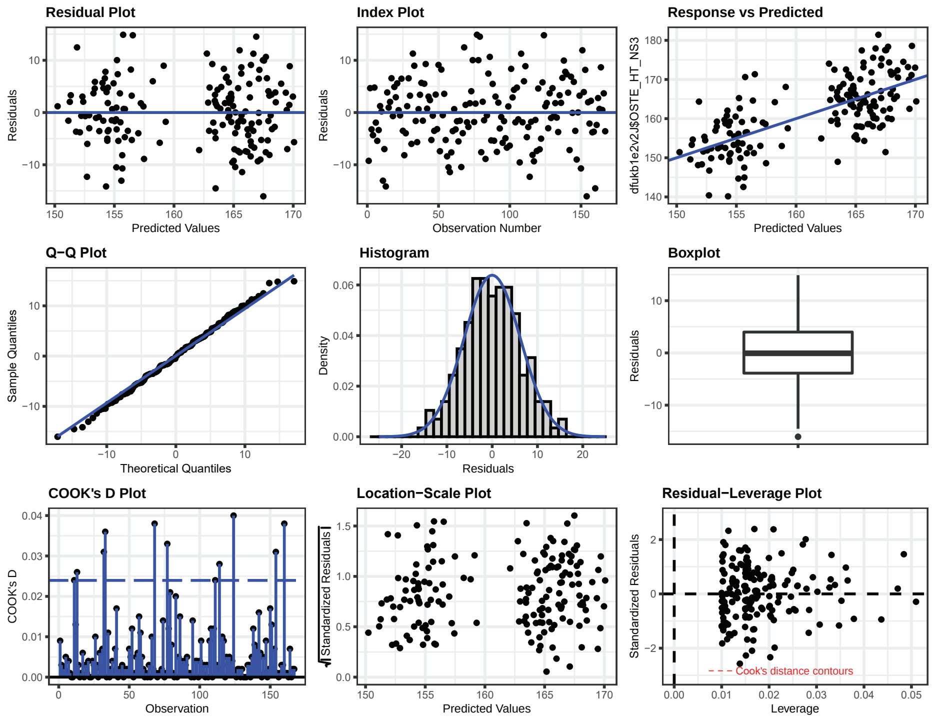


Fig. S10. Residuals of osteological height and genetic height score for UK Biobank GWAS cohort individuals and those excluded from the GWAS cohort. Predictive accuracy between phenotypic and predicted height (r^2) for two sample sets (n=361,182 GWAS and n=4,712 non-GWAS individuals), each stratified by sex and for both sexes combined. A set of 784,256 genotyped SNPs were subject to LD-clumping and 5,183 SNPs were retained at the genome-wide significance level. For females and males combined, the non-GWAS individuals (right panel) exhibit slightly lower variance relative to the GWAS cohort (left panel). Males are represented by orange squares and females by blue circles.

A. Diagnostic residual plots for deamination filtered data set



B. Diagnostic residual plots for non-deamination filtered data set

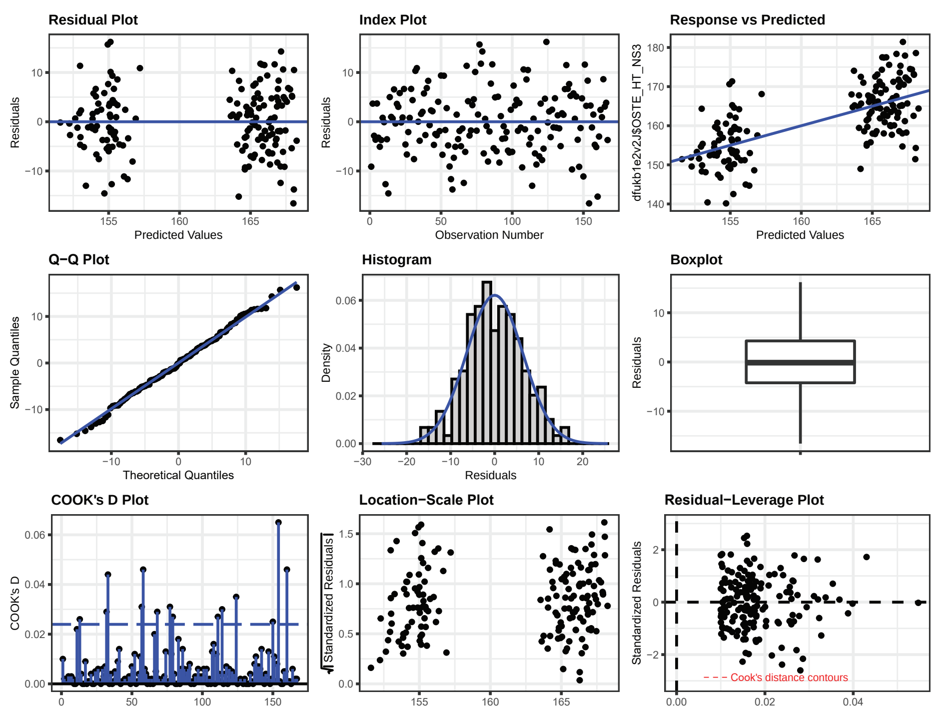


Fig. S11. Diagnostic residual plots for the linear model of osteological height and genetic height score with sex as a co-variate. Residual diagnostic plots generated using 'ggResidpanel' (v0.3.0) for the deamination filtered data set (**A**) and the non-deamination filtered data set (**B**).

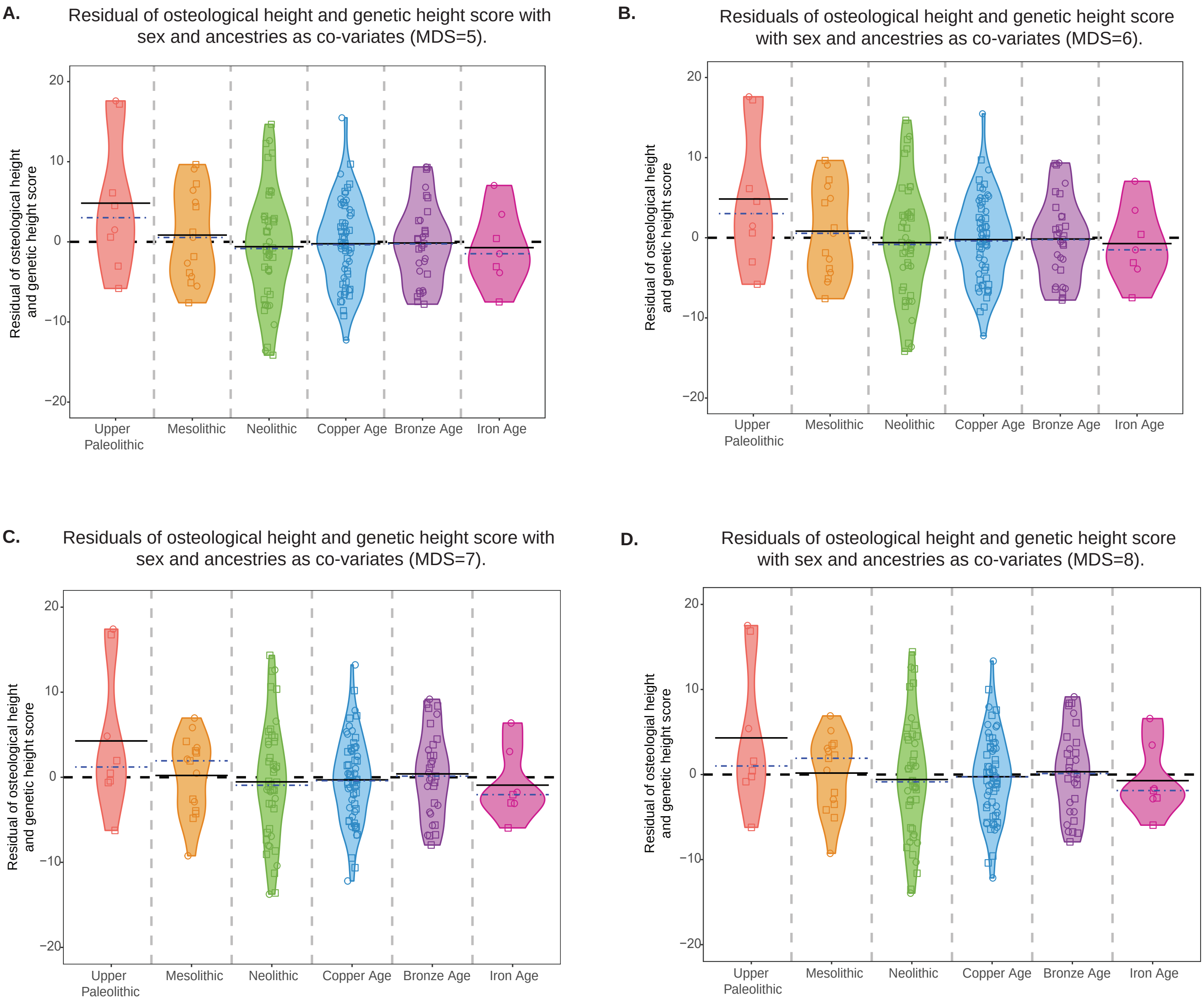


Fig. S12. Residuals of osteological height and genetic height score with sex and ancestries (MDS axes 5 to 8) as co-variates. Genetic ancestries based on 5 (**A**), 6 (**B**), 7 (**C**) and 8 (**D**) MDS clusters are included as co-variates in the main linear model for females and males combined. Mean is in black and median is the blue dashed line. Females are represented by circles and males by squares. Full results in Table S21.

	Upper Paleolithic	*Mesolithic*	*Neolithic*	*Copper Age*	*Bronze Age*	*Iron Age*	*Pre-Neolithic*	*Post-Neolithic*
Females - average height (cm)	163.37 (±10.26)	155.54 (±5.69)	151.04 (±6.72)	154.80 (±6.16)	155.64 (±4.80)	158.20 (±7.79)	157.28 (±7.03)	155.06 (±5.73)
Males - average height (cm)	169.88 (±9.02)	167.65 (6.92)	164.48 (±7.42)	165.50 (±5.50)	167.31 (±6.32)	165.85 (±1.28)	168.61 (±7.64)	166.16 (±5.82)
Combined (females and males) - average height (cm)	168.25 (±9.07)	162.00 (±8.77)	160.10 (±9.56)	160.69 (±7.87)	162.79 (±8.11)	161.48 (±6.90)	164.18 (±9.19)	161.40 (±7.97)

Skeletal element	**Region**	**Sex**	**Equation[1]**
Femur	All	Males	2.72(femur_length)+42.85
		Females	2.69(femur_length)+43.56
Tibia	North	Males	3.09(tibia_length)+52.04
		Females	2.92(tibia_length)+56.94
	South	Males	2.78(tibia_length)+60.76
		Females	3.05(tibia_length)+49.68
Humerus	All	Males	3.83(humerus_length)+41.42
		Females	3.38(humerus_length)+54.6
Radius	All	Males	4.85(radius_length)+47.46
		Females	4.2(radius_length)+63.08

Table S1. Average osteological heights (cm, with standard deviation) across cultural periods based on stature regression formula from Ruff et al. (2012)[1].

