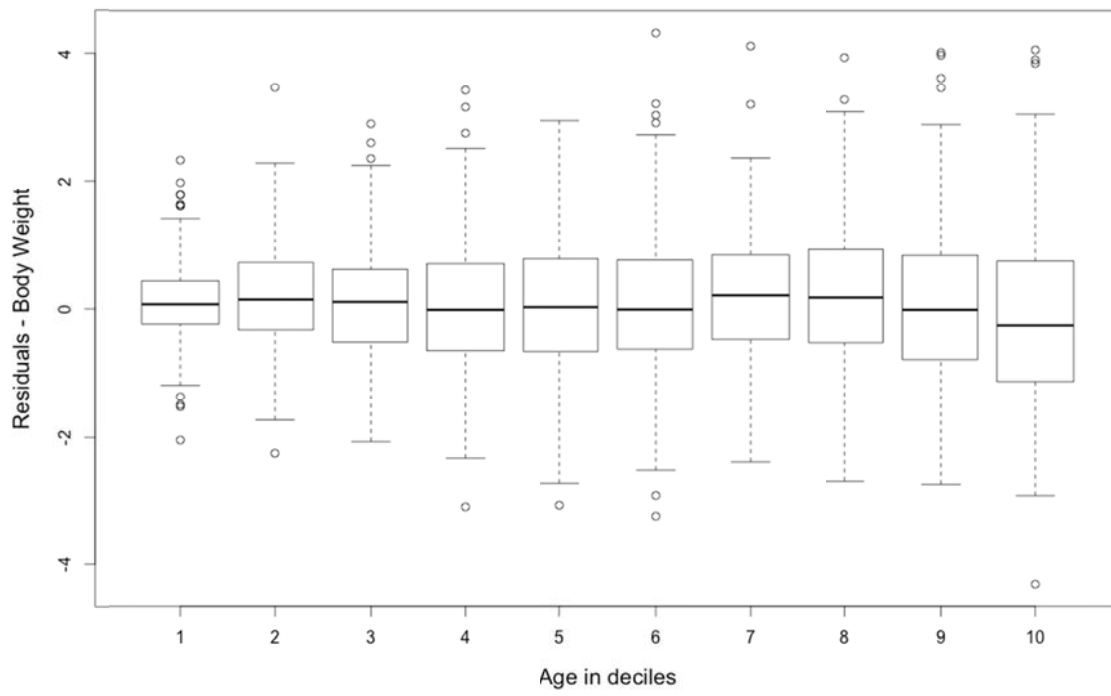
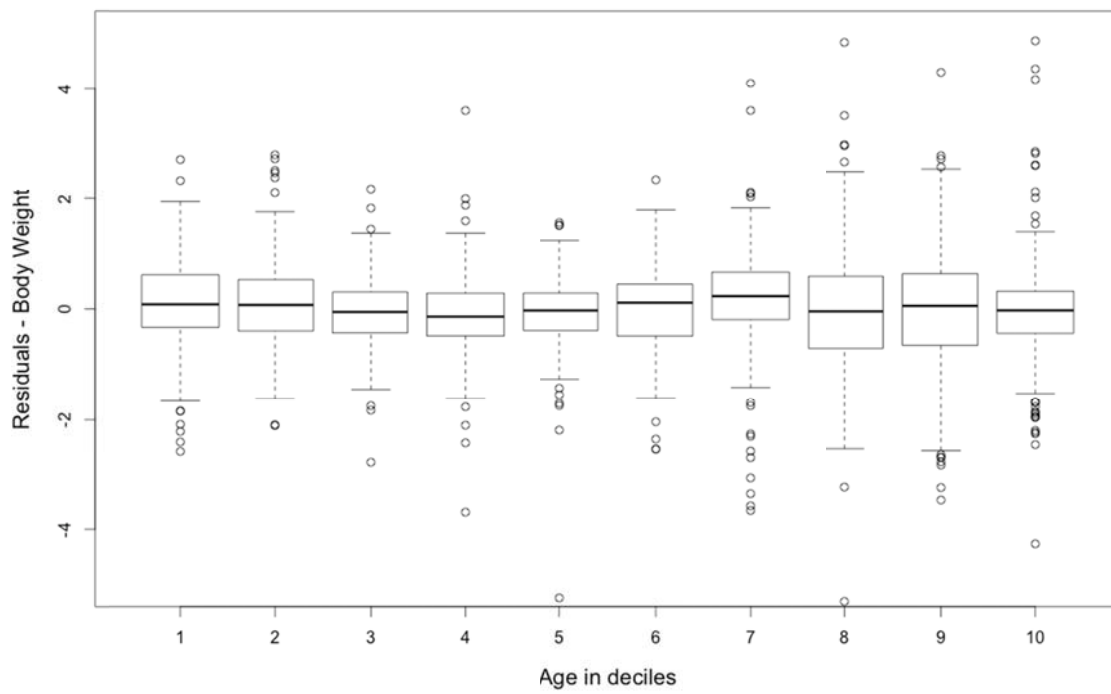


