

**An Early Pleistocene Human Pedal Phalanx from Swartkrans, SKX 16699,
and the Antiquity of the Human Lateral Forefoot**

**Une Phalange du Pied Humain du Pléistocène Inférieur de Swartkrans, SKX
16699, et l'Antiquité de l'Avant Pied Latéral Humain**

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Supporting Information

Table S1. Morphometric dimensions for Pliocene and Pleistocene hominin lateral (digits 2 to 5) proximal pedal phalanges, in millimeters and degrees.

Site/Locality	##	Side	Digit	Femur Head Diam. ¹	Inter-artic. Length ²	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle ³	Ref. ⁴
Burtele															
BRT-VP-2/	73e	rt	2		27.4	6.0	6.4	9.6	10.9			5.3	8.0	94°	1
BRT-VP-2/	73d	rt	4		26.5	5.2	5.3	8.6	10.3			5.4	7.9	91°	1
Australopith															
A.L. 288	1y			28.0	21.0	4.6	3.6	5.5	6.7			3.6	5.6		2,3
A.L. 333	22			37.4		6.3	6.7					5.7	8.4		4
A.L. 333	26			37.4	28.4	5.4	8.0	9.5	11.1			6.1	8.7	95°	4,5
A.L. 333	60	lt		37.4	26.1	4.8	6.2	10	10.9			6.0	8.2	90°	4,5
A.L. 333	71	rt		37.4	30.1	5.8	6.6	9.3	10.0			5.7	8.0	89°	4,5
A.L. 333	102	lt		37.4		5.7	6.8	10.2	10.6			5.7	9.3		4
A.L. 333	115g	lt	2	37.4	29.6	6.7	7.0	9.4	11.5			6.6	9.4		4
A.L. 333	115h	lt	3	37.4	30.9	6.1	8.0	10.6	13.6			5.7	9.0	99°	4,5
A.L. 333	115i	lt	4	37.4	30.6	6.1	7.8	10	11.7			6.0	9.0	96°	4,5
A.L. 333	115j	lt	5	37.4	26.8	6.0	6.0	8.9	10.1			5.4	8.9	90°	4,5
A.L. 333	145	rt	2	37.4	27.3	5.8	6.1	9.8	10.6			5.2	7.2	98°	6
A.L. 333	154	rt	4	37.4	25.3	5.2	5.4	8.9	9.9			5.3	6.8	97°	6
A.L. 333	167	lt	2	37.4	27.3	5.8	5.8	10.2	10.3			5.6	7.5	92°	6
A.L. 333	168	rt		37.4	30.3	5.4	6.2	9.8	10.7			5.6	7.6	98°	6
A.L. 333w	25			37.4		6.4	8.4	9.6	11.2						4
A.L. 333w	51			37.4		6.5	9.2	10.1	11.8						4
StW	355			33.2	23.4	5.4	6.1	8.0	9.1	6.2	7.1	4.9	6.8	96°	
DNH	117			32.2	22.2	4.9	6.6	9.2	10.3			5.1	7.5		7
SKX	16699				18.6	4.5	4.7	8.6	8.9	6.3	7.4	4.8	6.9	110°	