Cultural period comparisons	**P-value**	**df**	**t**	**95% CI**
Pre-Neolithic - Neolithic	0.012	43.482	2.61	1.096 8.537
Neolithic - Post-Neolithic	0.046	74.825	2.02	0.034 4.895

Combined Comparisons	**Mean of residuals**	**Std. dev.**
Pre-Neolithic	2.636	7.244
Upper Paleolithic	5.112	8.842
Mesolithic	1.316	6.163
Neolithic	-2.18	7.195
Copper Age	-0.19	5.765
Bronze Age	1.201	5.695
Iron Age	1.979	5.895
Post-Neolithic	0.284	5.748

Table S2. Comparisons of the residuals from a linear model of osteological stature and sex

Combined Comparisons	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.016	45.273	2.504	0.891 8.211
Neolithic - Post-Neolithic	0.037	73.057	-2.123	-5.026 -0.159
Females: Comparisons				
Pre-Neolithic - Neolithic	0.053	17.348	2.072	-0.104 12.477
Neolithic - Post-Neolithic	0.048	20.368	-2.1	-8.576 -0.035
Males: Comparisons				
Pre-Neolithic - Neolithic	0.1238	24.981	1.593	-1.100 8.603
Neolithic - Post-Neolithic	0.266	52.785	1.125	-1.353 4.810

Combined Comparisons	Mean of residuals	Std. dev.
Pre-Neolithic	2.337	7.047
Upper Paleolithic	4.484	8.653
Mesolithic	1.192	6.047
Neolithic	-2.214	7.254
Copper Age	0.009	5.523
Bronze Age	1.092	5.819
Iron Age	1.955	5.059
Post-Neolithic	0.378	5.617
Females: Comparisons		
Pre-Neolithic	3.291	7.013
Upper Paleolithic	8.334	10.396
Mesolithic	0.694	5.694
Neolithic	-3.795	7.197
Copper Age	0.451	5.774
Bronze Age	0.643	4.682
Iron Age	3.88	5.807
Post-Neolithic	0.51	5.4
Males: Comparisons		
Pre-Neolithic	2.302	7.334
Upper Paleolithic	3.201	8.678
Mesolithic	1.628	6.699
Neolithic	-1.449	7.274
Copper Age	-0.352	5.373
Bronze Age	1.377	6.544
Iron Age	-0.611	2.984
Post-Neolithic	0.279	5.825

Table S3. Comparisons of the residuals from a linear model of osteological stature and polygenic height score with sex as a co-variate for data not filtered for deamination.

Individual	*Deamination_filtered*	*No_deamination_filter*
Ajvide58	-7.51E-05	-0.000125735
BDB001	-4.30E-05	3.39E-05
Bichon	1.44E-05	-9.64E-06
Brandysek26	1.89E-05	-4.12E-05
Brandysek71	-0.000231567	-0.00023012
BUD4a	-0.000207535	-0.000161335
Canes1	5.42E-05	2.36E-05
Chan_Meso	-9.58E-06	8.98E-06
Cheddar man	-7.87E-05	-5.95E-05
CSAT19a	1.36E-06	5.52E-05
Donkalnis1	7.37E-05	5.19E-05
Donkalnis4	0.000272809	2.54E-05
Donkalnis6	-2.57E-05	-1.38E-05
Dzielnica243	0.000195233	0.000188845
ElMiron	4.15E-05	4.09E-05
GB1_Eneo	-0.000261064	-0.000276753
GEN15a	0.000140877	0.000246451
GEN16a	-0.000160559	-0.000329706
GEN58	-0.000156011	-8.13E-05
GEN59	-9.00E-05	-0.000147259
GEN62	2.29E-05	-1.49E-05
GEN71	-0.000111029	-9.34E-05
GEN72	0.000164855	0.000106642
Gyvakarai	8.82E-05	0.00013729
HAJE7a	-0.000234718	-0.000229872
Hume21	7.92E-05	-8.60E-05
Hume4	0.000183755	4.20E-05
Hume5	-0.000182867	-0.000233154
Hung127	-3.35E-05	-9.22E-05
Hung130	0.0001407	6.15E-05
Hung136	-0.000147448	-6.37E-05
Hung137	-0.000249027	-0.000275379
Hung148	0.000348272	0.000306409
Hung149	0.000150221	5.48E-05
Hung152	0.000316939	0.000306
Hung154	1.41E-05	-0.000119496
Hung155	-0.000196275	-0.000132634
Hung160	-4.89E-05	-0.000112089
Hung162	-0.000270412	-0.000323389
Hung331	0.000233155	0.000229946
Hung849	-0.000213957	-0.000213362
Hung969	-0.000162083	-7.11E-05
Iwiny83	-0.000179239	-0.000224765
JAG06	-9.27E-05	-0.000107996

Jinonice59	0.000103694	0.000114679
Jinonice84a	-0.000103032	8.72E-05
Jinonice88	0.000115584	7.13E-05
Jinonice94	0.000170819	0.000217661
Kivutkalns153	0.000173614	0.000137455
Kivutkalns19	3.70E-05	4.11E-05
Kivutkalns25	2.25E-06	-7.19E-05
Kivutkalns42	0.000135495	5.85E-05
KON2a	-0.000135544	-9.71E-05
Kornice1561	-9.25E-05	-3.34E-05
Kornice34	0.00014143	0.000153345
Kostenki14	3.52E-05	0.000160783
Kretuonas1	4.12E-05	0.000195008
Kretuonas5	-2.05E-05	0.000280834
LaBrana1	-3.58E-05	-8.52E-05
LBK1976	-6.96E-05	5.86E-05
LBK2155	9.66E-05	3.60E-05
LEPI_54E	4.30E-05	8.77E-05
LGCS1a	-1.30E-05	1.91E-05
Loschbour	3.52E-05	1.30E-06
M9984	-4.38E-05	-0.000121324
MA110	-6.51E-05	0.00016102
MC337A	-6.53E-05	0.000182958
MEMO2b	-0.000214316	-0.000233353
MG104	0.000286081	0.000140714
MX191	-4.59E-05	5.87E-05
MX195	0.000190987	0.000204788
MX196	0.000200022	0.000103785
OC1	0.000150312	0.000201249
OC32	4.52E-05	4.18E-05
OHV6.1	-9.02E-05	-0.000134465
OHV7.1	-0.000191489	-0.000269854
Ostuni	8.51E-05	1.65E-05
PADN12	0.000115032	-2.07E-05
Pavlov	7.14E-05	0.00016532
PULE1.13a	0.000133271	8.60E-05
PULE1.18a	-0.00017404	-0.000120638
PULE1.23a	1.09E-05	-8.15E-05
PULE1.24	0.000220781	0.000239844
PULE1.9a	-2.41E-05	0.000158594
Raciborz	-2.57E-05	-6.49E-05
Rathlin1	0.000134032	0.000107336
RDVS02	0.000145888	0.000261309
RDVS116	2.63E-05	0.000126496
RDVS117	-1.73E-05	2.47E-05

RDVS53	0.000309311	0.00026497
RDVS59	1.28E-05	0.000132088
RDVS67	-0.000240956	-0.000286988
RDVS68	3.42E-05	0.000124182
RISE154	-7.25E-05	-0.00013318
RISE480	0.000322747	0.000200215
RISE483	3.05E-05	8.16E-05
RISE486	-0.000192781	-0.000183235
RISE489	5.82E-05	5.06E-05
RISE586	0.000216884	0.000173996
SCH011	3.96E-05	5.15E-05
SCH016	-0.000138607	-8.36E-05
SCH018	3.02E-05	1.04E-05
Smyadovo12	-0.000179991	-0.000297124
Smyadovo21	8.90E-05	0.000157171
Smyadovo23	-1.37E-05	7.97E-05
Smyadovo26	3.93E-05	2.81E-05
Smyadovo40	-8.37E-05	-0.000159608
Spiginas2	5.29E-05	0.000184151
Spiginas4	6.74E-05	4.77E-05
Strachow	0.000277662	0.000103543
SunghirSI	0.000288803	0.000282335
Sushina28	9.60E-05	0.000121869
Sushina29	-5.15E-05	-6.50E-06
Sushina32	-0.00014956	-0.000180516
Thurston Mains sk 1	0.000361401	0.000268465
TIDO2a	0.000156977	5.83E-05
Turlojiške1	8.16E-05	6.58E-05
Turlojiške3	-3.00E-05	2.05E-05
Tyrolean Iceman	-4.80E-05	-0.000107601
Urzi10	-9.91E-05	-6.85E-05
Urzi12	-7.00E-05	-7.10E-06
Urzi13	-1.75E-05	7.61E-06
Urzi21	-0.000106645	-2.17E-05
Urzi26	0.000147851	4.08E-05
Urzi31	-0.000340407	-0.00041114
Urzi37	-1.43E-05	-7.90E-05
Urzi39	-0.00013508	-0.000229477
Urzi41	-0.000107558	-4.30E-05
Urzi44	-9.11E-05	-0.00016093
Urzi48	-4.64E-05	-7.45E-05
Urzi51	-0.000186477	-0.000256737
Urzi60	-0.000131645	-0.000140025
Urzi65a	-0.000108877	-0.000117267

