Appendix to Chapter 4
Human bones from Chagar Bazar: scientific analyses

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Introduction

During the British excavations at Chagar Bazar the skeletons of 22 individuals as well as seven small deposits of human bones were found[1]. All but two individuals were dated to the Middle Bronze Age, ca. 1750–1650 BCE. One well-preserved skeleton of a child (T. 7) came from a 20th century CE burial and the smell of decomposed lipids and collagen was still present. Two skeletons of newborn children were not assigned a tomb number, and here they are referred to as A (from oven 00-20 in Area A) and B (pit Locus 9.1 in Area A). In one bag the tag was completely rotten: there were only few hand and foot bones and it is possible that they belonged to the individual T.50/1, although a complete lack of degenerative joint disease makes this attribution uncertain.

All skeletons and single bones were described and measured with use of a form based chiefly on standards developed for North American collections (Buikstra & Ubelaker 1994). Apart from standard set of metric and nonmetric measurements, the occurrence of degenerative joint disease and additional observations of bone robustness were scored on a 3-point or 4-point scale. A full database of the human remains from Chagar Bazar is presented here in 56 tables[2].

State of preservation

Most skeletons were heavily fragmented, weathered and discoloured from post-burial processes and several years of storage post-excavation. Teeth were usually broken into pieces, and in some individuals (especially T.10 and T.11) chiefly small fragments of tooth roots have been preserved. The only exception was the almost complete and well preserved skeleton of the modern child (T.7). Plant root traces were observed on bone surfaces (especially T.11, T.32, T.41), and in one case (T.11) a rodent left deep toothmarks on a strongly eroded tibia. In few cases bones were stained green by bronze or copper objects, especially clear in the right arm bones of T.41. Some bones were covered with salt crystals, most visible in T.33.

In general, the skeletons of children were much better preserved and more complete than adult skeletons (Tables 4.2-14.3, Fig. 33)[3]. The preservation difference between children and adults is highest in teeth, despite the fact that most deciduous teeth represented early stages of development and were not fully mineralised before the individual's death. Another striking feature is the general lack of difference between four defined body parts in children and better preservation of both extremities, compared to axial skeleton and skull in adults. This difference between

[1] From 2006 they were stored in the excavation house at Tell Brak and studied in April 2009 by the author.

[2] Statistics were calculated with a simple Pascal program for χ^2 written by the present author and a t-test calculator available online at www.usablestats.com. Tables are found at the end of this Appendix.

[3] There were two adult individuals for whom only the lower part of the body was excavated (T.12 and T.39) and these are not included in the diagramme.

children and adults may have been partially related to the climatic conditions and a high amplitude of humidity throughout the year, which caused larger and denser adult bones to be subject to tension due to rapid desiccation of a part of a bone while another parts were still damp. A similar bias in preservation towards child skeletons has been observed in a much larger sample of human remains from Tell Masaikh (Tomczyk & Sołtysiak 2007a). Female skeletons were better preserved than male skeletons, but the number of individuals with a sex diagnosis was extremely small and this difference may have been accidental.

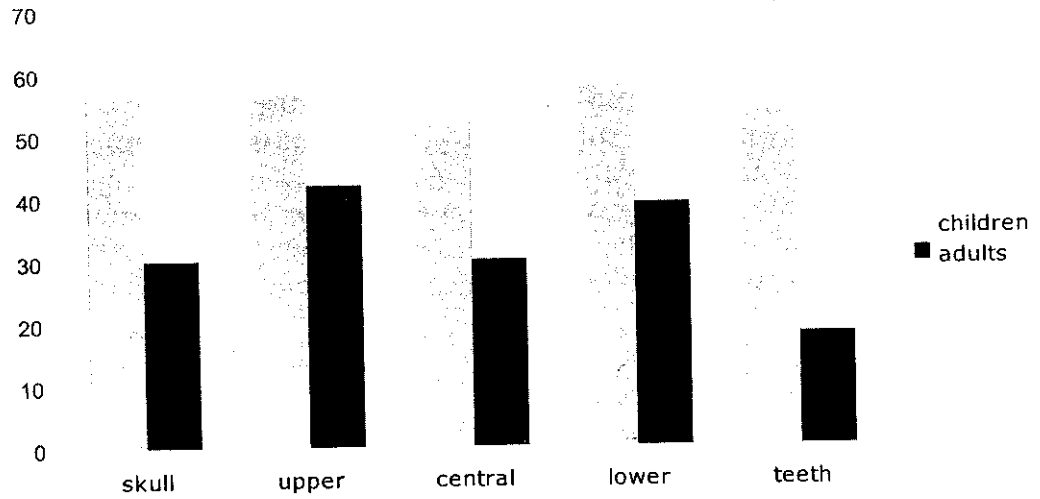


Figure 33: Average state of preservation in children and adults (see Table 4.2).

Sex and age pattern

Sex diagnosis was possible only in six individuals (Tables 4.14-4.15) and the sample is far too small to analyse pattern. The age distribution reflects the pattern expected for a cemetery in a pre-industrial society, with 42% children less than one year old, 38% adults and 20% older children and adolescents. However, there are clear differences in age distribution between the three periods of occupation represented by the skeletal sample. In the oldest Phase III there are four infants (or foetuses), one older child and one adult. In Phase II there are no infants, two children, one adolescent and as many as six adults. In Phase I again there are six infants and only two adults. Chronological sub-samples are very small, but this scarcity of adults in Phases I and III and scarcity of infants in Phase II seems not accidental (χ^2=12.11, $p<0.02$, but all cells with expected frequencies less than 5). In many Near Eastern sites burials of infants were located within the settlement, beneath floors, in walls or *tannurs*, so only the high number of adults in Phase II is unexpected.

Bone measurements

Most bone metric measurements presented in Tables 4.16-4.24 are too few for comparison with other sites, although some were useful in sex assessment in adults or age assessment in children. In four cases, stature estimation was possible: 151 cm for female T.13 (tibia), 152 cm for female T.4 (radius & ulna), 161 cm for female T.37 (humerus, radius & ulna) and 166 cm for male T.10 (fibula) (Trotter & Gleser 1952, formula for American white males and females). At Tell Ashara (middle Euphrates), the average male stature in a small Bronze Age sample was c 170 cm and the average female stature was c 160 cm (Tomczyk & Sołtysiak 2007b).

Non-metric trait scores are also too few for inter-population analyses, but they may be included in future in a larger regional sample. Apart from the traits scored in Tables 4.25-4.30, two cases of absent spina bifida (T.10 and T.37), one case of double root of RP^1 (T.10) and an absent rocker mandible (T.37) were noted. In T.10 arachnoid granulations were present in the frontal bone. The only striking peculiarity of the Chagar Bazar sample is the quite high incidence of double mental foramen, especially in children, 5/23 in both sides pooled.

Tooth size and oral health

In Mesopotamia, tooth size exhibited gradual reduction from the Chalcolithic to the Iron Age, and the average size of permanent teeth from Chagar Bazar (Tables 4.46-4.49) is similar to other Middle Bronze Age dental samples from the Khabur basin (cf. Sołtysiak 2007). In deciduous teeth, the dentition of the one modern individual (T.7) is much smaller than the teeth of Middle Bronze Age children, but this difference needs comparison with a larger regional sample.

The frequency of dental caries in Chagar Bazar adults is quite high (8/42 teeth), chiefly because of two females T.4 and T.37 (Tables 4.44-4.45). Again the sample size makes statistical analysis impossible, but in general carious lesions were very few (less than 5%) in other Bronze Age sites from the Khabur basin (Sołtysiak 2006), and the individual T.37, with as many as six cariotic teeth, seems to be exceptional. In all instances the lesions developed in the cemento-enamel junction or slightly above it on medial or distal sides of a tooth. The most extreme case was the left upper premolar of T.37 with most part of the crown's medial side affected. Antemortem loss of as many as five teeth of this relatively young individual may have been the consequence of dental caries. Also in two other individuals (T.10 and T.50/1) some teeth were lost antemortem, but both died in old age and tooth loss was likely related to advanced resorption of the alveolar process (Tables 4.36-4.37).