Supplementary Figure 1: Characteristics of the Jenss model in term of interpretation of the coefficients. (1) is the historical parameterisation. Parameterisation (2) allows e^A to be interpreted as the measurement at birth (length only when considering neonatal weight loss). Parameterisation (3) adds positivity constraints to the parameters to facilitate convergence of the model.

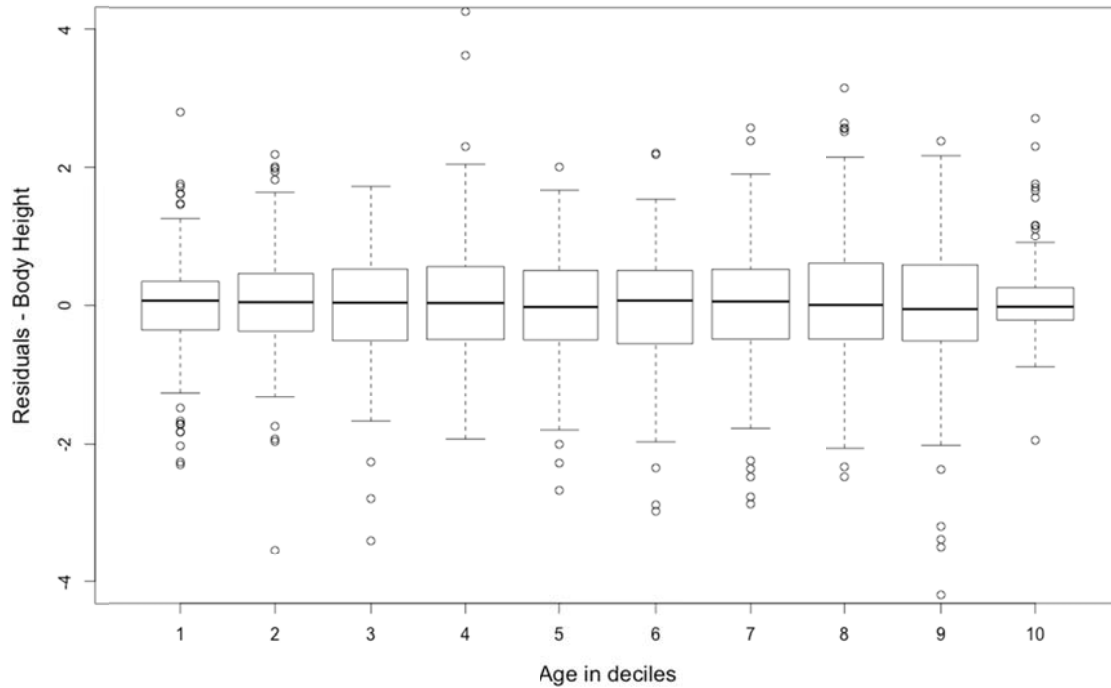
a.



b.