Urzi68	-0.000196495	-0.00015488
Urzi70	-0.00025477	-0.000239259
V228	-0.000105479	-0.000104364
V229	-0.000124943	-0.000190834
V242	0.000121595	1.51E-05
V243	-2.98E-05	7.19E-05
V247	4.99E-05	2.01E-05
V575	0.000263181	0.000263508
VEJ5a	-0.000299315	-0.0001608
Vestonice16	-0.000120289	-4.46E-05
Villabruna1	8.73E-05	7.35E-05
VLSC_80a	-9.80E-05	-9.03E-05
XN164	5.23E-05	0.000119422
XN167	9.83E-05	0.000196308
XN168	-6.33E-05	7.60E-05
XN170	0.000156719	7.96E-05
XN172	8.00E-05	0.000162877
XN174	-3.67E-05	-6.12E-06
XN175	-2.25E-05	2.83E-05
XN206	9.18E-05	0.000143401
XN215	0.000117353	0.000276593
YABA2	0.000198061	0.000172738
YABA4	4.18E-05	-3.89E-05
ZEM7	-0.000197509	-0.000211304
ZEM8	-0.000195558	-0.000232087
ZEM13	-0.000220359	-0.000198162
ZEM24	-0.000192685	-0.000216087
ZEM33	-0.000146501	-0.000146876
ZEM35	-0.000106752	-0.000115839
Zerniki1	8.81E-05	9.19E-05
ZVEJ21	-2.50E-05	-2.40E-05
ZVEJ30	0.000269671	0.000128841
ZVEJ31	6.42E-05	6.00E-05
ZVEJ32	-1.49E-05	-3.07E-05

Table S4. Polygenic height scores for deamination filtered and not deamination filtered data

Females: Comparisons	P-value	df	t	95% CI	
Pre-Neolithic - Neolithic	0.401	20.951	0.857	-4.804e-05	1.153e-04
Neolithic - Post-Neolithic	0.587	31.574	0.549	-6.374e-05	1.108e-04
Males: Comparisons					
Pre-Neolithic - Neolithic	0.022	26.263	2.441	1.646e-05	1.915e-04
Neolithic - Post-Neolithic	0.613	66.205	0.508	-4.716e-05	7.934e-05

Table S5. Polygenic height score t-test results

Combined Comparisons	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.040	44.207	2.118	0.186 7.461
Neolithic - Post-Neolithic	0.068	73.042	1.852	-0.168 4.581
Females: Comparisons				
Pre-Neolithic - Neolithic	0.067	17.774	1.952	-0.500 12.072
Neolithic - Post-Neolithic	0.087	19.834	1.799	-0.594 8.031
Males: Comparisons				
Pre-Neolithic - Neolithic	0.246	23.856	1.188	-2.050 7.614
Neolithic - Post-Neolithic	0.326	53.608	0.991	-1.501 4.436

Combined Comparisons	Mean of residuals	Std. dev.
Pre-Neolithic	1.957	7.062
Upper Paleolithic	4.298	8.384
Mesolithic	0.709	6.199
Neolithic	-1.866	7.079
Copper Age	0.085	5.421
Bronze Age	0.835	5.65
Iron Age	1.402	4.965
Post-Neolithic	0.341	5.48
Females: Comparisons		
Pre-Neolithic	2.461	6.908
Upper Paleolithic	7.914	9.862
Mesolithic	0.903	5.889
Neolithic	-3.35	7.309
Copper Age	0.494	5.636
Bronze Age	0.087	4.498
Iron Age	3.428	4.772
Post-Neolithic	0.369	5.256
Males: Comparisons		
Pre-Neolithic	1.634	7.399
Upper Paleolithic	3.092	8.485
Mesolithic	0.54	6.859
Neolithic	-1.148	6.972
Copper Age	-0.249	5.303
Bronze Age	1.308	6.343
Iron Age	-1.298	4.543
Post-Neolithic	0.319	5.693

Table S6. Comparisons of the residuals from a linear model of osteological stature and polygenic height score with sex as a co-variate for deamination filtered data.

Combined Comparisons	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.043	43.755	2.083	0.124 7.510
Neolithic - Post-Neolithic	0.067	71.565	1.861	-0.159 4.597
Females: Comparisons				
Pre-Neolithic - Neolithic	0.065	17.375	1.967	-0.428 12.558
Neolithic - Post-Neolithic	0.077	19.352	-1.865	-8.262 0.471
Males: Comparisons				
Pre-Neolithic - Neolithic	0.273	23.787	1.122	-2.209 7.470
Neolithic - Post-Neolithic	0.348	52.911	-0.947	-4.347 1.559

Combined Comparisons	Mean of residuals	Std. dev
Pre-Neolithic	1.94	7.196
Upper Paleolithic	4.424	8.474
Mesolithic	0.615	6.33
Neolithic	-1.877	7.132
Copper Age	0.153	5.284
Bronze Age	0.709	5.606
Iron Age	1.51	4.958
Post-Neolithic	0.342	5.371
Females: Comparisons		
Pre-Neolithic	2.564	7.233
Upper Paleolithic	8.536	10.202
Mesolithic	0.858	6.094
Neolithic	-3.5	7.438
Copper Age	0.604	5.494
Bronze Age	-0.073	4.385
Iron Age	3.498	4.903
Post-Neolithic	0.395	5.130
Males: Comparisons		
Pre-Neolithic	1.539	7.416
Upper Paleolithic	3.053	8.408
Mesolithic	0.403	6.942
Neolithic	-1.092	6.966
Copper Age	-0.217	5.163
Bronze Age	1.204	6.321
Iron Age	-1.139	4.389
Post-Neolithic	0.302	5.595

Table S7. Comparisons of the residuals from a linear model of osteological stature and polygenic height score with sex, latitude and longitude as a co-variates.

Combined Comparisons_FEMUR	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.164	34.147	1.423	-0.525 2.980
Neolithic - Post-Neolithic	0.028	32.075	-2.308	-2.783 -0.174
Combined Comparisons_TIBIA				
Pre-Neolithic - Neolithic	0.024	18.599	2.535	0.418 4.406
Neolithic - Post-Neolithic	0.134	11.918	-1.606	-3.068 0.466
Combined Comparisons_HUMERUS				
Pre-Neolithic - Neolithic	0.48	15.504	0.723	-1.001 2.033
Neolithic - Post-Neolithic	0.277	45.084	-1.1	-1.117 0.328
Combined Comparisons_RADIUS				
Pre-Neolithic - Neolithic	0.017	22.222	2.588	0.329 2.974
Neolithic - Post-Neolithic	0.015	33.779	-2.572	-1.624 -0.190

Combined Comparisons: FEMUR	Mean of residuals	Std. dev.
Pre-Neolithic	0.082	2.553
Upper Paleolithic	1.537	2.914
Mesolithic	-1.049	1.599
Neolithic	-1.145	2.783
Copper Age	0.184	2.115
Bronze Age	0.752	2.129
Iron Age	1.171	0.963
Post-Neolithic	0.333	2.116
Combined Comparisons: TIBIA		
Pre-Neolithic	1.013	2.245
Upper Paleolithic	0.922	2.732
Mesolithic	1.074	2.036
Neolithic	-1.399	2.386
Copper Age	-0.075	1.972
Bronze Age	-0.141	1.806
Iron Age	0.928	2.779
Post-Neolithic	-0.097	1.894
Combined Comparisons: HUMERUS		
Pre-Neolithic	0.238	2.258
Upper Paleolithic	1.244	2.813
Mesolithic	-0.767	0.936
Neolithic	-0.278	1.394
Copper Age	0.231	1.331
Bronze Age	-0.184	1.715
Iron Age	-0.975	0.374
Post-Neolithic	0.117	1.44
Combined Comparisons: RADIUS		
Pre-Neolithic	0.822	2.17
Upper Paleolithic	1.524	2.193

Mesolithic	0.471	2.184
Neolithic	-0.83	1.403
Copper Age	-0.054	1.154
Bronze Age	0.268	1.334
Iron Age	0.649	0.658
Post-Neolithic	0.078	1.228

Table S8. Output of t-test results for comparisons of the residuals from a linear model of average long bone length and polygenic height score with sex as a co-variate for deamination-filtered data.

Combined Comparisons	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.12	43.671	1.587	-0.762 6.400
Neolithic - Post-Neolithic	0.74	71.153	0.333	-1.914 2.682
Females: Comparisons				
Pre-Neolithic - Neolithic	0.093	15.898	1.788	-1.003 11.768
Neolithic - Post-Neolithic	0.244	21.299	-1.198	-6.407 1.720
Males: Comparisons				
Pre-Neolithic - Neolithic	0.525	25.032	0.645	-3.164 6.049
Neolithic - Post-Neolithic	0.659	48.702	0.443	-2.228 3.488

Combined Comparisons	Mean of residuals	Std. dev
Pre-Neolithic	2.224	6.981
Upper Paleolithic	4.798	8.646
Mesolithic	0.852	5.78
Neolithic	-0.594	6.904
Copper Age	-0.267	5.249
Bronze Age	-0.1	5.063
Iron Age	-0.672	4.848
Post-Neolithic	-0.210	5.160
Females: Comparisons		
Pre-Neolithic	3.079	7.346
Upper Paleolithic	9.508	11.4
Mesolithic	1.242	5.708
Neolithic	-2.303	6.782
Copper Age	0.427	5.66
Bronze Age	-0.831	5.021
Iron Age	1.320	4.932
Post-Neolithic	0.040	5.437
Males: Comparisons		
Pre-Neolithic	1.675	6.96
Upper Paleolithic	3.228	8.175
Mesolithic	0.51	6.214
Neolithic	0.233	6.919
Copper Age	-0.835	4.903
Bronze Age	0.362	5.17
Iron Age	-3.328	3.937
Post-Neolithic	-0.398	4.985

Table S9. Output of t-test results for comparisons of the residuals from a linear model of osteological stature and polygenic height score with sex and ancestries (four MDS components) as a co-variates.