Most teeth were worn in a regular way, and only in the older woman in T.4 the upper incisors and canines were worn flat on the right side and more lingually (with a part of their roots) on the left side; this perhaps reflects malocclusion. Dental calculus was slight in all individuals, except the central lower incisors of T.33 and especially T.37 (Fig. 34).

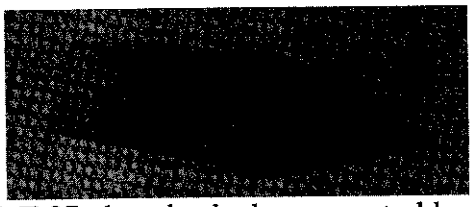


Figure 34: T.37, dental calculus on central lower incisor

Stress markers

The most common stress markers were scored, including various kinds of porosities (porotic hyperostosis, cribra orbitalia, femoral cribra), linear enamel hypoplasia in permanent teeth and irregular enamel hypoplasia in deciduous teeth. Porotic hyperostosis of the cranial vault is related to megaloblastic anemia caused by vitamin B_{12} deficiency in particular (and food of animal origin deficiency in general). Cribra orbitalia—porosity in the orbital roof—may be caused by megaloblastic anemia or scurvy (Walker *et al.* 2009). The etiology of femoral cribra is not clear but some scholars think it may reflect nutritional stress during childhood (Djuric *et al.* 2008).

There was no case of porotic hyperostosis in the sample, although in two individuals (T.9 and T.10) some areas of the parietal bone were thickened up to 9 mm, and especially in T.9 the expansion of diploë was evident, which may suggest that porotic hyperostosis occurred in the past but was obliterated after disappearance of the deficiency condition. Initial cribra orbitalia were observed in two children (T.7 and T.33) but are absent in all infants (T.15, T.26, T.32, T.41, A) and adults (T.4, T.10) in which the orbital roof was present. Unfortunately, the bone of T.33 with the most developed cribra orbitalia was strongly eroded and only a small part of the porotic area remained (Fig. 35). Femoral cribra were present in T.33 (Fig. 36), and some porosity in the femoral neck was observed in T.7 and T.35. Distinct porosity was present also in the palates of T.4 and T.10.

Figure 35: T.33, cribra orbitalia

Figure 36: T.33, femoral cribra

Another stress marker that reflects periods of nutritional deficiency during childhood is linear enamel hypoplasia in permanent teeth (Tables 4.40-4.43). Both intensity and position of hypoplastic lines were scored, as well as any occurrence of irregular hypoplasia in deciduous dentition: the latter condition occurred in the sample of Chagar Bazar only once, in the upper right canine of T.8. Linear enamel hypoplasia was present in all individuals with preserved permanent teeth, although its intensity and frequency of lines was variable. However, it may be safely stated that nutritional stress during childhood was common in the Middle Bronze population from Chagar Bazar.

Degenerative joint disease

Osteoarthritis was common in the sample of adults, which reflects the quite high frequency of mature and old individuals (Tables 4.31-4.33). However, this degenerative joint disease is correlated not only with age but also with degree of biomechanical stress, and some activities may accelerate the development of osteoarthritis and spondylosis only in involved areas (Table 4.34). In the population from Chagar Bazar, the clear prevalence of both osteoarthritis and spondylosis in cervical vertebrae over the central and lower part of the spine suggests that heavy loads were usually carried on heads (Fig. 37). A saddle-like depression in the anterior parietal bones of T.9 supports this explanation; the activity-related origin of this feature is ascertained by reduction of bone thickness in this area (6.5mm in bregma, 5mm in depression, 7mm behind it). Also related to carriage may be asymmetry in lower articular surfaces in T.37's axis and lumbar vertebral body compression in adolescent T.39 (21mm in ventral, 16mm in dorsal side).

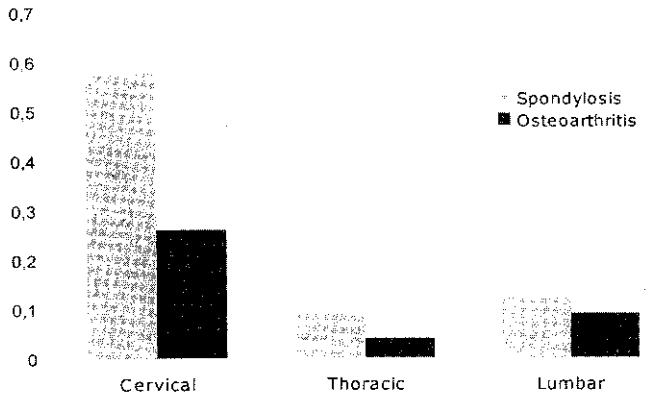


Figure 37: Frequency of degenerative joint disease in the spine (see Tables 4.31, 4.34)

Many cases of advanced degenerative joint disease were observed in the older male individual T.10, with an extreme example of eburnation in the left patella and distal femoral epiphysis (Fig. 38) and many joints with advanced osteoarthritis (Tables 4.31-33). Apart from the long bones, there were distinct osteophytes and occasionally porosity of articular surfaces also between atlas and axial dens (although the lateral articular surfaces of both vertebrae and occipital condyles were not affected), between navicular and first cuneiform, between right calcaneus and cuboid, in all joints of the first right toe (including sesamoid), in distal left 4th and right 2nd metatarsals and in the three first toe segments. No carpal bones were affected but initial osteoarthritis (osteophytes only) was present in 2/10 proximal ends of first, 1/5 proximal and 5/8 distal ends of second, and 3/5 third finger segments. All cervical vertebrae exhibited spondylosis, which was most advanced in C5-C7 (Fig. 39); only the upper surface of C3 and lower surface of C7 were not affected. Also osteoarthritis in cervical vertebrae was common in both sides. The upper surface of S1 was also heavily deformed (Fig. 40) which allows the deduction that there was also spondylosis in L5.

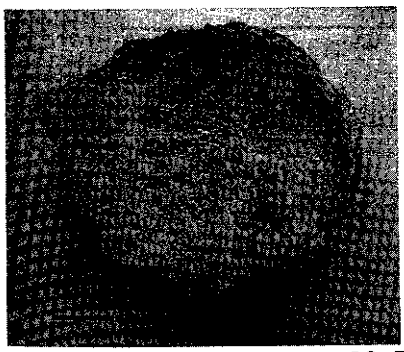
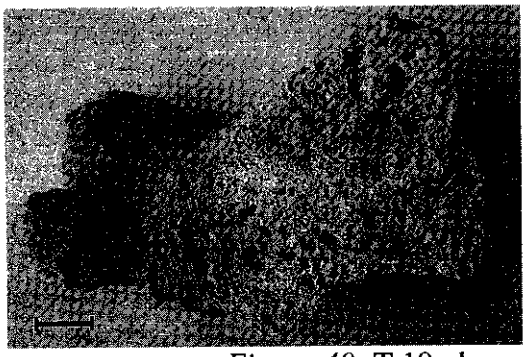


Figure 38: T.10, extreme eburnation of left patella
Figure 39: T.10, degenerative joint disease in cervical vertebrae

Other skeletons were much less affected by degenerative joint disease. In the individual T.4 there was evident osteoarthritis in a fragment of acetabulum and very initial disease in the right humerus, between atlas and axial dens and in the left mandibular condyle. Advanced osteoarthritis with eburnation was present between the left greater multangular and first metacarpal, and it is possible that this was a consequence of a traumatic event (Fig. 41). A similar pattern of osteoarthritis was noted in the individual T.11, again a fragment of an acetabulum and joint between atlas and axial dens show moderate osteoarthritis. Some osteophytes were observed in

foot bones (some toe segments, both right 5th toes) and in one of the third finger segments. Initial degenerative joint disease affected acetabula of T.13 and T.50/1 (also the femoral head of the latter), as well as the left mandibular condyle of T.50/1. There is more advanced osteoarthritis in the tibial articular surface of T.37's right talus and an initial condition also in the calcaneal articular surface (Fig. 42).