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
<i>Homo naledi</i>															
U.W. 101-	504			35.5	22.6	6.3	6.5	9.7					8.1	106°	8,9
U.W. 101-	725					5.1	5.8								8,9
U.W. 101-	976			35.5	20.8	5.3	5.9	9.9							8,9
U.W. 101-	1013			35.5	19.7	5.1	5.5	8.4				4.9	6.4	99°	8,9
U.W. 101-	1034			35.5	17.0	4.3	4.3					3.5	5.9		8,9
U.W. 101-	1148			35.5	18.9	5.5	4.9	8.9	7.9			4.5	6.3		8,9
U.W. 101-	1395			35.5	19.0	5.6	5.2	8.6	8.4			4.6	6.8	105°	8,9
U.W. 101-	1441			35.5	20.5	5.9	5.4	9.5	8.5			4.7	7.2	104°	8,9
U.W. 101-	1557											3.3	5.1		8,9
Late Archaic Humans															
Amud	1			51.5				13.6	12.5	10.4	12.1				
Amud	15	rt	2		26.8	7.3	7.2					6.6	10.7		
Amud	15	lt	3		26.0	6.8	6.7	12.1	13.0	11.0	11.7	6.5	10.4	96°	
Amud	15	rt	4		25.0	6.2	6.3	11.6	12.3	10.2	11.5	6.2	9.8		
Amud	15	rt	5		23.7	6.0	6.6						9.6		
Bordul Mare	1		5		25.0	6.3	8.4	11.8	14.0	9.7	12.8	6.2	11.4		10
La Chapelle-a-S	1	rt	3	52.4	25.0	7.4	9.5	12.8	14.0	10.0	11.9	7.6	11.0	98°	
La Chapelle-a-S	1	rt	5	52.4	22.8	6.1	7.7	11.7	13.8	9.5	10.8	7.7	12.2	112°	
Denisova	5		4		20.5	6.3	7.8	10.5	12.0	9.2	10.5	6.0		107°	11
La Ferrassie	1	rt	2	54.0	26.0	7.5	8.7	13.6	15.0	11.9	13	8.2	11.8	112°	
La Ferrassie	1	lt	3	54.0	24.8	7.3	8.1	14.3	15.0	12.8	12	6.5	12.1	113°	
La Ferrassie	1	rt	4	54.0	23.8	6.0	7.0	13.9	15.3	12.8	12.8	8.2	12.1	113°	
La Ferrassie	1	lt	4	54.0	24.2	7.7	8.9	15.5	15.2	13.4	13.3	8.3	11.8	114°	
La Ferrassie	2	rt	2	45.9	21.7	5.6	7.0		13.3		10.9	6.0	9.0		
La Ferrassie	2	rt	3	45.9	20.7		6.5	11.0	11.5	9.0	9.3	6.8	9.1		
La Ferrassie	2	rt	4	45.9	20.7	6.0	6.1	12.4		8.6	10.2	9.6	10		

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
Kiik-Koba	1	rt	2		26.2	6.7	8.9					7.1	11.7	112°	
Kiik-Koba	1	lt	2		26.5	7.9	9.6	13.5	16.0	11.0	13.5	7.3	12.1	102°	
Kiik-Koba	1	rt	3		25.0	7.8	8.0	13.1		11.0		7.5	11.3	114°	
Kiik-Koba	1	lt	3		24.8	7.8	8.6	13.6	15.1	11.3	11.4	7.7	11.7	110°	
Kiik-Koba	1	rt	4		24.3	6.4	8.1	12.5	14.9	10.7	11.6	7.1	10.9	110°	
Kiik-Koba	1	lt	4		23.5	6.9	8.0	12.4	14.7	11.1	12.0	7.5	11.0	109°	
Kiik-Koba	1	rt	5					11.2	14.6	10.0	10.7				
Kiik-Koba	1	lt	5		20.8	6.1	6.0	11.2	14.6	10.0	10.7	6.9	10.1	111°	
Krapina	251.1	lt	5		19.0	6.6	7.6	11.2	13.9	9.8	11.5	6.5	10.5	109°	
Krapina	253.1	rt	2		26.2	6.5	7.4	12.7		9.3	10.4	6.3	10.1	106°	
Krapina	253.2	rt	3		25.0	6.3	7.5	12.5	12.5	9.9	11.5	6.1	9.6	111°	
Krapina	253.4	lt	4		23.8	6.0	7.5	12.4	12.9	10.3	10.5	6.4	9.6	115°	
Krapina	253.5	lt	2		23.0	6.1	6.4	10.8	11.9	9.3	10.8	6.0	9.3	108°	
Krapina	253.6	lt	2		23.2	5.4	6.3	10.7	12.0	10.1	10.9	5.9		102°	
Krapina	253.7	lt	3		22.4	5.9	6.0	11.0	11.3	9.4	10.3	5.9	8.7	105°	
Krapina	253.8	lt	4		22.1	6.0	7.0	11.6	13.1	10.0	10.0	5.4	9.7	114°	
Krapina	253.9		3			5.5	6.2	10.8		9.4				112°	
Krapina	253.1	rt	5		18.8	5.2	6.1	10.3	13.8	8.8	10.5	5.9	9.2	115°	
Krapina	253.11	rt	4		19.7	5.0	5.7	10.0	12.8	8.8	9.6	5.3	8.9	113°	
Krapina	253.12	rt	5		21.6	5.1	5.9	10.8	11.8	9.3	9.5	6.4	8.8	110°	
Krapina	253.13	lt	5		19.7	4.8	5.9	10.0	11.3	8.7	9.8	5.6	8.4	108°	
Krapina	253.14	lt	2		21.0	5.1	5.4	10.5	10.6	9.5	9.6	5.2	7.5	106°	
Krapina	253.15	lt	5		19.1	5.1	5.4	9.7	11.4	8.5	9.3	5.1		108°	
Krapina	253.16	rt	3		22.0	4.9	5.5	10.2	11.8	9.0	9.9	6.0	8.5	109°	
Krapina	253.17	rt	2			5.3	5.8					5.3	8.3		
Krapina	253.18	lt	2			6.7	7.4					6.1	10.4		

