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Length estimate for KNM-ER 736, a hominid femur from the Lower Pleistocene of East Africa

Our knowledge concerning stature in early *Homo is* scanty. In this paper, based on comparison with the fossil femur KNM-ER 999, an estimate of 482 mm femur length is derived for KNM-ER 736, the latter dating from the Lower Pleistocene. From comparison with other fossil and modern femora, KNM-ER 736 appears to be the longest hominid femur so far recovered from a site of Early Pleistocene age. Moreover, the estimated femur length is higher than the published mean values of most modern populations. Provided that trunk and head proportions were not radically different from modern *H. sapiens*, the finding would suggest that a stature similar to that of modern man was already reached by East African *Homo* as early as about 1.6 Myr before present.

Key words: Femur length, Stature, *Homo*, Lower Pleistocene, Hominid, KNM-ER 736, East Africa

Introduction

Virtually all widely accepted evidence of modern man, *Homo sapiens*, has been found at sites less than 100,000 years old, and the vast majority of this evidence is less than 50,000 years old (WOOD, 1978). From older sites, only a few hominid femora are known which are complete enough that their length can be measured or estimated with some accuracy (e.g. DAY, 1971, 1978; KENNEDY, 1983; LOVEJOY & HEIPLE, 1970; WALKER, 1973). The femur is the longest bone in the human body and shows one of the closest correlations to stature in modern man (DUPERTUIS & HADDEN, 1951; ELIAKIS *et al.*, 1966; GENOVÉS, 1967; LORKE *et al.*, 1953; OLIYIER, 1963; PEARSON, 1899; TROTTER & GLESER, 1952, 1958). Knowledge about femoral length in fossil hominids would be helpful in reconstructing the evolution of hominid stature.

Among early representatives of the genus *Homo*, two species are widely accepted at present: *Homo habilis* and *H. erectus.* There are unfortunately no good data on body size of the former (Wood, 1978), as only few long bones are securely attributed to *H. habilis*. On the other hand, various authors differ markedly in their stature estimates for the latter, some preferring rather low average statures of 1.60 m or smaller (e.g. FEUSTEL, 1983, p. 84 and 91; PILBEAM, 1972, p. 163), whereas others think that *H. erectus* reached a stature of 1.83 m and was taller than most populations of modern *H. sapiens* (LEWIN, 1984). On the whole, our knowledge about the stature of early *Homo is* scanty.

The shaft of a massive left femur, KNM-ER 736, was found at the Koobi Fora region to the east of Lake Turkana, Kenya (LEAKEY, 1971; LEAKEY*et al.*, 1972). The fossil is a surface finding and was recovered from the Upper Member of the Koobi Fora Formation, 2-4 m below the projected level of the base of the Koobi Fora Tuff (LEAKEY *et al.*, 1978), for which an apparent K-Ar date of 1’57 ± 0.00 myr was reported (FITCH & MILLER, 1976; FITCH *et al.*, 1974). Although MCDOUGALL (1985) presented objections against the reliability of the date, it fits well with the results of more recent investigations: MCDOUGALL *et al.*, (1985) reported an age of 1.64 ±0.03 Myr for one tuff of the Okote Tuff

Complex and suggested that it can be regarded s providing an approximate guide to the age of the Koobi Fora Tuff Complex. BROWN & FEIBEL (1985) concluded, that «the Okote Tuff Complex and the Koobi Fora Tuff Complex as a whole probably lie within the interval between 1.5 and 1.7 Myr». (BROWN & FEIBEL, 1985, p. 797). The KNM-ER 736 fossil was first tentatively assigned to *Australopithecus* by LEAKEY *et al.* (1972), but the shaft has a low minimum breadth and external and internal shaft diameters that multivariate analysis shows to have affinities with *Homo* (KENNEDY, 1973, cit. in DAY, 1976). DAY (1976, 1978) feels that the specimen should be attributed to the genus *Homo*. The total length of this bone has been estimated only «by inspection»: MCHENRY (1974) felt that the length «could be as great as 54 cm or even larger, but it is difficult to tell because of the fossil's unique proportions» (MCHENRY, 1974, p. 334).