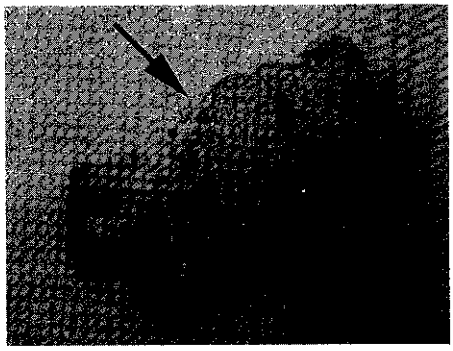
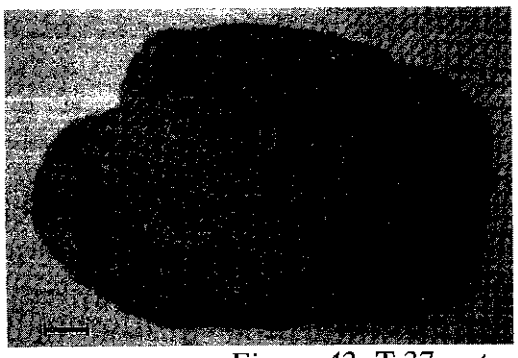


Figure 40: T.10, degenerative joint disease in sacrum
Figure 41: T.4, eburnation in first metacarpal



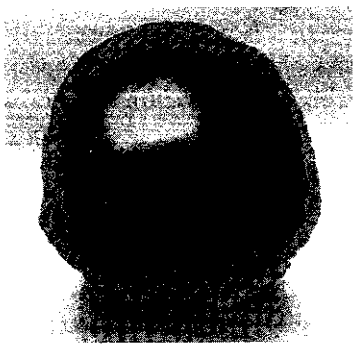


Figure 42: T.37, osteoarthritis in right talus
Figure 43: T.4, osteoporosis in femoral midshaft

Other diseases and trauma

The older woman in T.4 suffered from advanced osteoporosis and thus her long bones were more damaged than in other individuals. Cortical bone of the femur was very thin (Fig. 43) and the distal end of the fibula shows local demineralisation of its articular surface (Fig. 44). Osteochondrosis was present in both distal ends of T.39's femora (Fig. 45).

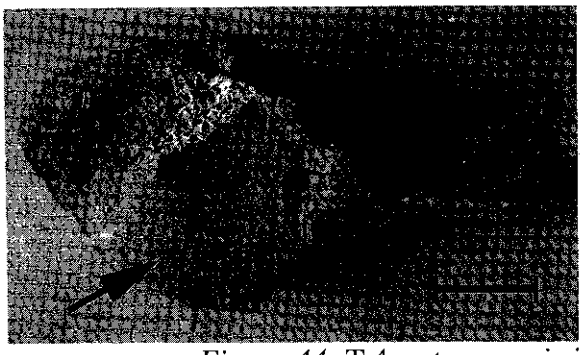


Figure 44: T.4, osteoporosis in articular surface of fibula
Figure 45: T.39, osteochondrosis in femoral condyles

In the femoral midshaft of the single bone recovered from L 54.1 there was a thickening of cortical bone ~69x15 mm, perhaps well-healed periostitis (Fig. 46). In the left occipital bone of T.34 there was a small oval, thinned, convex area (Fig. 47).

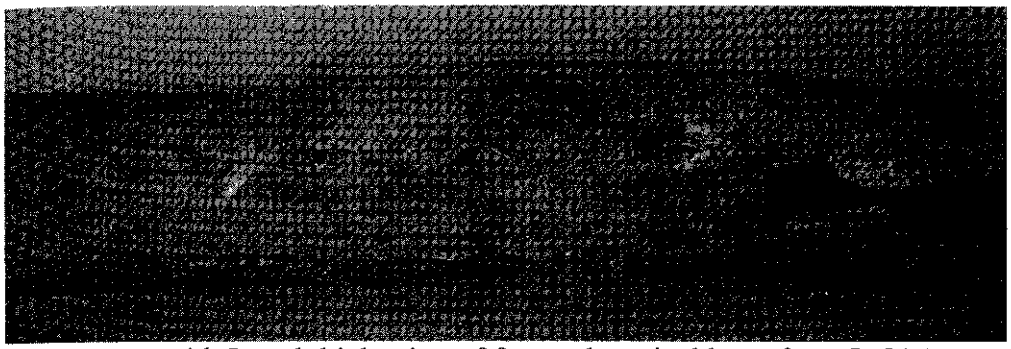


Figure 46: Local thickening of femoral cortical bone from L 54.1

Fractures or dislocations were observed in as many as four individuals. Individual T.9 had one scapular acromion broken, and it had just started to fuse (Fig. 48). At least three ribs of T.4 (the woman with advanced osteoporosis) were broken, but well healed without displacement (Fig. 49). One rib of T.11 was broken and slightly displaced before healing (Fig. 50), and some others show irregular developments of inferior margins (Fig. 51). In T.37 one of upper ribs had a clearly dislocated sternal end (Fig. 52).

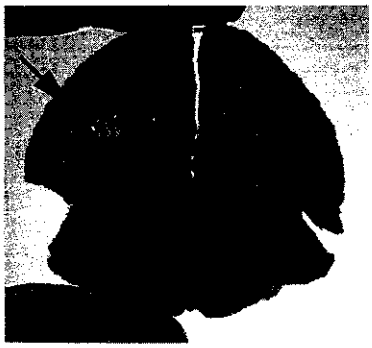
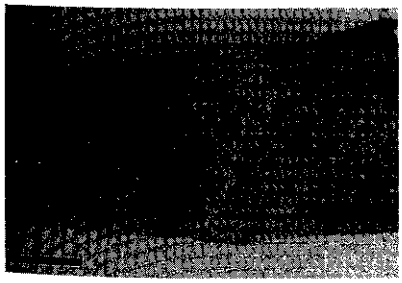


Figure 47: T.34, local thinning of parietal bone
Figure 48: T.9, fracture in scapular acromion



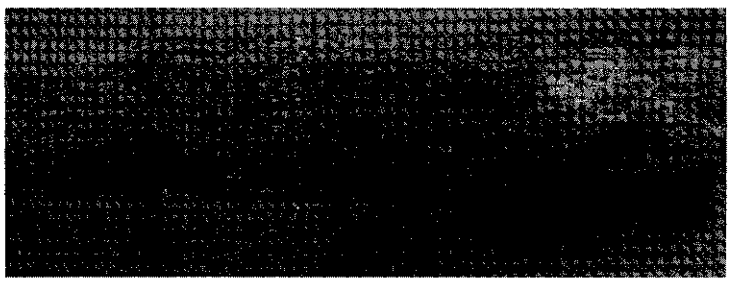


Figure 49: T.4, broken and healed rib
Figure 50: T.11, broken and healed rib

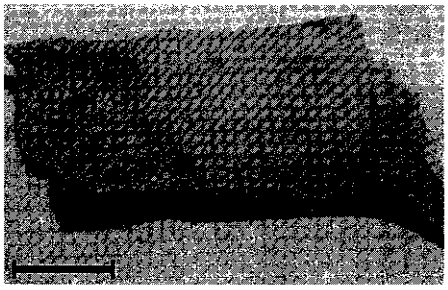



Figure 51: T.11, irregular development of interior margin of rib
Figure 52: T.37, dislocated sternal end of rib

Physical activity

Reconstruction of physical activity patterns in ancient populations is based on observations of modified articular surfaces, bone robustness and asymmetry, musculoskeletal stress markers, atypical degenerative joint disease, unusual dental wear, and other alterations (*cf.* Molleson 2007). In the small sample from Chagar Bazar only a few activity related skeletal morphologies were scored (Table 4.35) and others noted occasionally. Squatting was the common position of rest and work in ancient populations. There are several bone modifications usually associated with squatting: squatting facets on the anterior side of tibial distal articular surface, vastus notch in patella, and side-to-side flattening of proximal shafts in femur (platymeria) and tibia (platycnemia) due to muscular tension. Only two distal ends of tibia were preserved and in both a squatting facet was present, very large in T.10 (6.5 mm) and average in T.39 (3 mm). A vastus notch was absent in T.12, T.13 and T.37, minimal in T.39 and present in T.9 (larger on left side).