Individual	*Cribra orbitalia*	*Porotic hyperostosis*	*LEH*	*Cribra orbitalia (healed?)*	*Porotic hyperostosis (healed?)*	*Source of paleopathological data*
Bichon	FALSE	FALSE	TRUE	FALSE	FALSE	Werner Mueller (unpublished)
Brandysek26	TRUE	FALSE	NA	TRUE	FALSE	New
Brandysek71	FALSE	TRUE	TRUE	FALSE	TRUE	New
Canes1	NA	FALSE	NA	NA	FALSE	Drak Hernández, Labib (2016) Early Holocene populations in the Cantabrian region: environmental changes and human microevolution. [Thesis]
Chan_Meso (Elba)	TRUE	TRUE	TRUE	TRUE	NA	Serrulla Rech, F., & Sanin Matias, M. (2017). Forensic anthropological report of Elba. In: Cadernos Lab. Xeolóxico de Laxe Coruña, vol. 39, pp. 35 - 72.
Donkalnis1	TRUE	NA	TRUE	TRUE	NA	New
Donkalnis6	NA	NA	FALSE	NA	NA	New
Dzielnica243	FALSE	FALSE	TRUE	FALSE	FALSE	New
GB1_Eneo	FALSE	TRUE	NA	FALSE	TRUE	New
GEN71	FALSE	TRUE	NA	FALSE	TRUE	New
GEN72	FALSE	TRUE	FALSE	FALSE	TRUE	New
Gyvakarai	NA	NA	FALSE	NA	NA	New
Hume5	NA	NA	TRUE	NA	NA	New
Hung127	FALSE	FALSE	TRUE	FALSE	FALSE	New
Hung130	TRUE	FALSE	TRUE	TRUE	FALSE	New
Hung136	NA	FALSE	TRUE	NA	FALSE	New
Hung137	FALSE	FALSE	TRUE	FALSE	FALSE	New
Hung148	FALSE	FALSE	FALSE	FALSE	FALSE	New
Hung149	FALSE	FALSE	FALSE	FALSE	FALSE	New
Hung152	NA	FALSE	TRUE	NA	FALSE	New
Hung154	NA	FALSE	FALSE	NA	FALSE	New
Hung155	FALSE	FALSE	TRUE	FALSE	FALSE	New
Hung160	TRUE	FALSE	TRUE	TRUE	FALSE	New
Hung162	FALSE	FALSE	NA	FALSE	FALSE	New
Hung331	NA	FALSE	TRUE	NA	FALSE	New
Hung969	FALSE	FALSE	FALSE	FALSE	FALSE	New
Iwiny83	FALSE	TRUE	TRUE	FALSE	TRUE	New
JAG06	FALSE	FALSE	TRUE	FALSE	FALSE	New
Jinonice59	FALSE	FALSE	NA	FALSE	FALSE	New
Jinonice84a	FALSE	TRUE	TRUE	FALSE	TRUE	New
Jinonice88	TRUE	FALSE	FALSE	TRUE	FALSE	New
Kivutkalns19	TRUE	FALSE	TRUE	TRUE	FALSE	New
Kivutkalns25	FALSE	FALSE	TRUE	FALSE	FALSE	New
Kivutkalns42	FALSE	FALSE	TRUE	FALSE	FALSE	New
Kornice1561	FALSE	TRUE	NA	FALSE	TRUE	New
Kornice34	FALSE	TRUE	TRUE	FALSE	TRUE	New
Kretuonas1	FALSE	NA	TRUE	FALSE	NA	New
Kretuonas5	FALSE	NA	TRUE	FALSE	NA	New
MC337A	FALSE	FALSE	FALSE	FALSE	FALSE	New
MG104	NA	FALSE	FALSE	NA	FALSE	New

OC32	FALSE	TRUE	NA	FALSE	TRUE	New
OHV6.1	TRUE	FALSE	FALSE	TRUE	FALSE	New
OHV7.1	FALSE	TRUE	FALSE	FALSE	TRUE	New
Raciborz	FALSE	TRUE	TRUE	FALSE	TRUE	New
RDVS02	FALSE	FALSE	NA	FALSE	FALSE	New
RDVS116	TRUE	FALSE	NA	TRUE	FALSE	New
RDVS117	TRUE	FALSE	NA	TRUE	FALSE	New
RDVS53	TRUE	TRUE	FALSE	TRUE	TRUE	New
RDVS59	FALSE	FALSE	TRUE	FALSE	FALSE	New
RDVS67	TRUE	FALSE	NA	TRUE	FALSE	New
RDVS68	FALSE	NA	NA	FALSE	NA	New
RISE154	NA	TRUE	TRUE	NA	TRUE	New
SCH011	TRUE	TRUE	FALSE	NA	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
SCH016	TRUE	TRUE	FALSE	TRUE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
Spiginas2	FALSE	NA	TRUE	FALSE	NA	New
Spiginas4	FALSE	NA	TRUE	FALSE	NA	New
Strachow	TRUE	TRUE	TRUE	TRUE	TRUE	New
SunghirSI	NA	NA	TRUE	NA	NA	Sikora, M., Seguin-Orlando, A., Sousa, V. C., Albrechtsen, A., Korneliussen, T., Ko, A., ... & Willerslev, E. (2017). Ancient genomes show social and reproductive behavior of early Upper Paleolithic foragers. Science, 358(6363), 659-662.
Turlojiške3	FALSE	NA	FALSE	FALSE	NA	New
Urzi10	FALSE	FALSE	FALSE	FALSE	FALSE	New
Urzi12	FALSE	TRUE	FALSE	FALSE	TRUE	New
Urzi13	NA	NA	FALSE	NA	NA	New
Urzi21	FALSE	FALSE	FALSE	FALSE	FALSE	New
Urzi31	TRUE	NA	NA	TRUE	NA	New
Urzi37	NA	NA	FALSE	NA	NA	New
Urzi41	FALSE	FALSE	FALSE	FALSE	FALSE	New
Urzi48	FALSE	FALSE	TRUE	FALSE	FALSE	New
Urzi51	NA	NA	TRUE	NA	NA	New
Urzi60	NA	NA	TRUE	NA	NA	New
Urzi65a	TRUE	NA	FALSE	TRUE	NA	New
Urzi68	FALSE	FALSE	FALSE	FALSE	FALSE	New
Urzi70	NA	NA	FALSE	NA	NA	New
V228	FALSE	FALSE	FALSE	FALSE	FALSE	New
V229	TRUE	TRUE	FALSE	TRUE	TRUE	New
V242	FALSE	FALSE	FALSE	FALSE	FALSE	New
V243	FALSE	FALSE	FALSE	FALSE	FALSE	New
V247	FALSE	FALSE	FALSE	FALSE	FALSE	New
V575	FALSE	TRUE	FALSE	FALSE	TRUE	New

Villabruna1	TRUE	TRUE	FALSE	TRUE	TRUE	Vercellotti, G., Caramella, D., Formicola, V., Fornaciari, G., & Larsen, C. S. (2010). Porotic Hyperostosis in a late upper Palaeolithic skeleton (Villabruna 1, Italy). International Journal of Osteoarchaeology, 20(3), 358-368.
XN164	TRUE	TRUE	FALSE	TRUE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN167	FALSE	TRUE	TRUE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN168	FALSE	TRUE	FALSE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN170	FALSE	TRUE	FALSE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN172	FALSE	TRUE	FALSE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN174	FALSE	TRUE	FALSE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN175	FALSE	TRUE	TRUE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN206	FALSE	TRUE	FALSE	FALSE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
XN215	TRUE	TRUE	FALSE	TRUE	TRUE	Ash, A., Francken, M., Pap, I., Tvrdý, Z., Wahl, J., & Pinhasi, R. (2016). Regional differences in health, diet and weaning patterns amongst the first Neolithic farmers of central Europe. Scientific reports, 6(1), 1-10.
ZEM7	FALSE	FALSE	FALSE	FALSE	FALSE	New
ZEM8	FALSE	FALSE	FALSE	FALSE	FALSE	New
ZEM13	FALSE	FALSE	FALSE	FALSE	FALSE	New
ZEM24	FALSE	TRUE	NA	FALSE	TRUE	New
ZEM33	FALSE	TRUE	FALSE	FALSE	TRUE	New
ZEM35	FALSE	FALSE	NA	FALSE	FALSE	New
Zerniki1	NA	TRUE	TRUE	NA	TRUE	New
ZVEJ21	FALSE	FALSE	NA	FALSE	FALSE	New
ZVEJ30	FALSE	FALSE	FALSE	FALSE	FALSE	New
ZVEJ32	FALSE	FALSE	FALSE	FALSE	FALSE	New

Table S10. Paleopathological summary for 98 individuals.

n=58 individuals	P-value	df	t	95% CI
0 vs 1+ indicator	0.555	38.753	0.595	-2.202 4.037
0 vs 2+ indicator	0.561	30.73	0.587	-2.906 5.256

# of indicators	Mean of residuals	Std. dev
0 indicators	1.943	4.872
1+ indicators	1.026	6.345
2+ indicators	0.768	6.846

Table S11. Comparison of residuals from the main linear model for individuals with 0, 1+ and 2+ indicators of paleopathological stress (n=58 individuals).

Paleopathology	P-value	FDR	df	t	95% CI
Cribra orbitalia	0.461	0.771	33.253	-0.746	-4.587 2.126
Linear enamel hypoplasia	0.838	0.838	71.862	0.205	-2.523 3.101
Porotic hyperostosis	0.514	0.771	58.52	-0.656	-3.707 1.876
Paleopathology (healed)					
Cribra orbitalia	0.584	0.584	30.924	-0.553	-4.372 2.507
Porotic hyperostosis	0.574	0.584	55.769	-0.565	-3.650 2.044
Linear enamel hypoplasia	0.838	0.838	71.862	0.205	-2.523 3.101

Paleopathology (all)	Mean of residuals	Std. dev
Cribra orbitalia_TRUE	-0.372	6.607
Cribra orbitalia_FALSE	0.859	6.221
Porotic hyperostosis_TRUE	0.261	6.676
Porotic hyperostosis_FALSE	1.177	5.29
Linear enamel hypoplasia_TRUE	0.736	6.554
Linear enamel hypoplasia_FALSE	0.447	5.988
Paleopathology (healed)		
Cribra orbitalia_TRUE	-0.073	6.631
Cribra orbitalia_FALSE	0.859	6.221
Porotic hyperostosis_TRUE	0.374	6.751
Porotic hyperostosis_FALSE	1.177	5.29

Table S12. Comparisons for individuals with LEH and active/healed cribra orbitalia or porotic hyperostosis with the residuals from a linear model of osteological height and polygenic height score with sex as a covariate.