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Palomas	92	lt	2	44.2	24.4	6.1	7.1	10.6	11.6			6.0	8.9		
Palomas	92	lt	3	44.2	21.6	5.9	6.8						9.0		
Palomas	92	lt	4	44.2	20.1		7.0						9.2		
Palomas	92	lt	5	44.2	19.0	5.5	6.8	10.4		9.3	8.8	6.4	9.7		
Regourdou	1	rt	2	45.9	22.0	7.3	8.9	12.2	14.4	10.8	12.1	7.7	11.8	112°	
Regourdou	1		2	45.9	21.5	7.3	8.6	11.9	13.9	10.3	12	7.7	11.4	109°	
Regourdou	1		3	45.9	20.5	6.6	8.1	12.4	13.2	10.0	10.4			114°	
Regourdou	2		2		23.3	6.0	7.7	11.9	12.8	10.6	11.4	6.4	10.0	105°	
Shanidar	3	rt	2		26.5	7.6	9.3	14.3	15.3	12.3	13.6			110°	
Shanidar	4	lt	2	49.2	25.0	8.1	8.7	13.2	15.4	11.3	13.0	7.0	11.0		
Shanidar	4	rt	3	49.2	23.2	8.5	8.6	13.4	13.8	11.0	12.7	8.4	10.7		
Shanidar	4	lt	3	49.2	23.3	7.8	8.2	13.0	13.3	11.4	12.2	7.3	10.7		
Shanidar	4	rt	4	49.2	22.5	7.6	8.2	12.4	14.0	9.9	12.2	7.5	10.3		
Shanidar	4	rt	5	49.2	17.6	6.4	8.0	10.9	13.1	9.1	10.5	7.5	9.9		
Shanidar	4	lt	5	49.2		6.2	7.2					6.9	9.6		
Shanidar	8	rt	2		23.0	6.6	8.1	11.3	12.9	9.7	11.5	5.9	9.9		
Shanidar	8	lt	3		21.1	6.6	8.1	11.7	13.3	9.9	11.2	6.9			
Shanidar	8	rt	5		17.2	5.4	6.0	9.8	12.4	8.7	9.3	6.1	8.9		
Subalyuk	1		2		21.6	5.8	6.9	11.6	12.6	9.4	10.9			103°	
Tabun	1	rt	2	44.5	20.0	6.1	7.0	11.4	12.4	10.7	11.4	6.0	9.1	108°	
Tabun	1	rt	3	44.5	18.5	5.6	6.5	10.4	12.2	9.4	10.4	6.6	9.8	111°	
Tabun	1	rt	4	44.5		5.6	6.2	10.8	10.8	9.9	9.2			102°	