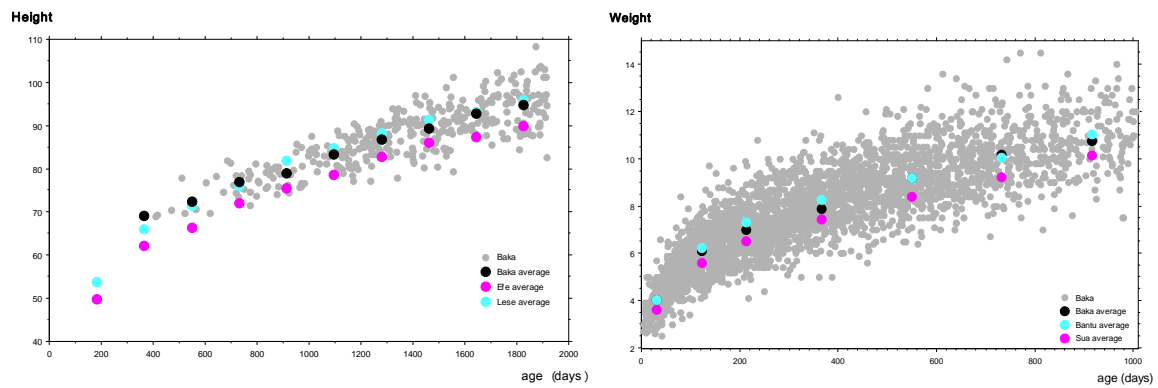


c.

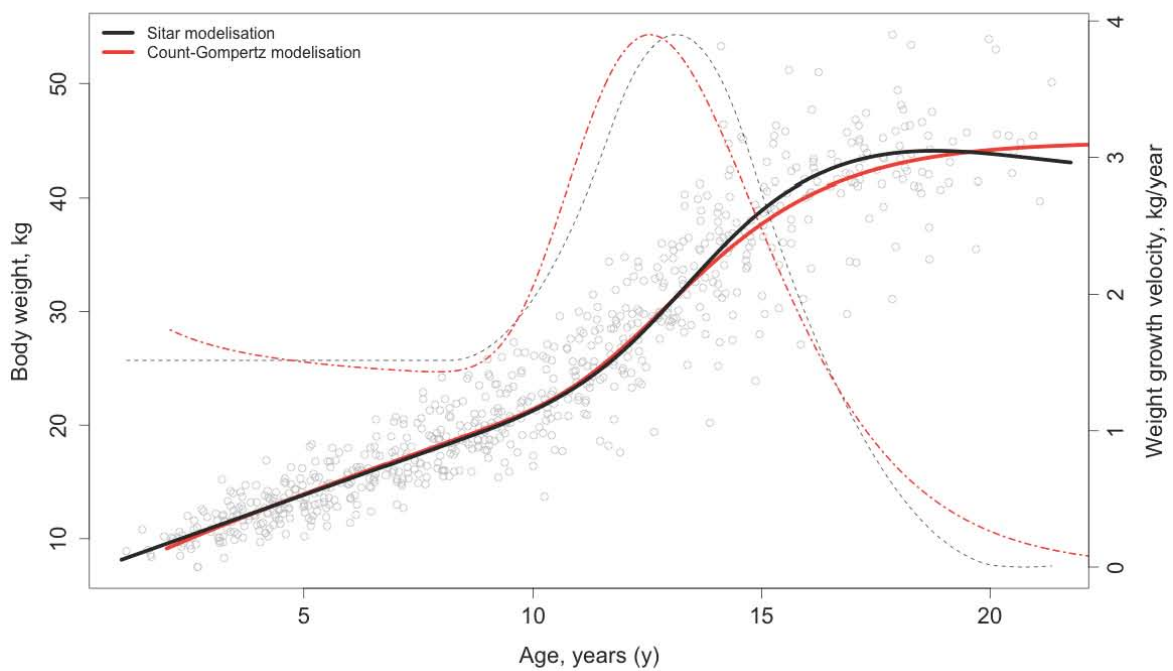
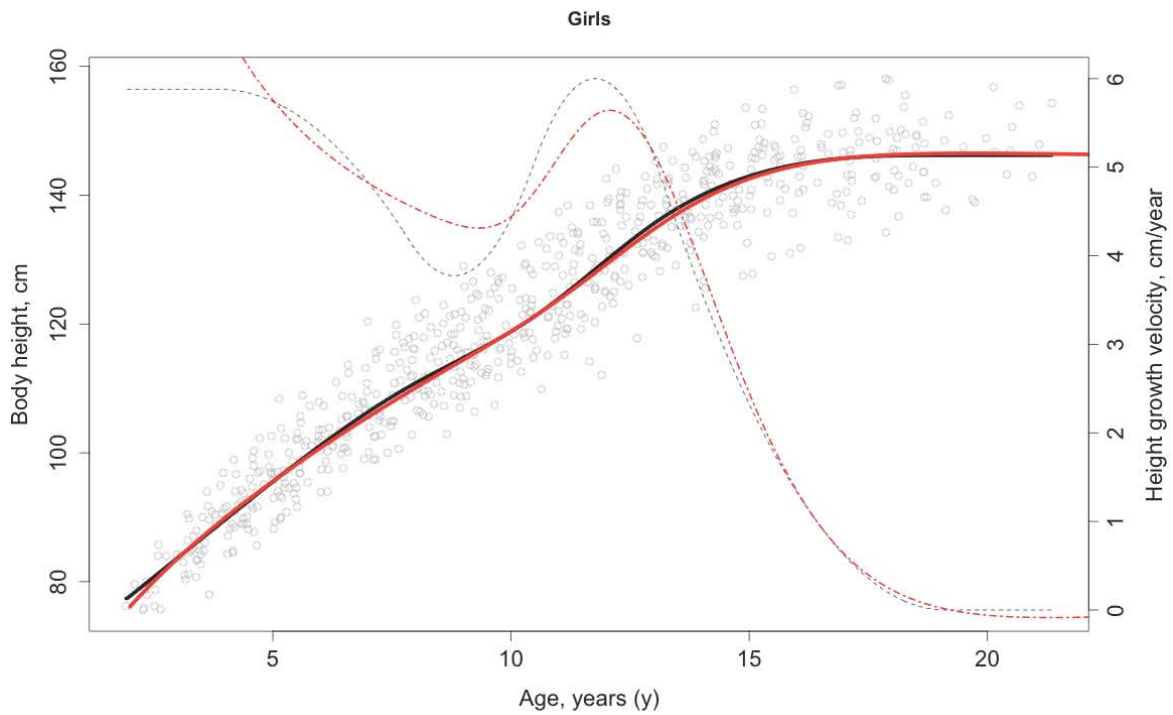