Cribra orbitalia	**P-value**	**FDR**	**df**	**t**	**95% CI**
PreNeolithic-PreNeolithic	0.294	0.8225	5.27	-1.164	-10.983 4.065
Upper Paleolithic-Upper Paleolithic	NA				
Mesolithic-Mesolithic	NA				
Neolithic-Neolithic	0.329	0.8225	7.583	-1.042	-13.339 5.090
Copper Age-Copper Age	0.973	0.973	18.977	-0.034	-4.040 3.911
Bronze Age-Bronze Age	0.901	0.973	2.829	-0.136	-13.661 12.580
Iron Age-Iron Age	NA				
PostNeolithic-PostNeolithic	0.975	0.975	22.915	-0.031	-3.461 3.358
Porotic hyperostosis					
PreNeolithic-PreNeolithic	0.588	0.932	3.586	-0.594	-16.614 10.973
Upper Paleolithic-Upper Paleolithic	NA				
Mesolithic-Mesolithic	0.712	0.932	1.462	-0.447	-49.395 42.787
Neolithic-Neolithic	0.634	0.932	19.99	0.483	-4.188 6.711
Copper Age-Copper Age	0.932	0.932	23.85	0.086	-3.881 4.220
Bronze Age-Bronze Age	0.889	0.932	8.01	-0.143	-6.290 5.552
Iron Age-Iron Age	NA				
PostNeolithic-PostNeolithic	0.974	0.974	37.091	0.032	-3.026 3.124
Linear enamel hypoplasia					
PreNeolithic-PreNeolithic	0.735	0.8901	4.022	-0.362	-10.042 7.718
Upper Paleolithic-Upper Paleolithic	NA				
Mesolithic-Mesolithic	0.696	0.8901	1.26	0.49	-16.086 18.210
Neolithic-Neolithic	0.645	0.8901	8.911	0.476	-7.418 11.367
Copper Age-Copper Age	0.343	0.8901	16.803	0.975	-2.159 5.866
Bronze Age-Bronze Age	0.071	0.497	13.38	-1.958	-7.936 0.379
Iron Age-Iron Age	0.763	0.8901	3.978	0.323	-11.627 14.684
PostNeolithic-PostNeolithic	0.891	0.891	40.454	-0.138	-3.211 2.801
Cribra orbitalia (healed)					
PreNeolithic-PreNeolithic	0.294	0.975	5.27	-1.164	-10.983 4.065
Upper Paleolithic-Upper Paleolithic	NA				
Mesolithic-Mesolithic	NA				
Neolithic-Neolithic	0.436	0.975	5.364	-0.841	-15.730 7.856
Copper Age-Copper Age	0.973	0.975	18.977	-0.034	-4.040 3.911
Bronze Age-Bronze Age	0.901	0.975	2.829	-0.136	-13.661 12.580
Iron Age-Iron Age	NA				
PostNeolithic-PostNeolithic	0.975	0.975	22.915	-0.031	-3.461 3.358
Porotic hyperostosis (healed)					
PreNeolithic-PreNeolithic	0.451	0.974	1.532	-0.993	-38.537 27.341
Upper Paleolithic-Upper Paleolithic	NA				
Mesolithic-Mesolithic	NA				
Neolithic-Neolithic	0.634	0.974	19.99	0.483	-4.188 6.711
Copper Age-Copper Age	0.932	0.974	23.85	0.086	-3.881 4.220
Bronze Age-Bronze Age	0.889	0.974	8.01	-0.143	-6.290 5.552

Iron Age-Iron Age	NA					
PostNeolithic-PostNeolithic	0.974		37.091	0.032	-3.026	3.124

Cribra orbitalia	**Mean of residuals**	**Std. dev.**
PreNeo_T	-1.711	2.323
PreNeo_F	1.748	6.068
UP_T	-0.069	NA
UP_F	-3.224	NA
Meso_T	-3.354	NA
Meso_F	2.742	6.214
Neo_T	-5.401	8.701
Neo_F	-1.276	7.608
CA_T	1.503	4.371
CA_F	1.438	5.311
BA_T	2.942	6.315
BA_F	2.401	5.554
IA_T	5.674	NA
IA_F	2.292	5.028
PostNeo_T	1.862	4.644
PostNeo_F	1.812	5.335
Porotic hyperostosis		
PreNeo_T	2.201	6.978
PreNeo_F	-0.619	5.611
UP_T	-0.069	NA
UP_F	-3.224	NA
Meso_T	3.336	9.461
Meso_F	0.032	6.257
Neo_T	-1.649	8.403
Neo_F	-0.387	3.85
CA_T	1.609	4.393
CA_F	1.778	5.606
BA_T	2.262	3.89
BA_F	1.895	6.046
IA_T	NA	NA
IA_F	1.402	4.965
PostNeo_T	1.783	4.137
PostNeo_F	1.832	5.705
LEH		
PreNeo_T	0.105	5.881
PreNeo_F	-1.057	2.209
UP_T	2.822	8.551
UP_F	-0.069	NA
Meso_T	-2.162	1.048

Meso_F	-1.551	2.88
Neo_T	-3.322	9.98
Neo_F	-1.348	7.606
CA_T	0.633	4.567
CA_F	2.487	4.689
BA_T	3.095	5.657
BA_F	-0.684	2.248
IA_T	1.133	6.003
IA_F	2.661	5.57
PostNeo_T	2.088	5.269
PostNeo_F	1.883	4.469
Cribra orbitalia (healed)		
PreNeo_T	-1.711	2.323
PreNeo_F	1.748	6.068
UP_T	-0.069	NA
UP_F	-3.224	NA
Meso_T	-3.354	NA
Meso_F	2.742	6.214
Neo_T	-5.213	9.714
Neo_F	-1.276	7.608
CA_T	1.503	4.371
CA_F	1.438	5.311
BA_T	2.942	6.315
BA_F	2.401	5.554
IA_T	5.674	NA
IA_F	2.292	5.028
PostNeo_T	1.862	4.644
PostNeo_F	1.812	5.335
Porotic hyperostosis (healed)		
PreNeo_T	4.979	7.138
PreNeo_F	-0.619	5.611
UP_T	-0.069	NA
UP_F	-3.224	NA
Meso_T	10.026	NA
Meso_F	0.032	6.257
Neo_T	-1.649	8.403
Neo_F	-0.387	3.85
CA_T	1.609	4.393
CA_F	1.778	5.606
BA_T	2.262	3.89
BA_F	1.893	6.046
IA_T	NA	NA
IA_F	1.402	4.965

PostNeo_T	1.783	4.137
PostNeo_F	1.832	5.705

Table S13. Comparisons for individuals with LEH, cribra orbitalia or porotic hyperostosis with the residuals from a linear model of osteological height and polygenic height score with sex as a co-variate within cultural periods.

Linear enamel hypoplasia	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.49	8.904	0.721	-7.349 14.203
Neolithic - Post-Neolithic	0.101	6.466	1.913	-1.866 16.393
Cribra orbitalia				
Pre-Neolithic - Neolithic	0.382	5.996	0.943	-5.887 13.267
Neolithic - Post-Neolithic	0.171	20.411	1.419	-1.606 8.470
Porotic hyperostosis				
Pre-Neolithic - Neolithic	0.457	3.291	0.842	-10.002 17.703
Neolithic - Post-Neolithic	0.208	7.116	1.386	-3.789 14.609
Cribra orbitalia (healed)				
Pre-Neolithic - Neolithic	0.486	4.83	0.754	-8.564 15.568
Neolithic - Post-Neolithic	0.183	4.782	1.556	-4.773 18.924
Porotic hyperostosis (healed)				
Pre-Neolithic - Neolithic	0.393	1.4	1.206	-29.936 43.192
Neolithic - Post-Neolithic	0.171	20.411	1.419	-1.606 8.470

Table S14. Output of t-test results for individuals with LEH, cribra orbitalia or porotic hyperostosis with the residuals from a linear model of osteological height and polygenic height score with sex as a co-variate.

MDS4*	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
MDS 1	58.625	38.486	1.523	0.1296
MDS 2	98.696	49.609	1.989	0.0483
MDS 3	269.855	76.977	3.506	0.0006
MDS 4	-72.707	93.479	-0.778	0.4378

*Residual standard error: 6.251 on 162 degrees of freedom
*Multiple R-squared: 0.1058,   Adjusted R-squared: 0.08374
*F-statistic: 4.793 on 4 and 162 DF, p-value: 0.001113

MDS5**	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
MDS 1	58.624	38.594	1.519	0.1307
MDS 2	98.697	49.748	1.984	0.0490
MDS 3	269.855	77.193	3.496	0.0006
MDS 4	-72.707	93.741	-0.776	0.4391
MDS 5	30.502	97.874	0.312	0.7557

**Residual standard error: 6.268 on 161 degrees of freedom
**Multiple R-squared: 0.1064,   Adjusted R-squared: 0.07861
**F-statistic: 3.832 on 5 and 161 DF, p-value: 0.002625

MDS6***	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
MDS 1	58.624	38.712	1.514	0.1319
MDS 2	98.697	49.901	1.978	0.0497
MDS 3	269.855	77.429	3.485	0.0006
MDS 4	-72.707	94.028	-0.773	0.4405
MDS 5	30.502	98.174	0.311	0.7564
MDS 6	14.081	101.229	0.139	0.8895

***Residual standard error: 6.288 on 160 degrees of freedom
***Multiple R-squared: 0.1065,   Adjusted R-squared: 0.07296
***F-statistic: 3.177 on 6 and 160 DF, p-value: 0.005673

MDS7****	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
MDS 1	58.627	37.426	1.566	0.1192
MDS 2	98.721	48.243	2.046	0.0423
MDS 3	269.855	74.857	3.605	0.0004
MDS 4	-72.707	90.904	-0.8	0.4250
MDS 5	30.502	94.912	0.321	0.7483
MDS 6	14.082	97.867	0.144	0.8858
MDS 7	352.510	100.991	3.491	0.0006

****Residual standard error: 6.079 on 159 degrees of freedom
****Multiple R-squared: 0.1701,   Adjusted R-squared: 0.1335
****F-statistic: 4.654 on 7 and 159 DF, p-value: 9.121e-05

MDS8*****	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
MDS 1	58.625	37.466	1.565	0.1196
MDS 2	98.726	48.294	2.044	0.0426
MDS 3	269.855	74.937	3.601	0.0004
MDS 4	-72.707	91.001	-0.799	0.4255
MDS 5	30.502	95.014	0.321	0.7486
MDS 6	14.081	97.971	0.144	0.8859

MDS 7	352.510	101.098	3.487	0.0006
MDS 8	84.531	103.915	0.813	0.4172

*****Residual standard error: 6.085 on 158 degrees of freedom
*****Multiple R-squared: 0.1735,   Adjusted R-squared: 0.1317
*****F-statistic: 4.147 on 8 and 158 DF, p-value: 0.0001607

Table S15. Output of linear models of osteological height with sex and ancestries using MDS components 4, 5, 6, 7 and 8 (excluding polygenic height score).