Shape indices of tibial and femoral shafts have been counted for several individuals. Platymeric (shape of proximal femoral shaft), pilastric (development of linea aspera) and cnemic (shape of proximal tibial shaft) indices in Chagar Bazar were compared with those from three sites in the middle Euphrates valley (Table 4.58, Euphrates valley sample from Tomczyk & Sołtysiak 2009). In the comparative sample from Tell Ashara and other sites on the Euphrates we observed no sex differences in platymeric and pilastric indices, but significant difference in cnemic index, with male tibiae more flattened in the proximal shaft. This was interpreted as the result of difference in activity patterns: in contemporary Syria women are busy with household activities and their body positions are variable while many males (especially adolescents) spend many hours a day as pastoralists, squatting and watching sheep and goat flocks. Such an interpretation is not valid in Chagar Bazar, where the sample of male tibiae is too small, but female tibiae there are much more flattened than tibiae of both women and men from the middle Euphrates valley. In spite of a very small sample size, the difference between Chagar Bazar and Euphrates females is statistically significant ($t=4.26$, $p=0.0008$). Also proximal femoral shafts in two Chagar Bazar females are more flattened (lower platymeric index), but this difference may be accidental ($t=2.44$, $p=0.25$). There is no significant difference of any kind in the pilastric index.

Robustness of lower long bones was less than average in the Chagar Bazar population; only in one individual (T.11) linea aspera was robust, in two others (T.10 and T.50/1) lateral tuberosity occurred in the proximal part of the shaft. In T.50/1 a distinct asymmetry was observed in the subtrochanteric area. All popliteal lines were moderate, only in T.37 a shallow fossa was developed and in T.13 clear asymmetry

was observed, with the right line more marked and longer. The right fibula of T.50/1 had very robust shaft, 20x15mm in the middle.

Articular surfaces of the first metatarsals of T.4, T.13, T.50/1 and L 33.2 were not extended, but in T.4 and T.13 the first toe segments were distorted laterally (probably hallux valgus, Fig. 53). A broad plantar calcaneal spur was present in the left foot of T.10 (Fig. 54). Lateral edges of both T.39's naviculars were pinched, especially the left (Fig. 55).

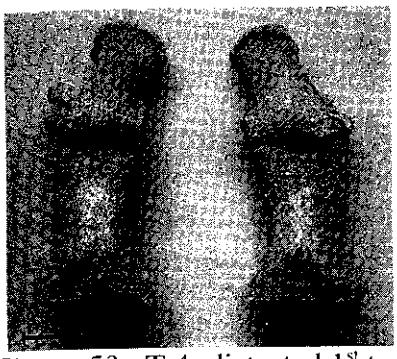


Figure 53: T.4, distorted 1st toe segments

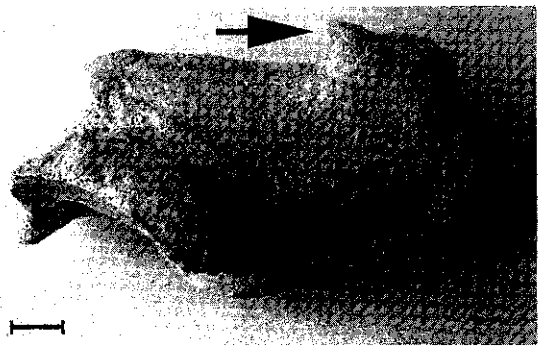


Figure 54: T.10, plantar calcaneal spur

Figure 55: T.39, pinched lateral edge of left navicular

In contrast to the legs, upper long bones were usually robust, especially radius and ulna (Table 4.35). Muscular attachments on deltoid tuberosities were most developed in males T.10 and T.11 (Fig. 56), but also in the child T.49. Radial and ulnar interosseus crests as well as radial tuberosities were usually marked and all preserved articular facets in the radial head more developed on the medial side due to pronation. There is clear asymmetry in forearm bones of T.4: bony spurs are present only on the right ulnar head and also the right radial interosseus crest is more developed (max. right 16mm vs left 15mm). Small bony spurs occurred also in both ulnar heads of T.10. Asymmetry of clavicles was noted in T.4, T.10 and T.50/1.

Figure 56: T.11, deltoid tuberosity

In T.9 and T.10, distal articular surfaces of the first metacarpals were enlarged (Fig. 57), and in T.50/1 the right first metacarpal was crooked (Fig. 58). Margins of finger segments were very well developed in T.4, T.9 and T.10 (Fig. 59), average in T.50/1 and NT, and gracile in T.12. All this suggests that habitual firm grasp was common.

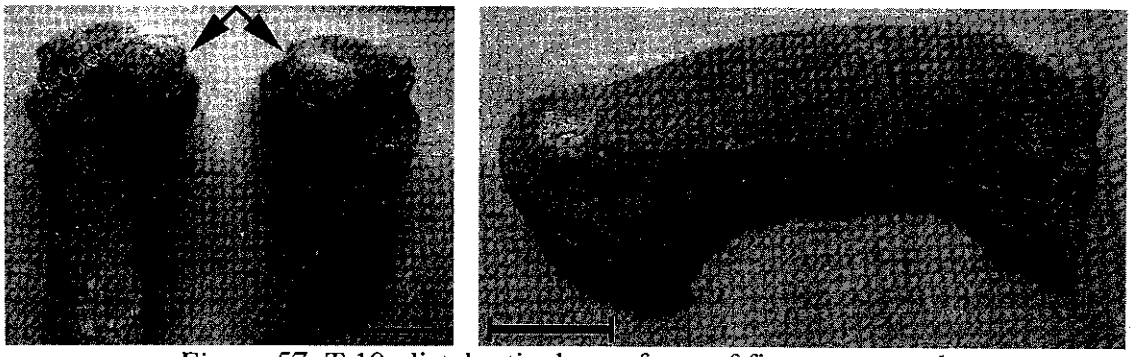


Figure 57: T.10, distal articular surfaces of first metacarpals
Figure 58: T.50/1, crooked right first metacarpal

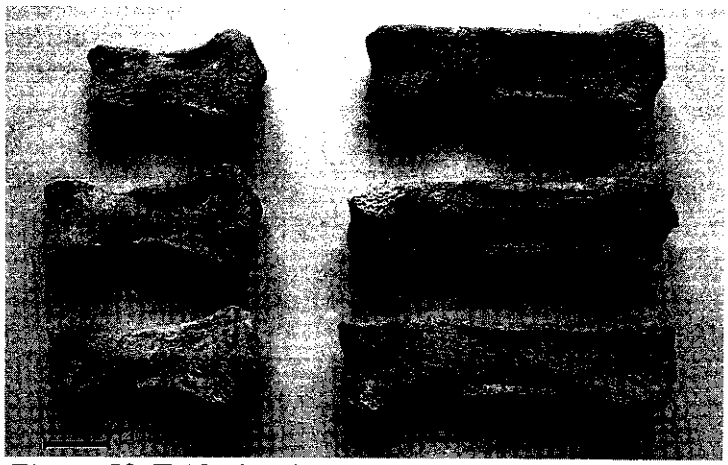


Figure 59: T.10, developed margins in finger segments

Conclusions

The sample of human remains excavated at Chagar Bazar is small, but in spite of this some preliminary characteristics of a local Middle Bronze Age population may be reconstructed. People from Chagar Bazar were physically active (especially women) and probably transported goods on their heads frequently. They were also relatively healthy, but exposed to injuries and childhood undernutrition. However, their diet was perhaps more abundant in sugars than at other sites in the Khabur basin, which may have been related to increased mobility of goods or people.