A second massive left femur, KNM-ER 999, also found in the Koobi Fora region, is much more completely preserved (DAY & LEAKEY, 1974). The fossil was recovered from the Guomde Formation (DAY, 1977; LEAKEY *et al*., 1978) which unconformably overlies the Koobi Fora Formation. The Silbo Tuff which lies within the Guomde Formation has been dated at 0.74 ±0.01 Myr (McDougall, 1985). Like KNM-ER 736, this femur does not appear to have clear australopithecine features (DAY, 1978), and it has been concluded that it should be attributed to *Homo* sp. indet. (DAY & LEAKEY, 1974; DAY, 1976, 1978). The fossil was assigned to *H. erectus* by WOLPOFF (1980, p. 199f), but the evidence for this attribution remains to be demonstrated.

Affinities between the two femora KNM-ER 736 and 999 have been noticed before by DAY (1976, 1978), who reported that both specimens show «medially placed lesser trochanters, similar gluteal markings, gradually widening shaft contours, and anterior convexities» (DAY, 1976, p. 513).

In this paper, I argue that from the femur KNM-ER 999, a tentative length estimate can be derived for the femur KNM-ER 736, thought to date from the Early Pleistocene. The finding will be compared with known data from other Early Pleistocene hominids, and some implications for the stature of these hominids will be considered.

Materials and Methods

KNM-ER 736 and 999 were described in anatomical detail by LEAKEY *et al*. (1972), and by DAY & LEAKEY (1974), respectively. Short descriptions of these fossils and an introduction to their context can also be found in LEAKEY (1971), DAY (1977), and LEAKEY *et al.* (1978). However, comprehensive analysis of the Koobi Fora remains (with regard to taxonomy, functional studies, and comparisons with other material) has not yet been accomplished.

In this study, fiberglass casts of KNM-ER 736 and 999, as available from the Department of Paleontology, National Museum of Kenya, were examined. Eight linear measurements, published by LEAKEY *et al.* (1972, 1978) and DAY & LEAKEY (1974) were repeated on the casts. The differences between measurements on the casts and those on the original fossils were less than 1%.

Only the maximum or greatest length of the femur (Ma 1), as described by MARTIN (1928, p. 1037), was used in the present study. As the lateral condyle is not preserved in either of the two fossils, the total or bicondylar length (Ma 2) could not be determined, and no attempt was made to estimate it from maximum length (Ma 1), although, for instance, BREITINGER (1937, p. 266) felt that the difference between the two length measurements could be neglected in modern man.

Several regression formulae, recurrent in anthropological and medicolegal literature, are available for estimation of stature from long bones. Some of these use bicondylar or total length of the femur instead of maximum length (ELIAKIS *et al*., 1966; OLIVIER, 1963, 1976a,b; OLIVIER & TISSIER, 1975a,b; OLIVIER *et al*., 1978); these formulae were not used in the present study. Thus, 29 regression formulae were applied on femoral length. Most of these equations yield living stature, but some give corpse length (DUPERTUIS & HADDEN, 1951; GENOVÉS, 1967; STEVENSON, 1929; TELKKÄ, 1950). From the latter estimates, as recommended by TROTTER and GLESER (1952, p. 492), 2.5 cm were subtracted for comparison.

As the Pleistocene fossils examined here do not, naturally, belong to any of the populations from which the equations were derived, a standard error of unknown size must be expected (see e.g. KEEN, 1953; TROTTER & GLESER, 1958; WELLS, 1959). In view of the very limited applicability of these formulae on fossil hominids (see also GEISSMANN, 1986), the stature estimates do not represent the exact stature of the two individuals under examination here. They enable us, however, to assess these individuals' stature in terms of somewhat larger orders of magnitude, that is, to undertake an attribution to such classes as 'short', 'average' and 'tall' stature which have been proposed for modern human populations (WELLS, 1963).

Results

KNM-ER 999 consists of several fragments. There are bony contacts between the pieces A, B, and C (LEAKEY *et al*., 1978). Together, these pieces constitute most parts of the femur, except for the distal end and parts of the head, neck, greater trochanter, and lower shaft. Only the distal part of the femur is missing to make maximum length determination possible.