MDS4*	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
Polygenic height score	1.19E+04	3.45E+03	3.458	0.0007
MDS 1	9.16E+01	3.85E+01	2.383	0.0183
MDS 2	5.98E+01	4.93E+01	1.213	0.2270
MDS 3	2.11E+02	7.64E+01	2.756	0.0065
MDS 4	-6.12E+01	9.05E+01	-0.676	0.5000

*Residual standard error: 6.05 on 161 degrees of freedom
*Multiple R-squared: 0.1677,   Adjusted R-squared: 0.1418
*F-statistic: 6.486 on 5 and 161 DF, p-value: 1.603e-05

MDS5**	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
Polygenic height score	1.19E+04	3.46E+03	3.451	0.0007
MDS 1	9.16E+01	3.86E+01	2.377	0.0186
MDS 2	5.98E+01	4.95E+01	1.209	0.2285
MDS 3	2.11E+02	7.67E+01	2.748	0.0067
MDS 4	-6.12E+01	9.08E+01	-0.674	0.5013
MDS 5	3.28E+01	9.47E+01	0.346	0.7300

**Residual standard error: 6.066 on 160 degrees of freedom
**Multiple R-squared: 0.1683,   Adjusted R-squared: 0.1371
**F-statistic: 5.395 on 6 and 160 DF, p-value: 4.211e-05

MDS6***	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
Polygenic height score	1.19E+04	3.47E+03	3.442	0.0007
MDS 1	9.17E+01	3.87E+01	2.37	0.0190
MDS 2	5.98E+01	4.96E+01	1.205	0.2300
MDS 3	2.11E+02	7.69E+01	2.739	0.0069
MDS 4	-6.12E+01	9.11E+01	-0.672	0.5026
MDS 5	3.28E+01	9.50E+01	0.345	0.7308
MDS 6	1.59E+01	9.80E+01	0.162	0.8713

***Residual standard error: 6.085 on 159 degrees of freedom
***Multiple R-squared: 0.1684,   Adjusted R-squared: 0.1318
***F-statistic: 4.6 on 7 and 159 DF, p-value: 0.0001044

MDS7****	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
Polygenic height score	1.23E+04	3.34E+03	3.695	0.0003
MDS 1	9.27E+01	3.72E+01	2.494	0.0137
MDS 2	5.85E+01	4.77E+01	1.227	0.2217
MDS 3	2.09E+02	7.39E+01	2.822	0.0054
MDS 4	-6.08E+01	8.76E+01	-0.695	0.4884
MDS 5	3.28E+01	9.14E+01	0.359	0.7198
MDS 6	1.60E+01	9.42E+01	0.169	0.8657
MDS 7	3.64E+02	9.72E+01	3.741	0.0003

****Residual standard error: 5.85 on 158 degrees of freedom
****Multiple R-squared: 0.2361,   Adjusted R-squared: 0.1974
****F-statistic: 6.104 on 8 and 158 DF, p-value: 7.598e-07

MDS8*****	**Estimate**	**Std. Error**	**tvalue**	**Pr(>|t|)**
Polygenic height score	1.22E+04	3.36E+03	3.625	0.0004

MDS 1	9.23E+01	3.73E+01	2.476	0.0143
MDS 2	5.90E+01	4.78E+01	1.234	0.2189
MDS 3	2.09E+02	7.41E+01	2.826	0.0053
MDS 4	-6.10E+01	8.78E+01	-0.695	0.4883
MDS 5	3.28E+01	9.16E+01	0.358	0.7207
MDS 6	1.59E+01	9.44E+01	0.169	0.8662
MDS 7	3.64E+02	9.75E+01	3.731	0.0003
MDS 8	5.15E+01	1.01E+02	0.512	0.6091

*****Residual standard error: 5.864 on 157 degrees of freedom
*****Multiple R-squared: 0.2374,   Adjusted R-squared: 0.1936
*****F-statistic: 5.429 on 9 and 157 DF, p-value: 1.772e-06

Table S16. Output of linear models of osteological height and polygenic height score with sex and ancestries using MDS components 4, 5, 6, 7 and 8.

Number of SNPs	P-value clumping threshold	Population	Sex	Total number of individuals (N)	r^2	r^2 subset 167: mean	r^2 subset 167: std. deviation
5183	5.00E-08	GWAS	Female	194167	0.078	0.0936	0.0584
5183	5.00E-08	GWAS	Male	167015	0.076	0.0938	0.0568
5183	5.00E-08	GWAS	Both combined	361182	0.0398	0.0433	0.0316
5183	5.00E-08	other European	Female	2771	0.0595	0.0721	0.0561
5183	5.00E-08	other European	Male	1941	0.0578	0.0652	0.0555
5183	5.00E-08	other European	Both combined	4712	0.0312	0.0369	0.0247

Table S17. Correlation between osteological height and polygenic height score for UK Biobank GWAS cohort and non-GWAS individuals as well as a downsampled subset of 167 individuals.

Individual ID	Coverage (Shotgun or capture)	Number of sites observed	Number of sites missing	Proportion of missing sites pre-imputation	Pre-imputation coverage	Total sites (filtering >GP 0.99) post-imputation	Number of missing sites post-imputation	Number of sites present post-imputation	Number of Imputed SNPs	Proportion of missing sites post-imputation	Post-imputation coverage
Ajvide58	2.312	14722	3266664	0.995513	0.004487	30761499	1628018	29133481	29118759	0.05292	0.94708
BDB001	1.523	43444	3237942	0.98676	0.01324	30761499	1527929	29233570	29190126	0.04967	0.95033
Bichon	9.7	1388046	1893340	0.576994	0.423006	30761499	830979	29930520	28542474	0.02701	0.97299
Brandysek26	2.382	394565	2886821	0.879757	0.120243	30761499	1104882	29656617	29262052	0.03592	0.96408
Brandysek71	3.56	462589	2818797	0.859026	0.140974	30761499	1139852	29621647	29159058	0.03705	0.96295
BUD4a	0.165	100863	3180523	0.969262	0.030738	30761499	1398080	29363419	29262556	0.04545	0.95455
Canes1	1.73	75291	3206095	0.977055	0.022945	30761499	1428689	29332810	29257519	0.04644	0.95356
Chan_Meso	5.28	242838	3038548	0.925995	0.074005	30761499	1205449	29556050	29313212	0.03919	0.96081
Cheddar man	3.763	1116287	2165099	0.659812	0.340188	30761499	879012	29882487	28766200	0.02858	0.97142
CSAT19a	0.52	276653	3004733	0.91569	0.08431	30761499	1151493	29610006	29333353	0.03743	0.96257
Donkalnis1	0.045	0	3281386	1	0	30761499	1729183	29032316	29032316	0.05621	0.94379
Donkalnis4	0.021	0	3281386	1	0	30761499	1709981	29051518	29051518	0.05559	0.94441
Donkalnis6	6.106	117508	3163878	0.96419	0.03581	30761499	1352331	29409168	29291660	0.04396	0.95604
Dzielnica243	2.796	459875	2821511	0.859853	0.140147	30761499	1036642	29724857	29264982	0.0337	0.9663
ElMiron	1.012	228423	3052963	0.930388	0.069612	30761499	1260743	29500756	29272333	0.04098	0.95902
GB1_Eneo	4.05	444188	2837198	0.864634	0.135366	30761499	1042986	29718513	29274325	0.03391	0.96609
GEN15a	1.664	457463	2823923	0.860588	0.139412	30761499	1069362	29692137	29234674	0.03476	0.96524
GEN16a	4.3	577230	2704156	0.82409	0.17591	30761499	1077483	29684016	29106786	0.03503	0.96497
GEN58	0.89	251493	3029893	0.923358	0.076642	30761499	1160752	29600747	29349254	0.03773	0.96227
GEN59	1.117	422302	2859084	0.871304	0.128696	30761499	1018008	29743491	29321189	0.03309	0.96691
GEN62	4.81	642474	2638912	0.804207	0.195793	30761499	1058263	29703236	29060762	0.0344	0.9656
GEN71	0.717	270239	3011147	0.917645	0.082355	30761499	1151213	29610286	29340047	0.03742	0.96258
GEN72	0.647	191921	3089465	0.941512	0.058488	30761499	1258345	29503154	29311233	0.04091	0.95909
Gyvakarai	7.559	209770	3071616	0.936073	0.063927	30761499	1169929	29591570	29381800	0.03803	0.96197
HAJE7a	0.7	386826	2894560	0.882115	0.117885	30761499	1089038	29672461	29285635	0.0354	0.9646
Hume21	0.155	70210	3211176	0.978604	0.021396	30761499	1471115	29290384	29220174	0.04782	0.95218
Hume4	0.042	17910	3263476	0.994542	0.005458	30761499	1637475	29124024	29106114	0.05323	0.94677
Hume5	0.459	187020	3094366	0.943006	0.056994	30761499	1238995	29522504	29335484	0.04028	0.95972
Hung127	0.0258	89319	3192067	0.97278	0.02722	30761499	1419211	29342288	29252969	0.04614	0.95386
Hung130	0.056	152656	3128730	0.953478	0.046522	30761499	1308870	29452629	29299973	0.04255	0.95745
Hung136	0.037	94203	3187183	0.971292	0.028708	30761499	1414235	29347264	29253061	0.04597	0.95403
Hung137	0.346	594410	2686976	0.818854	0.181146	30761499	1099179	29662320	29067910	0.03573	0.96427
Hung148	0.384	573770	2707616	0.825144	0.174856	30761499	1104579	29656920	29083150	0.03591	0.96409
Hung149	0.383	632503	2648883	0.807245	0.192755	30761499	1091339	29670160	29037657	0.03548	0.96452
Hung152	0.13	430848	2850538	0.868699	0.131301	30761499	1076114	29685385	29254537	0.03498	0.96502
Hung154	0.33	560972	2720414	0.829044	0.170956	30761499	1118241	29643258	29082286	0.03635	0.96365
Hung155	0.38	589468	2691918	0.82036	0.17964	30761499	1183435	29578064	28988596	0.03847	0.96153
Hung160	0.396	636480	2644906	0.806033	0.193967	30761499	1093902	29667597	29031117	0.03556	0.96444
Hung162	0.385	619622	2661764	0.811171	0.188829	30761499	1108915	29652584	29032962	0.03605	0.96395
Hung331	0.167	431308	2850078	0.868559	0.131441	30761499	1161307	29600192	29168884	0.03775	0.96225