Table 4.2: Human bones from Chagar Bazar

Tomb	Area	Phase	Sex	Age	Preservation (%)				
					Skull	Upper	Central	Lower	Teeth
T.4	A	II	F??	old	45	62	26	40	50
T.7	A II	Modern	–	2	81	98	93	89	92
T.8	A II	II	–	2	67	0	39	11	63
T.9	A II	II	?	adult	10	39	33	27	0
T.10	G I	II/1	M??	old	40	62	41	50	3
T.11	G I	II/1	M?	adult	30	20	17	22	16
T.12	A I	I	?	adult	0	1	6	21	0
T.13	G I	II/1	F	30–35	0	0	8	55	0
T.15	G I	III	–	birth	74	47	82	87	58
T.26	G II	III	–	foetus	6	51	42	61	0
T.30	A II	3rd mill BC	?	adult	2	0	0	0	0
T.32	G II	III	–	0–0.25	62	93	68	57	33
T.33	G IV	II/1	–	11	23	52	61	49	84
T.34	A II	I	–	birth	77	96	49	84	13
T.35	A II	I	–	0.25	76	88	65	71	75
T.37	G II	II/2	F	25–30	47	78	55	64	50
T.38/1	A II	I	–	foetus	6	0	0	0	0
T.38/2	A II	I	?	adult	0	0	2	0	0
T.39	G IV	II/2	F??	15–18	0	1	18	43	0
T.41	A II	I	–	0.75–1	73	79	75	81	88
T.49	G II	III	–	0.75	60	67	51	42	71
T.50/1	G IV	III	?	50–60	23	13	18	32	22
T.50/2	G IV	III	–	2	17	4	5	4	21
A	A II	IA	–	birth	46	16	12	0	29
B	A	I	–	birth	71	56	28	64	75
Locus	**Bones from secondary contexts**								
33.2	A	III	?	adult	0	1	2	1	0
54.1	G II	II/1	–	child	0	0	0	2	0
68.2	A II	II	–	1–9	0	0	0	0	4
St. 01/7	A II	I	?	adult	0	0	0	0	3
no tag			?	adult	0	1	0	5	0

Table 4.3: State of preservation (adults, skull); T. Tomb number, O complete, X broken, + fragment(s) only, * side not determined

T.	Frontal		Parietal		Occip-ital		Temp-oral		Sphen-oid		Zygo-mat.		Nasal		Maxilla		Palatine		Man-dible	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
4	X	X	X	X	X	X	+	O	+	+		X			+	+	+	+	X	+
9	+	+	+*		+*			X												
10	X	X	+	+	X	X	X	+			X		+	+	+	+	+	+	X	+
11	+	+	+	+	+	+	+	+			O	+			+	+	+	+	+	+
30			+*																	
33		+	X*		X*		+	+	+	+		O							+	+
37	+	+	+	+	X	X	X	X	+	+	O	O			+	+	+	+	X	X
50	+	+	+	+	+	+	+	+				+			+	+			X	+

Table 4.4: State of preservation (adults, upper limbs); P proximal end, D distal end

T.	R Humerus					R Radius					R Ulna					L Humerus					L Radius					L Ulna				
	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D
4				+	O	O	X	O	O	X	X	X	O	O	X				+	X	O	O	O	X		+	O	O	O	X
9		+	+	O	X	+	+				X	+	X	O	O	X	O	O	O	X					+	+		+		
10	+	X	O	X	O	X	+	+	+	X	O	X	X	+	X	+	X	O	O	X	X	+	+	+	X	O	X	X	+	X
11	+*					+*											X	O	X	+		+	X		+	X	+	+		+
33	O	X	+	X			X	X	X	O		O	X	O		O	X	+	X			X	X	X			O	O	O	
37	O	X	O	O	O	O	O	O	O	O	X	X	O	O	O	+	+	+	O	O		O	O	O		X	X	O	O	+
50	+*	X	X	+*		+	X	+				+*	+*																	

Table 4.5: State of preservation (adults, lower limbs); P proximal end, D distal end

T.	R Femur					R Tibia					R Fibula					L Femur					L Tibia					L Fibula				
	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D
4		X	X	+	+*	+*	X	O	X	+*	+	X	+	O	+		+	+	X			+	+	+				X		X
9	+*	X	O	X	+*	+*		O				+*	X*	+*		X*	X	X	+			+	+	+						
10	X	O	X	+	+	+*		+*		+	O	O	O	O	O		X	+		+			+	O	O		+			+
11		+*	X	+	+	+*	+*	X	+*			+*	+*	+*	X					+					+	X				
12	+	+	X	+	+	+	+	+*	+*				+*			+	X	X	X											
13	+	X	+	X	+	X	O	X	+	+	X	O	O	+		+				O	O	O	O	O	X		+	O	O	+
33	X	O	+		X	O	+*		+	X	X*	+*	X*			X	O	+		X	X			O	O				O	O
37	X	O	O	X	X	X	O	O	O	+			+	O	O	+	X	O	X	X	+	X	O	O			X	X		
39	X	+	O	X	X	+*	+	O	+	X			X			X	X	X	+	X	+*	+	X	+	+		+	X		
50	X*	O	X	X	+*		+	O	O	+	+	O	+		+		O	X	+			+	X			+	+	X		
nt				+*	+*										+															

Table 4.6: State of preservation (adults, central skeleton); At atlas, Ax axis, C cervical, T thoracic, L lumbar, S sacrum, Str sternum, M manubrium, B body, Clav clavicle, Scap scapula, Ilm ilium, Isch ischium, Ha Hand, Fo Foot, Calc calcaneus

T.	Vertebrae						Ribs	Str		Clav		Scap		Ilm		Isch		Pubis		Ha	Fo	Talus		Calc		Patel-la		Hy-oid
	At	Ax	C	T	L	S		M	B	R	L	R	L	R	L	R	L	R	L			R	L	R	L	R	L	
4	X	+				+	+	X	+	X	X	+	+	+*						O	X	O	+	X			+	+
9		X	+	+	+	+	+	+	+	X	X	+	+	+*									+			O	O	
10	+	X	X	+	+	X	+	+	+	X	X	X	X	+	X		+			X	X	O	O	X	X		O	
11	X	+				+	+			X	X	+*		+*								X	+	+				
12												+		+*						+	+		+	+	+	+	+	
13														+*		X			X			+	O	+	X			
33	X	X	O	O	X	X	X		X	O	O	X	+	X	+	+	X	X	X			O	O	X	+	O	O	
37	X	O	X	O	X	X	X		+	O	X	+	+	+	+	X	X			X	X	O	O	X	O	O	O	
38							+																					
39					+	X								+	X	X				+	X	+	X	X		O	+	
50			+	+	+		+			X	X	+	+	+*		+*					+			+	+			
L 33.2										+*										+	+							
nt																				+	+	+*						

Table 4.7: Vertebrae (adults); C complete vertebrae, B bodies, BF body fragments, A neural arches, AF fragments of neural arches

T.	Cervical					Thoracic					Lumbar					Coccyx
	C	B	BF	A	AF	C	B	BF	A	AF	C	B	BF	A	AF	
4			2		6		1			8			1		4	2-4
9					2			4		10		3				1
10	5							11		12					10	1
11					6			3		4			2		2	
37	3	2			1	12					4					1
39											1	2			4	
50	1									4					3	

Table 4.8: Foot and hand bones (adults)

T.	Carpals		Metacarpals		Finger segments			Tarsals		Metatarsals		Toe segments		
	R	L	R	L	I	II	III	R	L	R	L	I	II	III
4	8	8	5	5	10	8	9	5	5	5	5	9	6	5
9	5		7*		5	8	3	2	2	1	3*	2		
10	2+4*	1	5	4	6	8	6	4	5	5	5	9	2	6
11		6	4*		8	3	3	5	5	5	5	8	6	5
12	1	2	2*		6	2	3	2+2*	2	7*		5		1
13								5	5	5	5	10	5	6
33	10*		5	5	10	8	4	5	5	9*		7		1
37	13*		7*		8	8	10	4	4	5	5	7	1	1
39					11*			3+2*	3	8*		8*		
50/1	1	1	5	5	10	5	2	1	1	1	1	1		
L 33.2	1		1								1			
nt	2	3*		3	4	1	1	2+3*	2	2		3	2	3