Although an incomplete medial condyle (piece D) is preserved, it cannot be fitted to the rest of the femur (LEAKEY *et al*., 1978). On the posterior side of the femoral shaft, the bone is broken across just distal to the *labium mediale* reaching the shaft's medial border. On the basis of comparison with recent hominid femora of similar robusticity (as judged by the smallest transverse shaft diameter) I estimate that the break occurred not more than 30 mm proximal to the lateral condyle. If, therefore, the preserved medial condyle is experimentally attached to the distal shaft despite the lack of a bony contact, a minimum estimate for maximum length can be gained, with only a small piece of connective bone missing. Thus, a minimum estimate of 482 mm was determined.

The femur KNM-ER 736 preserves most of its shaft and is very similar in robusticity to the previous specimen (see *Figure 1*). The shaft is platymeric above the start of the femoral crest (LEAKEY *et al*., 1972) and thus flatter in this part than KNM-ER 999: Whereas the transverse diameter below the lesser trochanter is almost identical in both femora (40.0 mm for KNM-ER 736, and 40.7 mm for KNM-ER 999), subtrochanteric anteroposterior diameter of the shaft is only 30.0 mm for KNM-ER 736 and 34.8 mm for KNM-ER 999 (data in LEAKEY *et al*., 1978).

More distal on the shaft, the proportions remain similar in the two bones: for KNM-ER 999, DAY & LEAKEY (1974) report a midshaft anteroposterior diameter of 37.5 mm, and a transverse diameter of 34.4 mm (not 24.4, as erroneously listed by LEAKEY *et al*., 1978, p. 180). For comparison, I measured these diameters on a corresponding point (that is about 167 mm below the lesser trochanter) in a cast of KNM-ER 736, and obtained diameters of 33.2 mm and 36.1 mm, respectively. Still further distally, at about 20.6 mm

Figure 1 - Casts of (a) KNM-ER 736 and (b) KNM-ER 999, with the lateral condyle (piece D) attached to the shaft, although no bony contact exists.

below the lesser trochanter, I obtained anteroposterior and transverse diameters of 34.0 mm and 35.1 mm for KNM-ER 736, and of 37.5 and 34.0 mm for KNM-ER 999. Whereas the transverse diameters are very similar in the two bones, the anteroposterior diameters seem to be smaller in KNM-ER 736. This is, however, due to a more medially situated linea aspera in this specimen. If maximum diameter is used instead of anteropostenor diameter, I once more obtain very similar values for KNM-ER 736 and 999: 37.6 mm and 38.4 mm, respectively, at midshaft, and 38.6 mm and 37.8 mm, respectively, at about 20.6 mm below the lesser trochanter.