Supplementary Figure 2: Differences between observations and predictions from the model for height and weight (residual Standard Deviation). When the mean growth trajectory is of interest, the residuals in the model should have no trend over time, i.e. they should be centred on zero whatever the age. An assumption of homoscedasticity (constant variance over time) is required to estimate unbiased variances for statistical tests, which has little importance here. As can be seen from the graphs, the models estimate the mean growth trajectory with no systematic bias, for both periods A and B. The resulting models can be used to illustrate trajectories and to calculate growth characteristics and velocity curve.

- a. Weight for the cohort A ($N_{\text{individuals}}=481$, $N_{\text{observations}}=3089$)
- b. Weight for the cohort B ($N_{\text{individuals}}=554$, $N_{\text{observations}}=1757$)
- c. Height for the cohort B ($N_{\text{individuals}}=549$, $N_{\text{observations}}=1731$)



Supplementary Figure 3: Comparison between Baka and pygmies from East Africa. Baka average values are close to average non-pygmy's values (Lese, Bantu), whereas they are higher than those from Efe and Sua revealing two different growths processes responsible of pygmy phenotype.



Supplementary Figure 4: Comparison of growth curves as fitted by the Count-Gompertz model and by the SITAR model. Both models give very similar results and interpretation does not change using one or the other.