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
Mid. Paleol.															
Mod. Humans															
Qafzeh	6	lt	2		25.5	7.7	7.9	13.1	13.5	11.6		7.8		109°	
Qafzeh	6	lt	3		24.0	7.7	8.3					6.9	10.2		
Qafzeh	6	lt	4		22.5	7.0	7.9					7.3	10.5		
Qafzeh	8	rt	2		29.2	8.4	8.5	12.7	14.8	11.5	13.9	9.0	11.6	110°	
Qafzeh	8	lt	2		29.3	8.1	8.5	12.5	14.0	12.0	12.9	7.3	11.3	103°	
Qafzeh	8	rt	3		27.3	7.6	8.0	12.2	13.4	10.8	12.5	6.9	10.6	110°	
Qafzeh	8	lt	3		27.4	7.8	8.2	12.4	13.3	10.9	12.4	7.0	10.3	104°	
Qafzeh	8	rt	4		25.7	7.3	7.6	11.5	13.0	10.6	12.5	6.4	9.4	106°	
Qafzeh	8	lt	4		25.6	7.2	8.2	11.7	13.3	10.6	11.4	6.3	9.9	100°	
Qafzeh	8	rt	5		23.7	6.4	7.6	11.3	13.0	9.8	10.9	6.5	9.1	107°	
Qafzeh	8	lt	5		23.9	6.5	7.9	11.3	12.7	10.5	10.9	6.2	9.3	102°	
Qafzeh	9	rt	2	44.5	28.5	7.1	8.0	12.4	13.6	11.7	12.3	6.5	9.7	103°	
Qafzeh	9	lt	2	44.5	29.0	7.0	7.6	12.2	12.9	9.6	11.4	6.3	9.5		
Qafzeh	9	rt	3	44.5	26.2	6.6	6.9	11.7	12.6	10.1	10.5	6.2	9.4	103°	
Qafzeh	9	lt	3	44.5	25.9	6.3	6.7	10.9	12.0	9.6	11.3	6.3	9.2	106°	
Qafzeh	9	rt	4	44.5	24.7	6.2	6.9					6.0	8.9		
Qafzeh	9	lt	4	44.5	24.3	6.5	6.0	11.1	12.0	9.8	10.1	5.8		108°	
Qafzeh	9	lt	5	44.5	23.0	6.2	6.7	10.5	11.8	9.4	11.2	5.7	8.4		
Skhul	4	rt	2	47.3	26.7	8.2		13.0	14.0			7.2	10.1		12
Skhul	4	lt	2	47.3	28.4	8.0	7.5	13.0	15.0	10.0	13.0	7.0	11.0		12
Skhul	4	lt	3	47.3	26.8	7.0	8.0	12.0	13.2	10.0	11.0	7.0	10.0		12
Skhul	4	lt	4	47.3	25.0	6.2	7.0	11.5	13.0	10.0	11.0	6.0	9.0		12

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
Upper Paleolithic															
Barma Grande	2		2	52.4	27.5	7.2	7.7								13
Barma Grande	2		3	52.4	24.3	7.2	7.3								13
Barma Grande	2		4	52.4	26.6	6.8	7.6								13
Cisterna	6		4		23.0	5.5	5.8					5.9	8.8		
Continenza	1	rt	2	47.0	24.8	6.3	6.7								13
Continenza	1	rt	3	47.0	24.7	6.5	6.3								13
Continenza	1	lt	3	47.0	23.9	6.8	7.0								13
Continenza	1	rt	4	47.0	20.4	5.4	5.0								13
Continenza	1	lt	4	47.0	21.9	5.8	5.4								13
Continenza	1	rt	5	47.0	18.9	4.7	6.2								13
Continenza	6	rt	2	47.0	27.1	6.6	7.7								13
Continenza	6	lt	2	47.0	27.0	6.4	6.8								13
Continenza	6	rt	3	47.0	24.4	5.7	6.2								13
Continenza	6	rt	4	47.0	23.6	5.1	6.1								13
Continenza	6	rt	5	47.0	16.1	4.6	4.2								13
Dolní Věstonice	3	lt	2	40.5				8.0	9.8	5.8	6.8				
Dolní Věstonice	3	lt	3	40.5	23.4	5.2	5.1					5.5	8.6		
Dolní Věstonice	15	rt	2	46.9	24.1	5.6	4.6	9.4	10.3	8.6	10.2	5.5	7.9	106°	
Dolní Věstonice	15	rt	3	46.9	23.0	5.2	4.2	9.8	10.1	9.1	9.8	5.3	7.7	102°	
Dolní Věstonice	15	rt?	5	46.9	20.4	5.0	5.0				8.4		7.8	107°	
Dolní Věstonice	16	rt	2	50.5	28.4	7.0	6.2					6.3	9.4		
Dolní Věstonice	16	rt	4	50.5	25.2	6.1	5.9	11.1	11.3	9.8	9.8	5.8	8.3	107°	
Dolní Věstonice	16	rt	5	50.5				10.6	12.5	8.3	10.1			115°	
En-Gev	1	--	2			5.9	6.0	10.3	11.4	9.0	9.9				