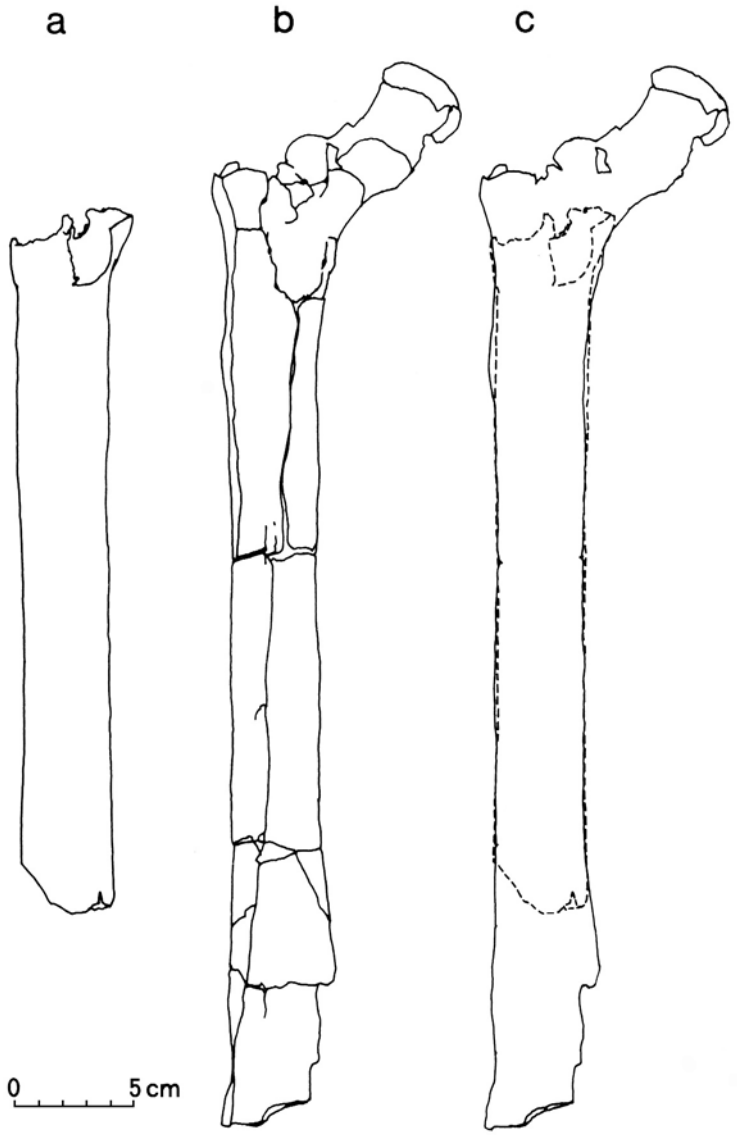

Figure 2 - Transverse profiles of the fossil left femora KNM-ER 736, KNM-ER 999, and superposition of the two. Profiles are traced from LEAKEY *et al.* (1978).
a) KNM-ER 736, posterior
b) KNM-ER 999, posterior
c) KNM-ER 736 and 999, in superposition.

Moreover, transverse profiles of both fossils in superposition reveal a striking similarity and indeed, are almost identical (Figure 2).

I therefore suggest that the length estimate obtained on a minimum basis from the KNM-ER 999 femur is a reasonable minimum estimate for the KNM-ER 736 specimen as well.

Several regression equations for estimation of stature from femur length have been used in this study. They are listed in *Table 1*, together with the stature estimates obtained for KNM-ER 736 and 999. These estimates range from 1.64 to 1.77 m.

TABLE 1 - *Estimates for living stature in modern human populations based on a femoral length (Ma 1) of 48.2 cm. For those formulae giving corpse length instead of living stature, a correction of 2.5 cm was made (see section on material and methods).*

Author	Sample [1]		Formula [2]	Stature estimate (cm)
BACH, 1965	Mid.Europ.	F	1.313Fe + 106.69	170.0
BOLDSEN, 1984	Danish	M	2.519Fe + 52.85	174.3
		F	2.528Fe + 50.76	172.6
BREITINGER, 1937	German	M	1.645Fe + 94.31	173.6
DUPERTUIS & HADDEN, 1951	US-White	M	2.116Fe + 77.048-2.5	176.5
		F	2.322Fe + 62.872-2.5	172.3
	US-Black	M	2.540Fe + 55.021-2.5	174.9
		F	2.498Fe + 54.235-2.5	172.1
	Gen. Form.	M	2.238Fe + 69.089-2.5	174.5
		F	2.317Fe + 61.412-2.5	170.6
GENOVÉS, 1967	Mesoamerican	M	2.26Fe + 66.379-2.5	172.8
		F	2.59Fe + 49.742-2.5	172.1
LORKE *et al*., 1953	W-Europ.	M	2.358Fe + 61.34	175.0
PEARSON, 1899	French	M	1.880Fe + 81.306	171.9
		F	1.945Fe + 72.844	166.6
RÖSING, 1983	Calcutta	M	1.987Fe + 78.00	173.8
		F	1.619Fe + 86.02	164.1
STEVENSON, 1929	N-Chinese	M	2.4378Fe + 61.7207–2.5	176.7
TELKKÄ, 1950	Finnish	M	2.1(Fe–45.5) +169.4–2.5	172.6
		F	1.8(Fe–41.8) + 156.8–2.5	165.8
TROTTER & GLESER, 1952	US-White	M	2.38Fe + 61.41	176.1
		F	2.47Fe + 54.10	173.2
	US-Black	M	2.11Fe + 70.35	172.1
		F	2.28Fe + 59.76	169.7
TROTTER & GLESER, 1958	US-White	M	2.32Fe + 65.53	177.4
	US-Black	M	2.l0Fe + 72.22	173.4
	Mongoloid	M	2.l5Fe + 72.57	176.2
	Mexican	M	2.44Fe + 58.67	176.3
	Puerto Rican	M	2.l0Fe + 72.61	173.8
Mean				172.8
Range				164.1-177.4