Supplementary Table 1: Age at Menarche in Sub-Saharan populations

	country	ethnicity/region	average	sd	CI (95%)	median	sd	CI (95%)
This study	Cameroon	Baka				14.5		14.1 - 15.0
1	Cameroon	Yaoundé suburban rural				13.18 13.98 14.27	1.08 1.55 1.65	
2	Congo		13.88 - 13.94§					
3	Dem.Rep.Congo	Bunya	15.67			14 - 15		
4	Dem.Rep.Congo	Kinshasa	13.61-13.99§			13.3		
5	Benin	Benin city	13.44	1.32	13.4-13.5			
6	Nigeria	Ilorin	13.21	1.29				
7	Nigeria	Enugu	13.3	1.09				
8	Nigeria	Port Harcourt	13.43	2.19				
9	Nigeria	Ife	13.94	1.31				
10	Nigeria	Zaria	14.2					
11	Nigeria	Ibadan	13.26-13.76 §					
12	Nigeria		13.53					
12	Zimbabwe		14.24					
13	Senegal					15.9		15.7 - 18.9
14	Senegal		16.1	2				
15	Ethiopia	Sawla	13.9	1.2	13.8 - 14	13 - 14		
16	Ethiopia	Amhara	13.72	1.31		14		
17	Tanzania		14.3	1.1				
18	South Africa	Transkei	15.02 - 15.42§			14 - 15		

§ Mean varies after the socioeconomic status.

Supplementary Table 2: Comparison of somatic growth (height & weight) between the Baka and other non-pygmy African groups

Height

Boys

Age years	Baka ^o			Lunda & Tchokwe ¹⁹			Somali ²⁰			Datoga ²¹			Baganda ²²			Baka vs L&Tch	Baka vs Somali	Baka vs Datoga	Baka vs Baganda
	X	N	SD	X	N	SD	X	N	SD	X	N	SD	X	N	SD				
1.5	74.9	11	4.7				77.4	39	5.8	76.8	11	5.0	77.4	123	4.0		0.1123	0.2177	0.1123
2.5	80.3	27	3.9				84.2	45	6.5	84.7	16	4.7	87.1	91	4.6		***	***	***
3.5	86.6	56	4.2	86.8	1042	5.38	93.2	60	9.4	92.7	22	6.1	96.4	63	4.7	0.8049	***	***	***
4.5	91.9	62	4.6	93.5	742	6.01	104.0	16	5.9	99.1	10	5.7	105.4	202	5.7	**	***	***	***
5.5	97.4	66	5.3	99.1	856	6.04	109.5	12	4.3	104.0	14	8.9	109.8	175	5.1	**	***	***	***
6.5	101.4	66	5.8	104.8	840	6.69	115.9	22	9.8	112.4	12	5.9	112.0	110	4.2	***	***	***	***
7.5	106.1	74	6.1	109.0	747	7.44	120.4	57	7.1	118.2	9	9.6				***	***	***	
8.5	111.1	70	5.5	112.8	792	7.16	126.3	60	5.9	124.2	5	3.9				*	***	***	
9.5	115.6	62	5.1	117.9	774	8.45	130.4	49	6.7	126.3	12	2.9				***	***	***	
10.5	119.6	49	6.3	122.1	737	8.85	135.0	51	5.6	132.2	9	9.4				**	***	***	
11.5	122.8	47	5.7	126.6	835	8.27	138.5	59	6.5	136.1	10	5.8				***	***	***	
12.5	127.2	53	5.5	132.5	826	8.91	142.8	67	6.6	142.6	9	9.2				***	***	***	
13.5	131.9	40	5.9	137.9	837	9.10	150.0	67	7.2	139.0	5	8.7				***	***	***	
14.5	138.4	33	7.5	145.8	1179	9.35	155.2	59	10.6	141.4	8	9.4				***	***	*	
15.5	141.7	26	7.4	152.3	512	9.42	164.3	62	7.6	145.4	3	2.6				***	***	*	
16.5	145.5	20	8	155.9	542	6.77	169.3	53	6.1	159.1	2	2.8				***	***	***	
17.5	150.4	23	5.8	157.7	547	7.01	171.6	37	4.4							***	***		
18.5	152.8	11	4.6	158.3	582	7.13	170.9	36	6.8							**	***		
19.5	155.4	12	4.9	159.7	453	7.23										*			