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
Ohalo	2	rt	2	49.0	27.1	7.1	6.9		13.1		11.9	6.2	9.4		
Ohalo	2	rt	3	49.0	26.0	7.3	6.9	11.4	12.8	10.2	11.5	6.2	9.7	101°	
Ohalo	2	lt	3	49.0	25.6	6.5	6.8	11.2	12.2	10.5	11.4	5.7	9.0	101°	
Ohalo	2	lt	4	49.0	25.8	6.2	6.0	10.5	11.8	8.9	10.5	5.2	8.6	94°	
Ohalo	2	lt	5	49.0	22.0	5.2	6.8	10.6	12.9	8.7	10.5	6.5	9.7	107°	
Ohalo	AD87	rt	3		24.2	5.7	6.1	10.9	12.1	10.2	10.9	5.4	8.8	105°	
Paglicci	25	rt	2	43.3	25.3	6.7	6.1								13
Paglicci	25	lt	2	43.3	25.7	6.4	6.7								13
Paglicci	25	rt	3	43.3	23.4	5.5	6.0								13
Paglicci	25	lt	3	43.3	23.3	5.7	5.3								13
Paglicci	25	rt	4	43.3	21.3	5.4	5.9								13
Paglicci	25	lt	4	43.3	21.6	6.5	5.8								13
Paglicci	25	rt	5	43.3	21.4	5.4	5.1								13
Paglicci	25	lt	5	43.3	21.8	5.5	5.2								13
Pataud	1	rt	2	42.2	25.1	6.3	6.0	11.0	11.1	10.4	10.6	6.2	8.9		
Pataud	1	lt	2	42.2	24.9	6.0	5.9	11.0	10.9	9.8	10	6.2	9.3		
Pataud	1	rt	3	42.2	22.5	5.6	5.3	10.3	10.2	9.5	9.0	5.9	8.5		
Pataud	1	lt	3	42.2	22.2	5.3	5.4	10.1		9.4		5.7	8.1		
Pataud	1	rt	4	42.2	21.4	5.6	5.3	9.7	9.9	8.8	8.8	5.7	8.2		
Pataud	1	lt	4	42.2	21.6	5.5	5.3	9.7	9.8	9.0	8.9	5.6	8.1		
Pataud	1	rt	5	42.2	21.1	5.3	6.2	9.8	10.6	9.0	9.7	6.9	9.2		
Pataud	1	lt	5	42.2	20.7	5.4	6.1	9.8	10.5	8.9	9.1	6.9	9.0		
Předmostí	3	rt	2	48.0	28.0	7.5	8.0	12.0		14.0		7.0	11.0		14
Předmostí	3	lt	2	48.0	27.5	7.0	7.0	12.0		14.0		6.5	11.0		14
Předmostí	3	rt	3	48.0	24.0	6.0	7.0	11.0		12.0		6.0	9.0		14
Předmostí	3	lt	3	48.0	23.1	6.0	7.0	11.0		12.0		6.0	9.5		14
Předmostí	3	rt	4	48.0	24.0	5.5	6.0	10.5		12.0		6.0	9.0		14
Předmostí	3	lt	4	48.0	24.0	6.0	6.0	11.0		11.0		5.5	9.0		14