[1] M = Male; F = Female.
[2] Fe = Femur length in cm.

Discussion

On a minimum basis the maximal length of KNM-ER 999 was estimated as 482 mm. Morphological affinities between KNM-ER 999 and 736 have already been reported by DAY (1976, 1978). My comparison of the two specimens revealed additional similarities in their dimensions to an extent that an application of the length estimate obtained for KNM-ER 999 to KNM-ER 736 seems reasonable. Although it has been speculated that the length of the latter specimen «could be as great as 54 cm or even larger» (MCHENRY, 1974, p. 334), I would from comparison of both fossils with modern femora of similar robusticity - prefer a more conservative estimate.

KNM-ER 736, thought to date from around 1.5 to 1.7 Myr, with an estimated length of 482 mm is probably the longest hominid femur recovered from a site of Early Pleistocene age. All possibly longer specimens of which I am aware date from the Middle Pleistocene or younger, e.g. the left femur E.689 from Kabwe (Broken Hill) or the Trinil femur II (see *Table 2).*

Dating of the Kabwe hominid remains is rather uncertain (DAY, 1977; JELINEK, 1978), but in some recent reviews a Middle Pleistocene age seems to be favoured (PARTRIDGE, 1982; VRBA, 1982).

The dating of the Trinil remains is likewise uncertain. As a result of their investigation on the Trinil femora, DAY & MOLLESON (1973) concluded: «Anatomically they [the Trinil femora] cannot be distinguished from the femora of *Homo sapiens,* their Middle Pleistocene antiquity is unconfirmed, their contemporaneity with the *Homo erectus* calotte from Trinil is unconfirmed, but their provenance is supported to some extent» (DAY & MOLLESON, 1973, p. 152).

The femora KNM-ER 736 and 999 are remarkably larger than other fossil femora also attributed to the genus *Homo,* such as KNM-ER 1472 and 1481A (DAY *et al.,* 1975; LEAKEY, 1973). The latter two seem to be of a size similar to some of the specimens assigned to *Australopithecus* (*Table 2*). PILBEAM & GOULD (1974) suggested that a steady increase in body size occurred in the two major groupings of African hominids. It may therefore be significant to note that the smaller femora of *Homo* were both found at lower stratigraphic levels (Lower Member of the Koobi Fora Formation, below KBS tuff) than the two larger specimens (Upper Member of the Koobi Fora Formation, above KBS tuff, and Guomde Formation, above the Koobi Fora Formation, respectively) (e.g. DAY, 1977; FINDLATER, 1978).

In addition, it is of course possible to compare the bone measurements with those of modern human populations. This reveals, that the minimum estimate for femoral length in KNM-ER 736 and 999 (i.e. 482 mm) is above the published mean values of most modern populations (see *Table 3*), but below the means of for instance black males reported by TROTTER & GLESER (1952, 1958).

Recently, an almost complete early hominid skeleton (WT 15000), suggested to be a male *Homo erectus,* was discovered *in situ* at west Lake Turkana and excavated from sediments of the Okote Tuff Complex dated close to 1.6 Myr (BROWN *et al.,* 1985). The specimen died at 12 ± 1 years of age, as judged by human standards (from tooth eruption timing). The stature of the individual, by using the regression equations developed on adult males in modern man (TROTTER & GLESER, 1952), has been estimated to be 1.68 m (caucasians) or 1.64 m (blacks) (BROWN *et al.,* 1985).