Girls

Age years	Baka ^o			Lunda & Tchokwe ¹⁹			Somali ²⁰			Datoga ²¹			Baganda ²²			Baka vs L&Tch	Baka vs Somali	Baka vs Datoga	Baka vs Baganda
	X	N	SD	X	N	SD	X	N	SD	X	N	SD	X	N	SD				
1.5	73.3	6	3.5				74.1	42	6.4	76.9	19	5.2	76.5	91	4.4		0.6105	0.0556	0.0785
2.5	79.3	27	3.5				83.7	51	7.0	89.5	17	7.0	86.1	77	4.5		***	***	***
3.5	86.2	66	4.4	86.7	1024	5.56	92.0	44	5.9	94.6	20	9.9	94.5	50	4.7	0.3322	***	***	***
4.5	92.6	64	4.7	93.3	790	6.00	103.8	18	3.6	97.5	19	8.6	105.5	205	5.5	0.2153	***	***	***
5.5	98.2	63	5.1	99.4	892	6.36	109.9	10	3.7	107.6	24	9.7	110.4	213	4.8	0.0692	***	***	***
6.5	104.6	43	5.7	105.1	805	6.68	117.4	37	5.7	111.5	10	8.1	113.6	97	4.6	0.5929	***	***	***
7.5	108.7	55	5.8	109.8	800	7.22	119.7	47	5.0	120.2	14	6.2				0.1591	***	***	
8.5	113.7	53	5.4	113.5	892	7.60	125.6	65	5.6	125.7	6	5.1				0.7934	***	***	
9.5	118.0	55	6.1	118.6	821	8.47	131.4	53	5.9	125.1	16	8.2				0.4473	***	***	
10.5	121.9	44	5.9	122.8	698	9.06	138.5	61	6.9	131.9	12	10.2				0.3207	***	***	
11.5	127.6	54	6.6	128.0	767	8.60	142.9	31	5.7	135.1	12	7.0				0.6491	***	***	
12.5	133.3	54	6	133.7	741	8.77	147.9	53	6.8	137.4	12	7.1				0.6359	***	***	
13.5	137.3	49	5.5	138.8	645	8.46	153.9	52	5.9	149.2	7	10.6				0.052	***	***	
14.5	140.5	48	6.2	144.0	561	7.55	158.3	35	4.2	149.1	10	6.3				***	***	***	

15.5	143.5	39	6	146.9	498	7.61	159.0	62	5.2	152.4	9	8.1		***	***	***	
16.5	145.3	28	6.2	148.7	363	6.39	159.3	42	4.8	156.7	4	5.8		**	***	***	
17.5	145.2	27	6.6	149.8	319	7.01	158.5	25	6.3	166.8	2	5.6		**	***	***	
18.5	145.5	25	4.8	150.1	395	6.37	163.2	28	4.7	149.3	2	6.7		***	***	***	
19.5	145.6	10	5.3	150.3	444	6.59								*			

Weight

Boys

Age years	Baka °			Somali ²⁰			Datoga ²¹			Baganda ²²			Baka vs	Baka vs	Baka vs
	X	N	SD	X	N	SD	X	N	SD	X	N	SD	Somali	Datoga	Baganda
1.5	9.28	563	1.24	9.3	86	1.8	9.8	11	1.1	10.62	457	1.18	0.7274	***	***
2.5	10.87	179	1.35	11.2	91	1.8	10.9	16	1.4	12.60	311	1.20	**	0.8038	***
3.5	11.79	72	1.2	12.8	93	2.1	12.8	22	2.5	14.66	165	1.02	***	***	***
4.5	12.93	63	1.44	15.3	36	3.6	15.6	10	2.6	17.33	210	2.28	***	***	***
5.5	14.34	66	1.8	17.2	17	2.5	15.7	14	2.3	18.31	200	2.13	***	***	***
6.5	15.45	66	2.02	19.1	22	3.0	17.6	12	2.7	18.63	128	1.64	***	***	***
7.5	16.86	74	2.48	21.3	57	3.3	20.2	9	4.0				***	***	
8.5	18.27	70	2.6	23.8	60	4.1	21.6	5	1.9				***	***	
9.5	20.23	62	2.92	25.2	49	4.1	23.2	12	2.0				***	***	
10.5	22.11	49	3.37	27.3	51	5.0	24.5	9	3.8				***	***	
11.5	23.89	47	3.32	29.9	59	5.3	27.6	10	2.5				***	***	
12.5	25.63	53	3.28	31.6	67	5.5	29.1	9	4.3				***	***	
13.5	28.66	39	4.43	36.0	67	7.3	29.7	5	5.0				***	0.1501	
14.5	33.38	33	5.64	38.8	59	7.7	30.1	8	4.8				***	***B	
15.5	35.77	26	6.2	44.4	62	6.0	35.1	3	2.7				***	0.5776	
16.5	39.41	20	7.78	49.6	53	6.1	36.5	2	5.9				***	0.124	
17.5	43.17	23	9.08	50.9	37	6.2							***		
18.5	46.73	11	8.79	50.3	36	8.1							***		