Site/Locality	##	Side	Digit	Femur Head Diam.	Inter-artic. Length	Mid-Shaft Height	Mid-Shaft Br.	Prox. Max. Ht.	Prox. Max. Br.	Prox. Artic. Height	Prox. Artic. Br.	Distal Height	Distal Max. Br.	Artic. Angle	Ref.
Předmostí	3	rt	5	48.0	22.4	5.5	6.0	10.0		11.0		5.0	8.0		14
Předmostí	3	lt	5	48.0	22.4	5.5	6.0	10.5		10.5		5.5	8.5		14
Předmostí	4		2	47.5	19.1										14
Předmostí	4		4	47.5	17.6										14
Předmostí	14		2	46.5	23.8										14
Sunghir	1	rt	2	50.9	28.6	6.2	6.4	11.6		10.1		6.8	9.6		
Sunghir	1	rt	3	50.9	27.0	5.3	5.6	11.0	11.8	9.9	10.4	6.3	8.4		
Sunghir	1	lt	3	50.9	26.8	6.0	5.8	11.1		9.6		6.3	8.5		
Sunghir	1	rt	4	50.9	25.3	5.1	5.0	10.5	11.5	9.8	10.0	6.1	8.1		
Sunghir	1	lt	4	50.9	25.2	5.1	5.5	10.3	11.4	8.9	10.2	5.7	8.1		
Sunghir	1	rt	5	50.9	23.6	5.7	5.8	10.8	12.6	9.5	10.9	7.0	9.5		
Sunghir	1	lt	5	50.9	23.3	5.8	6.7	10.6	12.7	9.3	11.1	6.7	9.3		
Tianyuan	1	rt?	2	53.8	29.2	6.9	6.6	12.9	13.7	11.8	11.8	7.0	10.4	108°	
Tianyuan	1	rt?	5	53.8	21.4	5.2	7.1	10.9	12.8	9.7	10.0	6.7	9.0	104°	
Veneri	1	lt	2	50.1	31.2	6.9	7.2								13
Veneri	1	rt	3	50.1	27.3	6.3	6.7								13
Veneri	1	lt	3	50.1	27.7	6.2	5.7								13
Veneri	1	rt	4	50.1	26.3	5.8	6.0								13
Veneri	1	lt	4	50.1	24.8	5.2	6.2								13
Veneri	1	rt	5	50.1	23.7	4.9	5.6								13
Veneri	2	rt	2	48.8	31.7	6.4									13
Veneri	2	lt	2	48.8	31.3	6.5									13
Veneri	2	rt	3	48.8	25.1	6.3									13
Veneri	2	lt	3	48.8	27.3	6.3									13
Veneri	2	rt	4	48.8	25.9	6.5									13
Veneri	2	lt	4	48.8	28.0	5.7									13
Veneri	2	rt	5	48.8	25.0	6.6									13
Veneri	2	lt	5	48.8	23.5	5.3									13

Notes to Table S1

- ¹ Femoral head diameter. For the *Au. afarensis* phalanges other than A.L. 288-1, the mean head diameter of 37.4 (\pm 4.1) mm from A.L. 152-2, 333-3 and 827-1 is provided. For StW 355, the average *Au. africanus* of 33.2 mm (\pm 2.4 mm, n = 7) is employed. For DNH-117 a *P. robustus* mean of 32.2 mm (\pm 3.3 mm, n = 6) is used. For the *H. naledi* phalanges the mean of the two Dinaledi femoral heads is employed. The individual Pliocene and early Pleistocene femoral head diameters are provided in Table S2. For Late Pleistocene specimens, the available head diameter or the average of the right and left ones is provided; values are not employed for phalanges unassociated with femoral head diameters in these samples.
- ² For those specimens for which only maximum length is available, articular length was estimated from the maximum length using least squares regressions. For the BRT-VP-2/73, A.L. 333-145, 333-154, 333-167 and 333-168, and *H. naledi* phalanges, articular length was estimated using the australopith proximal lateral phalanges for which both measurements are available (ArtLen = $0.904 \times \text{MaxLen} + 0.53$, $r^2 = 0.991$, n = 10). For the Skhul 4 and Předmostí phalanges, articular length was estimated using samples of recent human proximal phalanges by digit (PP2: ArtLen = $0.935 \times \text{MaxLen} - 1.49$, $r^2 = 0.996$, n = 76; PP3: ArtLen = $0.926 \times \text{MaxLen} - 1.01$, $r^2 = 0.961$, n = 74; PP4: ArtLen = $0.924 \times \text{Max Len} - 0.93$, $r^2 = 0.948$, n = 75).
- ³ The articular axis is the angle, in the midline parasagittal plane of the phalanx, between the tangent to the metatarsal facet and the interarticular axis of the phalanx; a proximodorsal orientation of the facet provides an angle $>90^\circ$ (Fig. S1). For those specimens for which only the ‘dorsal canting’ angle (the facet tangent relative to the tangent to the plantar surface) is available, the Burtele, *Au. afarensis* and *H. naledi* phalanges, the angle has been adjusted by subtracting the angle between the plantar tangent and the interarticular axis in lateral view from the provided ‘dorsal canting’ angle.
- ⁴ Unless otherwise indicated, the data are from the personal research of the authors on the original fossil remains. 1: Hailie-Selassie et al. (2012); 2: Johanson et al. (1982); 3: White and Suwa (1987); 4: Latimer et al. (1982); 5: Duncan et al. (1994); 6: Ward et al. (2012); 7: Vernon (2013); 8: Harcourt-Smith et al. (2015); 9: Marchi et al. (n.d.); 10: von Gaál (1928); 11: Mednikova (2011); 12: McCown and Keith (1939); 13: F. Mallegni, personal communication; 14: Matiegka (1938). Some of the Late Pleistocene data have been tabulated in Trinkaus (1983, 2016), Sládek et al. (2000), Shang and Trinkaus (2010), Trinkaus et al. (2011, 2014, n.d.); the remainder are previously unpublished.