Table 4.9: State of preservation (children, skull); S squamous part, P petrous part, W wing, B body, L lesser, G greater wing

T.	Front		Parie		Occipital					Temporal				Sphenoid					Zyg		Max		Palat		Mand	
	R	L	R	L	SR	S L	W R	W L	B	SR	S L	P R	P L	LR	L L	B	G R	G L	R	L	R	L	R	L	R	L
7	O	+	O	X	O	O	O	O	O	O		O	O	X	X	X	O		O	X	O	X	O	O	O	X
8	+	+	X	X	X	X	O	X	O	+	X	O	O	X	X	X	+	+	X	O	X	X	X	X	X	X
15	X	X	X	X	X	X	O	O	O	+	X	O	O	X	X	O	O	O	O	O	X	X	+	+	+	X
26		+	X	X																						
32	+	+	+	+	+	+	X	O	O		O	O	O	O		O	O	O		O	X	X	+	+	X	X
34	X	X	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O			+	X		+	X	X
35	+	O	X	O	X	X	O	O	O	X	X	O	O	X	X	O	O	O	O		+	O	+	X	X	X
38			+*		X	X																				
41	X	X	X	X	X	X	O	O	O	X	X	O	O	X	X		O	O	O	O	X	X	+	+	X	X
49	X	X	X	X	X	X	+	X	O	X	+	O	O	O	O	X	+	X	O	X					X	X
50	+	+	X	X	+*								X												X	X
A	+	+	+	+	+	+				+	+	O	O			O	O	O			X	O	X	X	X	X
B	O	+	X	X	X	X	O	O	O	O	X	O	O			O	O	O	X	X	O	X		+	X	X

Table 4.10: State of preservation (children, upper limbs)

T.	R Humerus					R Radius					R Ulna					L Humerus					L Radius					L Ulna				
	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D
7		O	O	O			O	O	O			O	O	O			O	O	O			O	O	O			O	O	O	
15		O	O	O			O	O	O			O	O	O																
26								O*				X	O	O			O	O	O								O	O	O	
32		O	O	O			O	O	O			O	O	O			X	O	O			O	O	X			O	O	O	
34		O	O	O			O	O	O			O	O	X			O	O	O			O	O	O			O	O	O	
35		X	O	X			X	O	X			O	O	+			O	O	O			O	O	O			O	O	O	
41		O	O	O			O	O	X			O	O	X			O	O	O			X	X				O	X		
49		X	O	O			O	O	O			X	O	O			X	X	O				+				O	X		
50													X*																	
A																	O	O	O											
B		+	+				X	O	X			O	O	X			X	O	O			X	O	X						

Table 4.11: State of preservation (children, lower limbs); P proximal epiphysis, D distal epiphysis

T.	R Femur					R Tibia					R Fibula					L Femur					L Tibia					L Fibula				
	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D	P	¼	½	¾	D
7		X	O	O	O	O	O	O	O	O		O	O	O			X	O	O	O	O	O	O	X	O		O	O	O	
8	O*									O*										O										
15		O	O	O			O	O	O			O	O	O			O	O	O			O	O	O			O	O	O	
26		O	O	O			X	O	O								O	O	X			X	O	O			O	O	O	
32		X	O	X			X	O	X				+	X			O	O	+			X	O	X			X	O	X	
34		O	O	O			O	O	O			O	O	O			O	O	O			X	O	O			O	O	O	
35	O	X	O	O			O	O	O			O	O	O		O	O	O	O			O	O	X			O	O	O	
41		O	O	X			X	O	X			X	O	X			O	O	X			O	O	X			O	O	X	
49		+	O	+			+	O	+			X	O	X			O	X					+	X				X		
50								·				+	X	+																
B		X	O	X			X	O	X			X	O	X			X	O	X			X	O	X			O	O	O	
L 54.1			X																											

Table 4.12: State of preservation (children, central skeleton)

T.	Vertebrae						Ribs	Stern		Clav		Scap		Ilium		Isch		Pubis		Ha	Foot	Talus		Calc		Hyoid
	At	Ax	C	T	L	S		M	B	R	L	R	L	R	L	R	L	R	L			R	L	R	L	
7	O	O	O	O	O	O	O		X	O	O	O	O	O	O	O	O	O	O	X	X	O	O	O	O	X
8	X	X	X	X	X		X		+	O	X			+	+	X					+						
15	O	X	X	O	O	O	X		X	O	O	+	X	O	O	O	O	O	O			O	O				
26				+	X	X	+							O	O	O	O	O	O								
32	+	O	O	O	O	X	X		+	X	O	X	X	O	O	+	X	O		+	+						
34		+					X		X	O	O	X	O	O	O		O		O	X	X	O					
35	X	O	X	X	X	X	X		+	O	O	+	X	+	X		O	O	O	X	X	O			O		
41	O	O	X	O	O	X	O		+	X	O	X	O	O	X	O	O		X	X	X	X	O		O		
49	+	X	X	X	X	X	X	O	X	X	X	+	+	+			X	X			+	+					
50							+				X																
A				X			X						O														
B							X		+	O	+	X		X		O		X									

Table 4.13: Vertebrae, foot and hand bones (children); B bodies, AC fused neural arches, AH non-fused halves of neural arches, C/T carpals/tarsals, M metatarsals, S finger/toe segments

T.	Cervical			Thoracic			Lumbar			Sacrum			Coccyx	C/T	M	S
	B	AC	AH	B	AC	AH	B	AC	AH	B	AC	AH				
7	5	5		12	12		5	5		5	5			5	15	24
8	4		7	11		18	4		5				1	2	8	2
15	4		5	12		24	5		9	4		8			15	22
26				3		4	4		10	4					4	2
32	4		10	12		24	5		10	2		1			6	13
33				12	12		4	4		3			1			
34	2		7	7		15	5		9	4		1			13	18
35	2		8	10	1	22	3		10	3		3		13	17	17
41	5		7	12		24	5		10	2		5		6	19	31
49	1		9	10	2	13	4		7	3					3	
A						19										
B	4		7	12		21	4		6	3		3			5	3

Table 4.14: Sex and age (adults, pelvis); scores after Buikstra & Ubelaker 1994

T. b	Ventral Arc		Subpubic Concavity		Ischio-pubic Ridge		Gr. Sciatic Notch		Preauric. Sulcus		Pubic S. (Todd)		Pubic S. (Suchey-Brooks)		Auricular Surface	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
10							2		3/4						3/4	
13	F		F		F						6		4			
37					F*	F*	2		3	1					2/3	2/3
50									0						7*	

Table 4.15: Sex and age (adults, skull); scores after Buikstra & Ubelaker 1994

T.	Nuchal Crest	Mastoid		Orbita		Gla-bella	Mental Emin.	External Cranial Vault				Int. Sag.
		L	R	L	R			Obel.	Sag.	Breg	Coron	
4		4	3*	2	2	1		3	2		2/3	
9		4										
10	4*		5			3	4	3	2	1	2	
11				2*	3			3	3			3
37		1	1				2					
50			2*		3*	1						

Table 4.16: Cranial and mandibular measurements (adults); MFB max. cranial breadth, OB orbital breadth, IOB interorbital breadth, CH chin ht., HMB ht. of mandibular body, BMB breadth of mandibular body, BGW bigonial width, BCB bicondylar breadth, MRB min. ramus breadth, XRB max. ramus breadth, MRH max. ramus height, ML mandibular length, MA mandibular angle, CSL condylo-symphyseal length, GGL gonion-gnathion length