Girls

Age years	Baka °			Somali ²⁰			Datoga ²¹			Baganda ²²			Baka vs	Baka vs	Baka vs
	X	N	SD	X	N	SD	X	N	SD	X	N	SD	Somali	Datoga	Baganda
1.5	8.82	514	1.24	9.0	89	1.7	8.4	19	1.4	10.20	275	1.03	***	***B	***
2.5	10.38	193	1.24	10.7	99	1.9	11.2	17	1.9	12.01	250	1.12	***	***	***
3.5	11.65	85	1.74	12.3	70	1.8	13.1	20	2.4	14.14	17	0.98	***	***	***
4.5	12.95	65	1.65	15.0	38	2.4	13.8	19	2.3	16.63	234	2.12	***	**	***
5.5	14.47	63	2.02	17.3	15	2.5	15.9	24	3.2	18.08	238	2.00	***	***	***
6.5	16.13	43	2.18	20.3	37	3.0	16.8	10	3.2	18.87	119	2.01	***	0.0516	***
7.5	17.46	55	2.39	20.7	47	2.9	19.9	14	2.4				***	***	
8.5	19.31	53	2.34	23.4	65	3.7	22.1	6	1.3				***	***	
9.5	21.23	55	2.9	26.9	53	4.2	21.5	16	3.9				***	0.4916	

10.5	22.71	44	3.4	29.2	61	4.5	23.7	12	4.2	***	0.0607
11.5	26.04	54	3.53	33.1	31	6.6	27.0	12	4.2	***	0.0515
12.5	29.50	54	3.53	34.6	53	6.0	28.6	12	6.6	***	0.0651
13.5	32.87	49	4.42	41.5	52	8.1	34.2	7	6.5	***	0.0411
14.5	36.27	48	5.73	45.9	35	7.7	35.5	10	5.3	***	0.3576
15.5	38.63	39	5.1	48.4	62	8.2	38.0	9	8.2	***	0.4483
16.5	41.24	27	4.2	50.4	42	8.6	38.3	4	7.4	***	**B
17.5	42.85	27	4.63	49.0	25	8.0	46.2	2	1.4	***	***
18.5	43.28	25	4.02	50.2	28	6.6	41.0	2	9.2	***	**B

° this study

B = Baka values are higher.

*** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$ (*t*-test one sample).

Supplementary Table 3: Comparison of somatic growth (height & weight) between the Baka and non-pygmy African groups (girls and boys together)

Height

Age in years	Baka [°]			Keneba ²³			Baka vs Keneba
	X	N	SD	X	N	SD	
1.5	72.5	7	3.4	73.6	3.86	65	0.359
2	77.0	19	2.9	78.6	3.56	50	0.383
2.5	79.0	28	3.2	82.0	3.76	38	**
3	83.4	46	3.1	87.0	3.48	43	***
3.5	86.8	60	3.8	89.8	3.84	44	***
4	89.4	69	4.4	94.2	3.56	41	***
4.5	92.8	60	4	97.5	3.51	44	***
5	94.9	66	5.2	100.3	3.38	34	***