These stature estimates are somewhat lower than the values which can be obtained if the same equations are applied on the estimated minimal femur length of 482 mm for KNM-ER 736 and 999 (see *Table 1*): this would yield a stature of 1.76 m (caucasians) or 1.72 m (blacks). It should be noticed, that the regression equations used here were developed on modern man and do not consider trunk or skull height differences. At least skull height is less in *H. erectus* than in *H. sapiens,* and may lead to a certain overestimate of stature (Brown *et al.,* 1985).

It has also been suggested that the WT 15000 specimen would have reached a greater height, perhaps 1.8 m, had it lived longer (JOYCE, 1984; LEAKEY & WALKER, 1985a; LEWIN, 1984). The estimate for WT 1500 is, however, based on some additional assumptions (DELSON, 1985): It implies that a similar adolescent growth spurt as in modern man existed in *H. erectus,* and that dental eruption timing in these early hominids was the same as it is today. Based on a study of growth patterns in tooth enamel,

TABLE 2 - *Femoral length of some Plio-Pleistocene hominids. All lengths are estimates or taken from reconstrnctions, except for KNM-ER 1481A, a virtually complete lemur* (DAY *et al*., 1975).

Specimen	Genus [1]	Femur length (mm) [2]	Source	Dating [3]
A.L. 288-1	A	280	JOHANSON & TAIB, 1976	2.8-3.3 Myr [4]
		280	JOHANSON *et al*., 1982	
		281	JUNGERS, 1982	
		283*	SCHMID, 1983	
A.L. 333-3	A	386	STERN & SUSMAN, 1983	2.8-3.3 Myr [4]
Sts 14	A	310*	BROOM *et at*, 1950	2.4-2.8 Myr [5]
		276*	LOVEJOY & HEIPLE, 1970	
		310*	ROBINSON, 1972	
		250*	WALKER, 1973	
		280*	WOLPOFF, 1973	
Sts 34	A	369±61.0	MCHENRY, 1974	2.4-2.8 Myr [5]
		330340*	WALKER, 1973	
		330*	WOLPOFF, 1973	
TM 1513	A	388.3-392.8	HELMUTH, 1968	2.4-2.8 Myr [5]
		359±71.7	MCHENRY, 1974	
		320*	WOLPOFF, 1973	
KNM-ER 1472	H	400*	DAY *et al*., 1975	≥ 1.88 Myr [6]
		401.0	MCHENRY& CORRUCCINI, 1978	
KNM-ER 1481A	H	395.0*	DAY *et al*, 1975	≥ 1.88 Myr [6]
		397.0	DAY *et al*, 1975	
		392*	KENNEDY, 1983	
		396	MCHENRY& CORRUCCINI, 1978	
KNM-ER 3728	?	380-400 (*?)	LEAKEY & WALKER, 1985b	≥ 1.88 Myr [6]
KNM-ER 738	A	378±30.8	MCHENRY, 1974	1.88 Myr [6]
SK 82	A	399±30.0	MCHENRY, 1974	1.6-1.8 Myr [5]
		330340*	WALKER, 1973	
SK 97	A	412 ±30.1	MCHENRY, 1974	1.6-1.8 Myr [5]
KNM-ER 736	H	482	GEISSMANN, this study	1.5-1.7 Myr [6]
KNM-ER 737	H	460	MCHENRY, 1974	1.5-1.7 Myr [6]
KNM-ER 1463	A	290*	ROBINSON, 1978	1.5-1.7 Myr [6]
KNM-ER 993	A	360.0*	WALKER, 1973	1.5-1.64 Myr [6]
KNM-ER 1503	A	330.6-389.8	MCHENRY, 1978	1.39-1.88 Myr [6]
OH 34	H	432*	DAY & MOLLESON, 1976	0.8-1.15 Myr [7]
KNM-ER 999	H	482	GEISSMANN, this study	0.74 Myr [6]
OH 28	H	456*	DAY, 1971	0.6-0.8 Myr [7]
Gesher Benot Ya'acov	H	370400*	GERAADS & TCHERNOV, 1983	Md. Pleist [8]
Peking I	H	400	WEIDENREICH, 1941	0.23-0.5 Myr [9]
Peking IV	H	407	WEIDENREICH, 1941	0.23-0.5 Myr [9]
		402.5*	WEIDENREICH, 1941	
Kabwe E.689 (Broken Hill)	H	460.1-481.9	VON BONIN, 1930	Md. Pleist.? [10]
Trinil I	H	455*	DAY, 1971	Md. Pleist.? [10]
Trinil II	H	469*	DAY, 1971	Md. Pleist.? [10]
		500*	KENNEDY, 1983	