T.	MFB	OB	IOB	CH	HMB	BMB	BGW	BCB	MRB	XRB	MRH	ML	MA	CSL	GGL
4					r25.5	r10.0			r28.5						
10	*92	*34.5	*24												
11										r49.0					
33									30.0	*36.0					
37				29.0	27.0	11.5	90.0	118.0	31.0	46.5	53.5	70.5	129.0	117.0	81.0
50					r31.0	r16.0									

Table 4.17: Postcranial measurements (adults, upper limbs); ML max. length, EB epicondylar breadth, VDH vertical diam. of head, XD max. diam. at midshaft, MD min. diam. at midshaft, PEB max. proximal epiphyseal breadth, DEB max. distal epiphyseal breadth, APD anterior-posterior diam. at midshaft, MLD medial-lateral diam. at midshaft, PL physiological length, MC min. circumference

T.	Humerus					Radius					Ulna				
	ML	EB	VDH	XD	MD	ML	PEB	DEB	APD	MLD	ML	APD	MLD	PL	MC
4		r53.5				204	20.0		15.0	10.0	**224	14.0	9.5		r28.5
4												r13.0	r10.5		
9												r13.5	r10.5		r35.0
10		r64.0	>46.0				21.5	31.0							
37	r294	r52.0	r37.0	r20.0	r15.0	230	19.0	28.5	13.5	11.0	r*248	14.5	11.0	r217	37.0
50			>45.0												

Table 4.18: Postcranial measurements (adults, lower limbs); EB epicondylar breadth, FH max. diam. of femur head, APS anterior-posterior subtrochanteric diam., MLS medial-lateral subtrochanteric diam., APD anterior-posterior midshaft diam., MLD medial-lateral midshaft diam., MC midshaft circumference, ML max. length, L length, PEB max. proximal epiphyseal breadth, DEB max. distal epiphyseal breadth, NF max. diam. at nutrient foramen, MN medial-lateral diam. at nutrient foramen, NC circumference at nutrient foramen, MD max. diam. at midshaft

T.	Femur							Tibia							Fibula			
	EB	FH	APS	MLS	APD	MLD	MC	ML	L	PEB	DEB	NF	MN	NC	ML	MD	PEB	DEB
4					r 23.5	r23	r73					r*30	r* 18.5					23
9		43	r25	r31	r*25	r*27	r*81											
10					29.5	29.5	92				52				r351	r20		r29
11					r*34	r30	r* 100										27.5	28.5
12		>41			r27	r 26.5	r 82.5											
13	75	41	* 22.5	* 33.5	r27	r28	r* 84.5	325	309	69.5		30	19	79				r27
13												r 33.5	r 19.5	r85				
37		38	23	30.5	26	26	81.5					34	21	87.5				23
39		41			r26	r23	r*76					r32	r22	r85				
50		48	28	35	32.5	*29	*96					** 37.5	**26					
50			r27.5	r38	r33	r 29.5	r96											

Table 4.19: Postcranial measurements (adults, others); ML max. length, AP anterior-posterior diam. at midshaft, SI superior-inferior diam.at midshaft, Sc Gl vertical diam. of scapular glenoid fossa, Sacrum max. transverse diam. of S1 base, TH total height, CH height without dens, B breadth, L length, H height, Ar upper articular surface length, Navic B navicular max. breadth

T.	Clavicle			Sc Gl	Sac-rum	Atlas L	Axis				Patella		Calcaneus		Talus		Nav-ic B
	ML	AP	SI				TH	CH	B	L	H	B	L	B	L	Ar	
4													r*66		r*49	32.5	
9											45	43					
10							36.5	21	* 50.5	49	*42	*44	83	* 44.5	*52	33.5	41.5
11															**53	38	
12																	36
13											37	42.5	66		50	36	r37
33						35.5	27	15		37	25	27			44	28	29
37	r133	r 11.5	r9.5	32.5	50		30	18	43	45	35.5	42.5	67	38	45	29.5	35
39											39.5	41					38
nt																	36

Table 4.20: Diaphyseal measurements (children, upper limbs); ML max. length, DM max. distal metaphyseal breadth, PM max. proximal metaphyseal breadth, XD max. midshaft diameter, MD min. midshaft diameter, APD anterior-posterior midshaft diameter, MLD medial-lateral midshaft diameter, PL physiological length, MC min. circumference

T.	Humerus					Radius					Ulna				
	ML	DM	PM	XD	MD	ML	PM	DM	APD	ML D	ML	APD	ML D	PL	MC
7	124.5	28	24	12	10	89	10	14.5	8	5.5	101	7.5	7.5	86	21.5
15	70	17	14	6	5	57	6	9.5	4.5	3.5	63	4	3.5	55	14
26	58	14	11	4	3.5						52	3	2.5	46.5	10
32	64	15.5	11.5	5.5	5	52			4	3	59.5	4	3	51.5	14
33		39	29				13	21			182	*11	*10	160	*24
34	62	15.5	11.5	4.5	4	52	5	8	3	3	59.5	4	2.5	51	12
35	73.5	18.5	14.5	6.5	6	59	7	10	4.5	4	67.5	4.5	3	57	16
41	89	20.5	17.5	7.5	6							5	4		
49	r*79	r21		r8	r7	r62.5	r7	r12	r5.5	r4.5	r68.5	r5	r5	r61	r16
A	61	15	12	5	4.5										
B	*66			5.5	5						r*58	r4	r3	r*49	r14

Table 4.21: Diaphyseal measurements (children, lower limbs)

Tomb	Femur						Tibia						Fibula	
	ML	DM	PM	APD	MLD	MC	ML	PM	DM	NF	MN	NC	ML	MD
7	167	41.5	*20.5	12	14	41	r130	r33	r24	r15.5	r12	r44	r128	r7
15	81	20	18	6.5	6.5	22	70.5	15.5	11.5	8	7	24	67	4
26	r63	r17	r13	r5.5	r5	r17.5	55		9	6.5	6	19	53	2.5
32	r76			r6	r6	r20.5				7.5	7	23		3.5
33									33					
34	75	18.5	16	4.5	6	18	r65.5	r15	r10	r6	r6	r20	61	3
35	86	24.5	21	7	7	23	r73.5	r18.5	r13	r9.5	r8	r25.5	69	3.5
41	>96		23	7	8	24	91	20		9.5	7.5	27.5	*85	4
49			26	9	8.5	28			15	r9	r8.5	r28	>72	4.5
L 54.1				18										

Table 4.22: Skull and os coxae measurements (children); WL lesser wing length, WW lesser wing width, BL body length, BW body width, LB length of body, WA width of arc, FLH full length of half mandible, H height, B breadth, Au max. length of auricular surface, W width

T.	Sphenoid				Occipital		Mandible			Ilium			Ischium		Pubis
	WL	WW	BL	BW	BL	BW	LB	WA	FLH	H	B	Au	L	W	L
7	28	17.5			18	27				69.5	61.5		42	26	33
8					17	26						25			
15			12	20	12	16	37			37	33	14	20	14	16
26										29	26	11	16	10.5	13
32	22	12	9.5	17.5	12.5	14.5				32.5	30	13		11	16
33										r104			57		47
34	19	11.5	9	17	12	14	r36	r17	r46.5	32	29.5	11	18	12	15
35	26.5	15	12.5	20	13	17	40			*35	*36	13	22	13	18.5
41					15	19.5				r47	r43	15.5	27.5	17.5	*22
49	24	15			13	19									
50								27							
A			12	18			33.5	*15	45						
B			11	18.5	11.5	15.5	r36.5	r*18	r47	r*33			19.5	r12	r17

Table 4.23: Postcranial measurements (children); ML max. length, AP anterior-posterior diameter at midshaft, SI superior-inferior diameter at midshaft, L length, W width, LS length of the spine, B breadth, PE max. proximal epiphyseal breadth, DE max. distal epiphyseal breadth