Figure S1. Angle measurements for lateral pedal proximal phalanges, superimposed on the mid-sagittal section of the SKX 16699 pedal phalanx.

- A: the interarticular axis of the phalanx, from the dorsoplantar middle of the metatarsal facet to the most distal point on the middle of the distal trochlea (the length of the axis on the bone is the interarticular length).
 - B: the mid-sagittal tangent to the proximal (metatarsal) articular facet, across the dorsal and plantar margins of the facet.
 - C: the plantar plane of the phalanx, tangent to the plantar distal trochlea and the proximal plantar tubercles.
 - a: the ‘articular angle’ between the interarticular axis (A) and the proximal facet tangent (B), in the parasagittal plane.
 - b: the angle between the interarticular axis (A) and the plantar plane of the phalanx (C).
 - c: the ‘dorsal canting angle’ between the plantar plane (C) and the proximal facet tangent (B).
- Note that $a = c - b$.

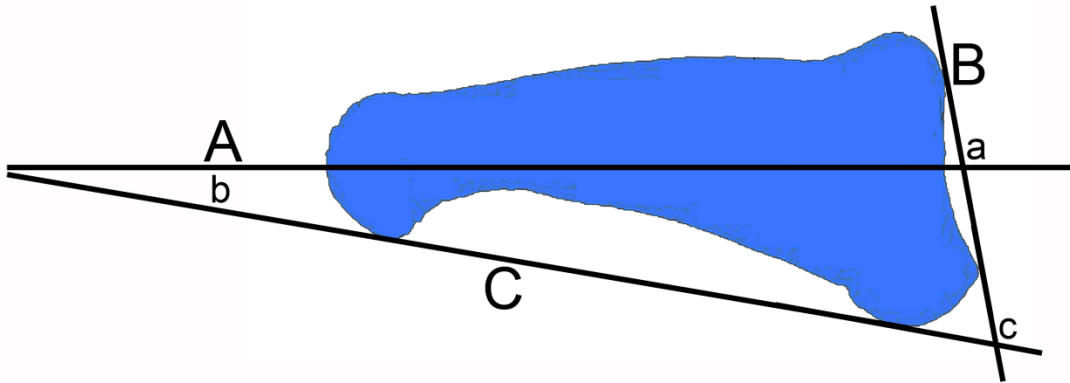


Table S2. Individual Pliocene and Early Pleistocene femoral head diameters, from Ward et al. (2012) for *Au. afarensis*, Marchi et al. (n.d.) for *H. naledi*, and Ruff (2010) for the other specimens. Note that some of the femoral head diameters were estimated from acetabular height by Ruff (2010), as indicated by an *.