[1] A = *Australopithecus*; H = *Homo*.
[2] Maximal length (Ma 1 in MARTIN, 1928), except *=bieondylar length (Ma 2).
[3] For this colum, the following sources were used: [4] BROWN (1982), [5] VRBA (1985), [6] BROWN & FEIBEL (1985), MCDOUGALL (1985), and MCDOUGALL *et al*., (1985), [7] DAY (1977), [8] GERAADS & TCHERNOV (1983), [9] WU RUKANG (1985), [10] see text for references.

TABLE 3 - *Mean femoral length (Ma 1) in mm for some recent human populations.*

Author	Sample	Sex [1]	Sample size	Femoral length
BACH, 1965	Middle Europ.	F	500	420
BREITINGER, 1937	German	M	2400	461
DAVIVONGS, 1963	Australian aborigine	M	75	447.73
		F	55	423.59
DUPERTUIS & HADDEN, 1951	US-White	M	100	453.3
		F	100	422.4
	US-Black	M	100	477.2
		F	100	439.6
GENOVÉS, 1967	Mesoamerican	M	69	429.9
		F	29	402.0
LORKE *et al*., 1953	W-Europ.	M	200	462.7
PAN, 1924, cit. in RÖSING, 1983	Calcutta	M	86	417.6
		F	56	387.2
PEARSON, 1899	French	M	50	445.2
		F	50	408.6
	Aino	M	40	407.7
		F	20	382.0
STEVENSON, 1929	N-Chinese	M	48	439.75
TELKKÄ, 1950	Finnish	M	115	454.8
		F	39	417.8
TROTTER & GLESER, 1952	US-White (Terry Collect.)	M	255	456.60
	US-White (military)	M	710	473.22
		F	63	429.59
	US-Black (Terry Collect.)	M	360	474.24
	US-Black (military)	M	54	483.37
		F	117	437.12
TROTTER & GLESER, 1958	US-White	M	2327	470.77
	US-Black	M	343	482.20
	Mongoloid	M	67	442.46
	Mexican	M	50	451.38
	Puerto Rican	M	40	447.58

[1] M = Male; F = Female.

BROMAGE & DEAN (1985) concluded «that Plio-Pleistocene hominids had markedly abbreviated growth periods relative to modern man», and DEAN's (1985) study of root growth pattern suggests similar conclusions.

It cannot be determined, therefore, whether the WT 15000 specimen, if adult, would have been of taller stature than KNM-ER 736 (and 999); probably, they were not very different in size.

WELLS (1963) stated that «from accumulated evidence, the mean stature of the male half of the world's living population appears to be approximately 165.0 cm … it has been found consistent with experience to label statures below 160.0 cm as 'short', and those of 170.0 cm and upwards as 'tall'» (WELLS, 1963, p. 365). As the various formulae for stature estimates from long bones are remarkably different from each other, a large range of estimates was obtained for the two femora examined in this study (R = 164-177 cm). It is, therefore, not possible to decide, if KNM-ER 736 and 999 (and also WT 15000) were of 'average' or 'tall' stature, although WT 1500 has previously been considered as exceptionally big (LEWIN, 1984).

Brachial, cranial and intermembral indices of the WT 1500 specimen have been reported to be well within the ranges of variation seen in modern human populations (WALKER & LEAKEY, 1986). Based on a conservative length estimate for the KNM-ER 736 femur, and provided that possible differences in body proportions (as mentioned above) do not radically distort the stature estimate, these findings would still suggest, that at least the 'average' stature class, as proposed for modern human populations, had already been reached by East African *Homo* as early as about 1.6 Myr before present.

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