Hung849	1.63	408749	2872637	0.875434	0.124566	30761499	1108309	29653190	29244441	0.03603	0.96397
Hung969	1.239	131940	3149446	0.959791	0.040209	30761499	1338701	29422798	29290858	0.04352	0.95648
Iwiny83	3.103	497841	2783545	0.848283	0.151717	30761499	1045779	29715720	29217879	0.034	0.966
JAG06	1.111	609944	2671442	0.81412	0.18588	30761499	989408	29772091	29162147	0.03216	0.96784
Jinonice59	2.324	428740	2852646	0.869342	0.130658	30761499	1059328	29702171	29273431	0.03444	0.96556
Jinonice84a	3.866	515526	2765860	0.842894	0.157106	30761499	1032900	29728599	29213073	0.03358	0.96642
Jinonice88	1.821	370965	2910421	0.886949	0.113051	30761499	1102971	29658528	29287563	0.03586	0.96414
Jinonice94	0.861	280637	3000749	0.914476	0.085524	30761499	1118174	29643325	29362688	0.03635	0.96365
Kivutkalns153	0.334	0	3281386	1	0	30761499	1723120	29038379	29038379	0.05602	0.94398
Kivutkalns19	5.76	85138	3196248	0.974054	0.025946	30761499	1415371	29346128	29260990	0.04601	0.95399
Kivutkalns25	1.569	59944	3221442	0.981732	0.018268	30761499	1513864	29247635	29187691	0.04921	0.95079
Kivutkalns42	1.102	40770	3240616	0.987575	0.012425	30761499	1578650	29182849	29142079	0.05132	0.94868
KON2a	2.12	593860	2687526	0.819022	0.180978	30761499	1009459	29752040	29158180	0.03282	0.96718
Kornice1561	1.157	301686	2979700	0.908061	0.091939	30761499	1117896	29643603	29341917	0.03634	0.96366
Kornice34	3.429	504487	2776899	0.846258	0.153742	30761499	1046693	29714806	29210319	0.03403	0.96597
Kostenki14	2.42	5379	3276007	0.998361	0.001639	30761499	1674535	29086964	29081585	0.05444	0.94556
Kretuonas1	0.367	1056	3280330	0.999678	0.000322	30761499	1724207	29037292	29036236	0.05605	0.94395
Kretuonas5	0.204	887	3280499	0.99973	0.00027	30761499	1720890	29040609	29039722	0.05594	0.94406
LB1 (La Brana)	3.4	1130633	2150753	0.65544	0.34456	30761499	982951	29778548	28647915	0.03195	0.96805
LBK1976	0.441	51652	3229734	0.984259	0.015741	30761499	1522326	29239173	29187521	0.04949	0.95051
LBK2155	5.5	177881	3103505	0.945791	0.054209	30761499	1265578	29495921	29318040	0.04114	0.95886
LEPI_54E	0.019	6758	3274628	0.997941	0.002059	30761499	1700535	29060964	29054206	0.05528	0.94472
LGCS1a	0.766	310741	2970645	0.905302	0.094698	30761499	1128559	29632940	29322199	0.03669	0.96331
Loschbour	22	1361371	1920015	0.585123	0.414877	30761499	834123	29927376	28566005	0.02712	0.97288
M9984	1.42	286469	2994917	0.912699	0.087301	30761499	1268952	29492547	29206078	0.04125	0.95875
MA110	5.391	3072	3278314	0.999064	0.000936	30761499	1707666	29053833	29050761	0.05551	0.94449
MC337A	0.05	15771	3265615	0.995194	0.004806	30761499	1618735	29142764	29126993	0.05262	0.94738
MEMO2b	2.28	458659	2822727	0.860224	0.139776	30761499	1079235	29682264	29223605	0.03508	0.96492
MG104	1.19	358323	2923063	0.890801	0.109199	30761499	1086995	29674504	29316181	0.03534	0.96466
MX191	0.055	139577	3141809	0.957464	0.042536	30761499	1290728	29470771	29331194	0.04196	0.95804
MX195	0.036	262529	3018857	0.919994	0.080006	30761499	1130735	29630764	29368235	0.03676	0.96324
MX196	0.047	139293	3142093	0.957551	0.042449	30761499	1286219	29475280	29335987	0.04181	0.95819
OC1	1.86	153358	3128028	0.953264	0.046736	30761499	1258376	29503123	29349765	0.04091	0.95909
OC32	2.19	397790	2883596	0.878774	0.121226	30761499	1093723	29667776	29269986	0.03555	0.96445
OHV6.1	3.15	417377	2864009	0.872805	0.127195	30761499	1146569	29614930	29197553	0.03727	0.96273
OHV7.1	3.229	402030	2879356	0.877482	0.122518	30761499	1162452	29599047	29197017	0.03779	0.96221
Ostuni	0.245	198	3281188	0.99994	6E-05	30761499	1718791	29042708	29042510	0.05587	0.94413
PADN12	2.92	306925	2974461	0.906465	0.093535	30761499	1155338	29606161	29299236	0.03756	0.96244
Pavlov	0.028	4078	3277308	0.998757	0.001243	30761499	1713655	29047844	29043766	0.05571	0.94429
PULE1.13a	0.383	188807	3092579	0.942461	0.057539	30761499	1241753	29519746	29330939	0.04037	0.95963
PULE1.18a	0.29	150180	3131206	0.954233	0.045767	30761499	1309816	29451683	29301503	0.04258	0.95742
PULE1.23a	0.172	102757	3178629	0.968685	0.031315	30761499	1390659	29370840	29268083	0.04521	0.95479
PULE1.24	0.4	205428	3075958	0.937396	0.062604	30761499	1220736	29540763	29335335	0.03968	0.96032

PULE1.9a	0.108	59882	3221504	0.981751	0.018249	30761499	1512373	29249126	29189244	0.04916	0.95084
Raciborz	0.708	288974	2992412	0.911935	0.088065	30761499	1120233	29641266	29352292	0.03642	0.96358
Rathlin1	10.5	2474708	806678	0.245835	0.754165	30761499	693268	30068231	27593523	0.02254	0.97746
RDVS02	3.523	491914	2789472	0.85009	0.14991	30761499	1010218	29751281	29259367	0.03284	0.96716
RDVS116	3.173	454085	2827301	0.861618	0.138382	30761499	1084431	29677068	29222983	0.03525	0.96475
RDVS117	3.097	412517	2868869	0.874286	0.125714	30761499	1117980	29643519	29231002	0.03634	0.96366
RDVS53	4.109	529364	2752022	0.838677	0.161323	30761499	1076065	29685434	29156070	0.03498	0.96502
RDVS59	1.143	31734	3249652	0.990329	0.009671	30761499	1617413	29144086	29112352	0.05258	0.94742
RDVS67	3.203	466404	2814982	0.857864	0.142136	30761499	1073025	29688474	29222070	0.03488	0.96512
RDVS68	3.556	488165	2793221	0.851232	0.148768	30761499	1057346	29704153	29215988	0.03437	0.96563
RISE154	0.178	151458	3129928	0.953843	0.046157	30761499	1260924	29500575	29349117	0.04099	0.95901
RISE480	0.11	166926	3114460	0.949129	0.050871	30761499	1270848	29490651	29323725	0.04131	0.95869
RISE483	0.1	123922	3157464	0.962235	0.037765	30761499	1419508	29341991	29218069	0.04615	0.95385
RISE486	0.25	163575	3117811	0.950151	0.049849	30761499	1252865	29508634	29345059	0.04073	0.95927
RISE489	0.49	254693	3026693	0.922382	0.077618	30761499	1143571	29617928	29363235	0.03718	0.96282
RISE586	0.15	112885	3168501	0.965598	0.034402	30761499	1338495	29423004	29310119	0.04351	0.95649
SCH011	0.002	0	3281386	1	0	30761499	1718469	29043030	29043030	0.05586	0.94414
SCH016	0.0401	31629	3249757	0.990361	0.009639	30761499	1592518	29168981	29137352	0.05177	0.94823
SCH018	0.004	0	3281386	1	0	30761499	1704879	29056620	29056620	0.05542	0.94458
Smyadovo12	0.53	346385	2935001	0.894439	0.105561	30761499	1153247	29608252	29261867	0.03749	0.96251
Smyadovo21	0.063	30102	3251284	0.990826	0.009174	30761499	1609284	29152215	29122113	0.05231	0.94769
Smyadovo23	0.96	259357	3022029	0.920961	0.079039	30761499	1186034	29575465	29316108	0.03856	0.96144
Smyadovo26	1.27	327518	2953868	0.900189	0.099811	30761499	1159076	29602423	29274905	0.03768	0.96232
Smyadovo40	1.13	321409	2959977	0.902051	0.097949	30761499	1152552	29608947	29287538	0.03747	0.96253
Spiginas2	3.164	53331	3228055	0.983747	0.016253	30761499	1523616	29237883	29184552	0.04953	0.95047
Spiginas4	1.122	6283	3275103	0.998085	0.001915	30761499	1691011	29070488	29064205	0.05497	0.94503
Strachow	0.022	10123	3271263	0.996915	0.003085	30761499	1669019	29092480	29082357	0.05426	0.94574
SunghirSI	1.1	1117462	2163924	0.659454	0.340546	30761499	1185430	29576069	28458607	0.03854	0.96146
Sushina28	0.215	85537	3195849	0.973933	0.026067	30761499	1457138	29304361	29218824	0.04737	0.95263
Sushina29	0.026	10870	3270516	0.996687	0.003313	30761499	1690108	29071391	29060521	0.05494	0.94506
Sushina32	1.492	381615	2899771	0.883703	0.116297	30761499	1114352	29647147	29265532	0.03623	0.96377
Thurston	0.999	330242	2951144	0.899359	0.100641	30761499	1062477	29699022	29368780	0.03454	0.96546
TIDO2a	0.446	200697	3080689	0.938838	0.061162	30761499	1204784	29556715	29356018	0.03917	0.96083
Turlojiške1	0.131	0	3281386	1	0	30761499	1715460	29046039	29046039	0.05577	0.94423
Turlojiške3	0.671	58961	3222425	0.982032	0.017968	30761499	1510741	29250758	29191797	0.04911	0.95089
Tyrolean Iceman	7.6	2086058	1195328	0.364275	0.635725	30761499	978610	29782889	27696831	0.03181	0.96819
Urzi10	0.254	507051	2774335	0.845477	0.154523	30761499	1158985	29602514	29095463	0.03768	0.96232
Urzi12	0.323	552842	2728544	0.831522	0.168478	30761499	1210553	29550946	28998104	0.03935	0.96065
Urzi13	0.255	505907	2775479	0.845825	0.154175	30761499	1204504	29556995	29051088	0.03916	0.96084
Urzi21	0.251	509509	2771877	0.844728	0.155272	30761499	1169849	29591650	29082141	0.03803	0.96197
Urzi26	0.249	496779	2784607	0.848607	0.151393	30761499	1171692	29589807	29093028	0.03809	0.96191
Urzi31	0.374	614058	2667328	0.812866	0.187134	30761499	1199941	29561558	28947500	0.03901	0.96099
Urzi37	0.179	449093	2832293	0.863139	0.136861	30761499	1090967	29670532	29221439	0.03547	0.96453