Weight

Age in years	Baka [°]			Keneba ²³			Baka vs Keneba
	X	N	S.D.	X	N	S.D.	
0.0	3	2		2.8	68	0.39	
0.25	5.47	342	0.84	5.4	81	0.78	0.1072
0.5	6.71	305	0.98	6.5	81	0.98	*** B
0.75	7.4	255	1.03	6.9	75	1.02	*** B
1	8.04	256	1.02	7.2	75	1.16	*** B
1.25	8.67	218	1.05	7.6	70	1.22	*** B
1.5	9.15	187	1.18	8.1	66	1.18	*** B
1.75	9.68	140	1.27	9.0	58	1.32	*** B
2	10.09	108	1.27	9.6	52	1.50	*** B
2.25	10.32	79	1.21	10.1	42	1.62	0.1084
2.5	10.73	51	1.23	10.8	38	1.32	0.6846
2.75	10.98	42	1.44	11.3	40	1.48	0.1591
3	11.29	33	1.27	11.9	41	1.37	**
3.5	11.63	31	1.3	12.7	38	1.31	***
4	12.33	26	1.39	13.9	38	1.57	***
4.5	12.98	18	1.25	14.8	37	1.56	***
5	13.48	24	1.52	15.6	29	1.43	***

[°] this study

B = Baka values are higher.

*** = P < 0.001, ** = P < 0.01, * = P < 0.05 (t-test one sample).

Supplementary Table 4: Comparison of somatic growth (height & weight) between the Baka and non-pygmy African groups

Height

Girls				Boys										
Age in years	Baka [°]			Ime ²⁴			Baka vs Ime	Baka [°]			Ime ²⁴			Baka vs Ime
	X	N	SD	X	N	SD		X	N	SD	X	N	SD	
1								69.1	2	0.3	72.1	na	na	0.421
1.5	70.3	3	0.5	76.7	na	na	***	74.2	4	3.9	77.7	na	na	0.1631
2	76.8	6	1.8	82.8	na	na	***	77.1	13	3.3	82.5	na	na	***
2.5	78.7	19	3.4	85.6	na	na	***	79.8	9	2.7	86.1	na	na	***
3	83.2	20	3.4	89.1	na	na	***	83.6	26	2.8	89.9	na	na	***
3.5	86.3	39	3.9	92.7	na	na	***	87.7	21	3.3	93.2	na	na	***
4	89.8	32	4.4	95.5	na	na	***	88.9	34	4.4	96.7	na	na	***
4.5	93.1	34	4.1	98.8	na	na	***	92.5	26	4	99.0	na	na	***
5	96.2	32	4.8	101.3	na	na	***	93.2	34	5.4	102.1	na	na	***

Weight

Girls				Boys										
Age in years	Baka [°]			Ime ²⁴			Baka vs Ime	Baka [°]			Ime ²⁴			Baka vs Ime
	X	N	SD	X	N	SD		X	N	SD	X	N	SD	
0.25	5.28	265	0.87	5.08	na	na	***B	5.62	271	0.93	5.36	na	na	***B
0.5	6.46	209	0.92	6.26	na	na	***B	6.93	238	0.99	6.58	na	na	***B
0.75	7.20	194	1.04	6.85	na	na	***B	7.61	195	1.06	7.53	na	na	0.3128
1	8.01	243	1.1	7.89	na	na	0.0939	8.47	312	1.01	8.21	na	na	***B
1.5	8.87	268	1.16	9.25	na	na	***	9.47	264	1.15	9.53	na	na	0.4023
2	9.89	164	1.12	10.16	na	na	***	10.21	165	1.37	10.70	na	na	***
2.5	10.44	99	1.27	11.34	na	na	***	11.01	86	1.21	11.61	na	na	***
3	11.07	44	1.34	12.52	na	na	***	11.28	53	1.29	12.66	na	na	***
3.5	11.80	51	1.87	13.20	na	na	***	11.89	29	1.14	13.65	na	na	***
4	12.10	33	1.62	13.88	na	na	***	12.36	38	1.28	14.06	na	na	***
4.5	13.06	34	1.38	14.74	na	na	***	13.16	26	1.31	14.83	na	na	***
5	14.17	32	2.06	15.38	na	na	***	13.07	35	1.71	15.92	na	na	***

[°] this study

B = Baka values are higher.

*** = P < 0.001, ** = P < 0.01, * = P < 0.05 (t-test one sample).

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