	Femur Head Diameter (mm)
<i>Australopithecus afarensis</i>	
A.L. 152-2	32.9
A.L. 288-1	28.0
A.L. 333-3	41.0
A.L. 827-1	38.2
<i>Australopithecus africanus</i>	
Sts 14	30.8*
StW 311	36.4
StW 392	31.5
StW 431	36.4*
StW 501	33.0
StW 522	31.0
StW 527	33.0
<i>Paranthropus robustus</i>	
SK 50	31.7*
SK 82	34.2
SK 97	37.2
SK 3121	28.8
SK 3155	30.5*
SKW 19	30.7
<i>Homo naledi</i>	
U.W. 101-271	35.8
U.W. 101-1300	35.2
Early <i>Homo</i>	
Dmanisi D4167	40.2
KNM-ER 1472	40.0
KNM-ER 1481	44.0
KNM-ER 3228	46.8*

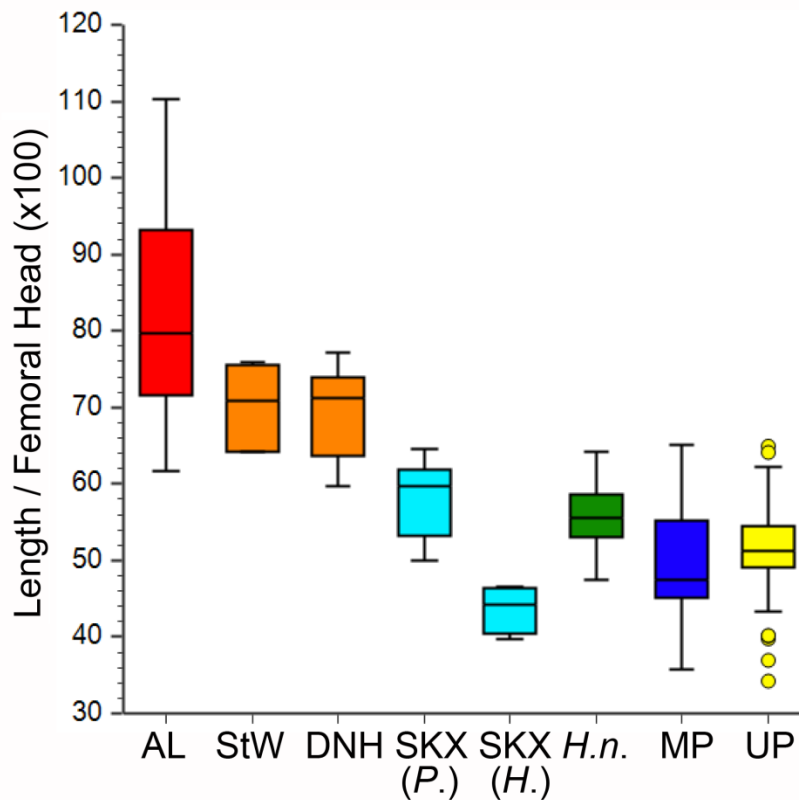
Figure S2. Box plot of distributions of phalanx interarticular length / femoral head diameter indices for Pliocene and Pleistocene hominin pedal phalanges.

For the sample-specific distributions, each Pliocene or Early Pleistocene phalanx interarticular length is divided by all of the individual femoral head diameters for the sample. For each Pliocene / Early Pleistocene phalanx, therefore, there is a range of values as each phalanx length is divided by all of the femoral head diameters available for that sample. Similarly, for SKX 16699 there are two ranges of values, as its interarticular length is first divided by the femoral head diameters available for *P. robustus* and then by those available for early *Homo*.

The Late Pleistocene (MP and UP) indices only include specimens with associated phalanges and femoral head diameters in partial skeletons.

AL: Hadar *Au. afarensis*; StW: StW 355 *Au. africanus*; DNH: DNH 117 *P. robustus*; SKX (*P.*): SKX 16699 using *P. robustus* femoral head diameters; SKX (*H.*): SKX 16699 using early *Homo* femoral head diameters; *H.n.*: *H. naledi*; MP: Middle Paleolithic humans; UP: Upper Paleolithic humans.

Comparative sample repeated measure ANOVA $p < 0.0001$.



Supporting Information References

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