Urzi39	0.284	499215	2782171	0.847865	0.152135	30761499	1174858	29586641	29087426	0.03819	0.96181
Urzi41	0.175	516562	2764824	0.842578	0.157422	30761499	1183925	29577574	29061012	0.03849	0.96151
Urzi44	0.365	596280	2685106	0.818284	0.181716	30761499	1221428	29540071	28943791	0.03971	0.96029
Urzi48	0.211	447358	2834028	0.863668	0.136332	30761499	1167282	29594217	29146859	0.03795	0.96205
Urzi51	0.274	535564	2745822	0.836787	0.163213	30761499	1171329	29590170	29054606	0.03808	0.96192
Urzi60	0.249	508259	2773127	0.845108	0.154892	30761499	1155902	29605597	29097338	0.03758	0.96242
Urzi65a	0.264	538027	2743359	0.836037	0.163963	30761499	1125919	29635580	29097553	0.0366	0.9634
Urzi68	0.109	39140	3242246	0.988072	0.011928	30761499	1558594	29202905	29163765	0.05067	0.94933
Urzi70	0.169	426486	2854900	0.870029	0.129971	30761499	1102339	29659160	29232674	0.03584	0.96416
V228	0.803	238218	3043168	0.927403	0.072597	30761499	1161382	29600117	29361899	0.03775	0.96225
V229	2.131	424862	2856524	0.870524	0.129476	30761499	1059431	29702068	29277206	0.03444	0.96556
V242	2.765	516669	2764717	0.842545	0.157455	30761499	1005957	29755542	29238873	0.0327	0.9673
V243	4.036	536919	2744467	0.836374	0.163626	30761499	1009865	29751634	29214715	0.03283	0.96717
V247	0.589	228960	3052426	0.930225	0.069775	30761499	1188769	29572730	29343770	0.03864	0.96136
V575	4.524	417934	2863452	0.872635	0.127365	30761499	1118438	29643061	29225127	0.03636	0.96364
VEJ5a	0.619	298757	2982629	0.908954	0.091046	30761499	1127617	29633882	29335125	0.03666	0.96334
Vestonice16	1.31	452363	2829023	0.862143	0.137857	30761499	1245170	29516329	29063966	0.04048	0.95952
Villabruna1	3.137	353509	2927877	0.892268	0.107732	30761499	1050214	29711285	29357776	0.03414	0.96586
VLSC_80a	0.669	265898	3015488	0.918968	0.081032	30761499	1145958	29615541	29349643	0.03725	0.96275
XN164	0.0342	0	3281386	1	0	30761499	1705363	29056136	29056136	0.05544	0.94456
XN167	0.0297	9070	3272316	0.997236	0.002764	30761499	1686072	29075427	29066357	0.05481	0.94519
XN168	0.0202	0	3281386	1	0	30761499	1726463	29035036	29035036	0.05612	0.94388
XN170	0.028	0	3281386	1	0	30761499	1717478	29044021	29044021	0.05583	0.94417
XN172	0.03	0	3281386	1	0	30761499	1722158	29039341	29039341	0.05598	0.94402
XN174	0.0147	808	3280578	0.999754	0.000246	30761499	1711064	29050435	29049627	0.05562	0.94438
XN175	0.0217	15150	3266236	0.995383	0.004617	30761499	1658963	29102536	29087386	0.05393	0.94607
XN206	0.0021	22	3281364	0.999993	7E-06	30761499	1706268	29055231	29055209	0.05547	0.94453
XN215	0.0024	0	3281386	1	0	30761499	1708367	29053132	29053132	0.05554	0.94446
YABA2	1.96	368524	2912862	0.887693	0.112307	30761499	1126619	29634880	29266356	0.03662	0.96338
YABA4	1.37	339025	2942361	0.896682	0.103318	30761499	1119305	29642194	29303169	0.03639	0.96361
ZEM13	1.032	415992	2865394	0.873227	0.126773	30761499	1057801	29703698	29287706	0.03439	0.96561
ZEM24	1.02	335699	2945687	0.897696	0.102304	30761499	1073533	29687966	29352267	0.0349	0.9651
ZEM33	0.864	426700	2854686	0.869963	0.130037	30761499	1033726	29727773	29301073	0.0336	0.9664
ZEM35	0.945	477941	2803445	0.854348	0.145652	30761499	1018320	29743179	29265238	0.0331	0.9669
ZEM7	1.161	562988	2718398	0.82843	0.17157	30761499	985052	29776447	29213459	0.03202	0.96798
ZEM8	1.088	364170	2917216	0.889019	0.110981	30761499	1075795	29685704	29321534	0.03497	0.96503
Zerniki1	3.668	596678	2684708	0.818163	0.181837	30761499	973261	29788238	29191560	0.03164	0.96836
ZVEJ21	3.22	392408	2888978	0.880414	0.119586	30761499	1212806	29548693	29156285	0.03943	0.96057
ZVEJ30	2.43	467658	2813728	0.857482	0.142518	30761499	1072743	29688756	29221098	0.03487	0.96513
ZVEJ31	1.099	1038958	2242428	0.683378	0.316622	30761499	926579	29834920	28795962	0.03012	0.96988
ZVEJ32	3.513	516719	2764667	0.84253	0.15747	30761499	1072923	29688576	29171857	0.03488	0.96512

Table S18. Per-individual coverage and pre/post-imputation metrics.

Coverage level	all_correct=counts['REF/REF'] + counts['ALT_1/ALT_1'] + counts['ALT_2/ALT_2']	all_total= het_total + (counts['REF/ALT_1'] + counts['REF/ALT_2'] + counts['REF/REF'] + counts['REF/MISSING_ENTRY_{}'.format(sample_name)] + counts['ALT_2/ALT_2'] + counts['ALT_2/ALT_1'] + counts['ALT_2/REF'] + counts['ALT_2/MISSING_ENTRY_{}]	Proportion correct
3x	1651039	1663075	0.9928
2x	1536362	1545724	0.9939
1x	1425122	1432173	0.9951
0.7x	1366946	1372489	0.9960
0.5x	1311063	1314487	0.9974
0.4x	1294473	1297030	0.9980
0.3x	1270668	1298111	0.9789

Table S19. Assessing imputation accuracy in high coverage vs. low coverage paleogenomic data

Coverage level	het_nonmissing = (counts['ALT_1/REF'] + counts['ALT_1/ALT_2'] + counts['ALT_1/ALT_1'])	het_total=counts['ALT_1/REF'] + counts['ALT_1/ALT_2'] + counts['ALT_1/ALT_1'] + counts['ALT_1/MISSING_ENTRY_{}'	Proportion of heterozygote sites recovered
3x	1217	1238	0.9830
2x	767	788	0.9734
1x	518	539	0.9610
0.7x	348	369	0.9431
0.3x	148	173	0.8555

Table S20. Assessing imputation of heterozygote sites in imputed data.

Combined: MDS5	P-value	df	t	95% CI
Pre-Neolithic - Neolithic	0.118	43.802	1.594	-0.747 6.405
Neolithic - Post-Neolithic	0.729	71.053	0.347	-1.899 2.700
Combined: MDS6				
Pre-Neolithic - Neolithic	0.117	43.794	1.597	-0.742 6.411
Neolithic - Post-Neolithic	0.725	71.03	0.353	-1.892 2.706
Combined: MDS7				
Pre-Neolithic - Neolithic	0.198	46.893	1.305	-1.174 5.505
Neolithic - Post-Neolithic	0.679	70.475	0.416	-1.785 2.726
Combined: MDS8				
Pre-Neolithic - Neolithic	0.191	47.144	1.327	-1.136 5.539
Neolithic - Post-Neolithic	0.638	70.074	0.472	-1.724 2.794

Combined: MDS5	Mean of residuals	Std. dev.
Pre-Neolithic	2.226	6.965
Upper Paleolithic	4.83	8.63
Mesolithic	0.837	5.75
Neolithic	-0.603	6.911
Copper Age	-0.234	5.247
Bronze Age	-0.141	5.055
Iron Age	-0.724	4.843
Post-Neolithic	-0.202	5.154
Combined: MDS6		
Pre-Neolithic	2.227	6.996
Upper Paleolithic	4.843	8.631
Mesolithic	0.833	5.746
Neolithic	-0.607	6.911
Copper Age	-0.222	5.241
Bronze Age	-0.157	5.059
Iron Age	-0.731	4.849
Post-Neolithic	-0.200	5.152
Combined: MDS7		
Pre-Neolithic	1.627	6.348
Upper Paleolithic	4.269	8.499
Mesolithic	0.218	4.592
Neolithic	-0.538	6.793
Copper Age	-0.309	4.997
Bronze Age	0.398	5.082
Iron Age	-0.923	4.185
Post-Neolithic	-0.068	5.009
Combined: MDS8		
Pre-Neolithic	1.612	6.331

Upper Paleolithic	4.312	8.567
Mesolithic	0.172	4.462
Neolithic	-0.589	6.816
Copper Age	-0.254	4.989
Bronze Age	0.332	5.04
Iron Age	-0.72	4.262
Post-Neolithic	-0.054	4.986

Table S21. Output of t-test results for comparisons of the residuals from a linear model of osteological stature and polygenic height score with sex and ancestries with MDS axes 5, 6, 7 and 8.

Legend for Dataset S1

Dataset S1. Description of individuals in data set (n=167) including individual ID, genetic sex, radiocarbon dates, archaeological/cultural period, geographical coordinates, publication sources for the ancient DNA data and long bone measurements/terminal stature.

SI References

1. C. B. Ruff, *et al.*, Stature and body mass estimation from skeletal remains in the European Holocene. *Am. J. Phys. Anthropol.* **148**, 601–617 (2012).