T.	Clavicle			Scapula			Talus		Calcaneus		Femur		Tibia	
	ML	AP	SI	L	W	LS	L	B	L	B	PE	DE	PE	DE
7	74	6	4	69	48.5	57	24	17	32	19		32	23	16
8	r66	r6	r4.5								14	24		16
15	49	3.5	3.5		32	35	10	7.5						
32	45	4	3											
33	102	8	6								32	59	r52.5	37
34	44.5	3.5	2.5	33.5	29	31	9	6						
35	47	4.5	3.5				12	8	13.5	10	8			
41	56	5	3.5	49.5	37	45	14	9	19.5	11.5				
49	r53.5													
A	40	3	2.5	32	27	30								
B	r*40	r4	r3	r*35										

Table 4.24: Additional measurements

Tomb	Measurements
4	manubrium sterni B 51; acetabulum 47.5
33	radius, distal epiphysis r21.5; humerus head 29; distal fibula, epiphysis 18.5, metaphysis 18
7	hyoid body, breadth 11; parietal chord 106, occipital chord 89, frontal chord 89*, orbital breadth (maxillofrontale) 31.5; mandible, bigonial 68, bicondylar 79*, maximum ramus breadth 30, minimum ramus breadth 24, chin height 20.5, height of the mandibular body 17, breadth 9.5, condylo-symphyseal length 80, gonion-gnathion length 57.5, mandibular length 48, ramus height 32.5, mandibular angle 125°
8	gonion-gnathion length 56, chin height 23, height of the mandibular body 19.5, breadth 11, minimum ramus breadth 24
38	maximum breadth of occipital bone 51
49	manubrium sterni, height 15, breadth 17

Table 4.25: Nonmetric traits (adults, cranium I); scores after Buikstra & Ubelaker 1994. MS metopic suture, SN supraorbital notch, SF supraorbital foramen, ZFF zygomatico-facial foramina, PF parietal foramen, Bregm bregmatic sutural bone, Ast L left asterionic sutural bone, Par L left parietal notch bone, DHC divided hypoglassal canal, SSS flexure of superior sagittal sulcus

Tomb	MS	SN		SF		ZFF		PF		Bregm	Ast L	Par L	DHC		SSS
		L	R	L	R	L	R	L	R				L	R	
4	0	0	1	1	0			0	1				1	0*	
9	0														
10	0	2	2	0	0			1	1	0	1	0	0	0	
11	0	1		0			1								
33						1									
37						5	1						0	0	1
50	0		1		0*										

Table 4.26: Nonmetric traits (adults, cranium II); scores after Buikstra & Ubelaker 1994. FOI foramen ovale incomplete, FSI foramen spinosum incomplete, PSB pterygo-spinous bridge, PAB pterygo-alar bridge, TD tympanic dihiscence, AE auditory exostosis, MFL mastoid foramen location, MFN mastoid foramen number

T.	FOI		FSI		PSB		PAB		TD		AE		MFL		MFN	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
4	0	0	0	0	0	0	0	1	0		0	0				
10														1		2
37	0	0	0	0	1	1	1	1	0	0	0	0				

Table 4.27: Nonmetric traits (adults, mandible and postcranial); scores after Buikstra & Ubelaker 1994. MF mental foramen, MT mandibular torus, MBL mylohyoid bridge location, MBD mylohyoid bridge degree, ABL atlas bridging lateral, ABP atlas bridging posterior, SA septal aperture, TAS talar articular surfaces (0 – joint, 2 – separated), TT third trochanter

T.	MF		MT		MBL		MBD		ABL		ABP		SA		TAS		TT	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
4	1	1		0		0		0						0		0		
9													0	1*				
10	1	1	0	0									2	0	0	0		
11		2														0		
13																0		
33					0		0		0	0	0	0	0	0		0	0	0
37	1		0		2	2	2	1	0	0	0	0	2	0	0	0		
39																2		
50		1		0											2	2		

Table 4.28: Nonmetric traits (adults, accessory transverse foramina in cervical vertebrae); scores after Buikstra & Ubelaker 1994

Tomb	C3		C4		C5		C7	
	L	R	L	R	L	R	L	R
10		0	0	1	1	2		
33	0	0	0		0		0	0
37	0	0	0	0	1	0	0	

Table 4.29: Nonmetric traits (children, cranium I); scores after Buikstra & Ubelaker 1994. MS metopic suture, SN supraorbital notch, SF supraorbital foramen, IS infraorbital suture, MIF multiple infraorbital foramina, ZFF zygomatico-facial foramina, PF parietal foramen, CC condylar canal, DHC divided hypoglassal canal, SSS flexure of superior sagittal sulcus

T.	MS	SN	SF	IS		MIF		ZFF		PF		CC		DHC		SSS
		R	R	L	R	L	R	L	R	L	R	L	R	L	R	
7	0	1	0	2	2	0	0	1*	0			1	1	0	0	1
8	0			2	2	0	0	0	0*			0	1		0	
15		0	0					2	2			1	1	0	0	
32								1				1	1	0	0	
34												1	1	0	0	
35				0		0			2			1	1	0	0	
41								1	2			1	1	0	0	
49								1*	1	1	1	1		0	0	
50												1	0			
A				2		0										
B					1		0							0	0	

Table 4.30: Nonmetric traits (children, cranium II and other bones); scores after Buikstra & Ubelaker 1994. FOI foramen ovale incomplete, FSI foramen spinosum incomplete, PSB pterygo-spinous bridge, PAB pterygo-alar bridge, MF mental foramen, MT mandibular torus, MBL mylohyoid bridge location, MBD mylohyoid bridge degree, SA septal aperture, TT third trochanter

T.	FOI		FSI		PSB		PAB		MF		MT		MBL		MBD		SA		TT	
	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R
7		0		2		2		2	2	1	0	0	0	0	0	0	0	0	1	0
8		0		1		0		0	1	1	0	0	0	0	0	0				
15																				
32	0	0	1	1	0	1	2	2	1		0		0		0					
34									2*	2	0	0								
35									1	1										
41	0	0	0	0	1	2	1	1	1	1	0	0					0	0		
49	0	1	1	2					2		0	0	0	0	0	0	0	0	2	
50									1	1			0	0	0	0				
B									1	1										

Table 4.31: Degenerative Joint Disease (adults, vertebrae and ribs); Up upper articular surfaces, Lo lower articular surfaces, 0 no osteoarthritis, 1 osteophytes, 2 porosity and/or eburnation

T.	Atlas		Axis	Cervical			Thoracic			Lumbar			Ribs		
	Up	Lo	Up	0	1	2	0	1	2	0	1	2	0	1	2
4	0*			9	4		9			6			1		1
9				4			9			5			4		
10			1	10	2	3	4		2	6	1		3		
11	0*	0*	0*	5	1	4	2			1			3		1
37	0	0	0	13			39			10			10		
50				2	1		2		1	1		2			

Table 4.32: Degenerative Joint Disease (adults, upper limb); M medial, L lateral, A acromion, G glenoid, D distal, P proximal, 0 no osteoarthritis, 1 osteophytes, 2 initial porosity and/or eburnation, 3 advanced porosity and/or eburnation

T.	Stern		Clavicle				Scapula				Humerus				Ulna				Radius			
	L	R	L M	R M	LL	RL	LA	R A	L G	R G	LP	RP	LD	R D	LP	RP	LD	R D	LP	RP	LD	R D
4	0	0	0	0	0*				0*				0*	0/1	0					0	0*	0
9	0	0		0/1			0	0					0	0		0*		0			0*	
10			2			2	2			1*	0	0	1*	1*	0	0	0/1	0/1	0/1	0/1	0	0
11						1											0*				0/1	
37			0	0		0			0*	0	0	0	0	0	0	0	0	0		0		0
50										0*												

Table 4.33: Degenerative Joint Disease (adults, lower limb); M medial, L lateral, D distal, P proximal

T.	Os Coxae				Femur				Tibia				Fibula				Patella	
	LM	RM	LL	RL	LP	RP	LD	RD	LP	RP	LD	RD	LP	RP	LD	RD	L	R
9					0	0											0	0
10	0		0/1	0/1			3	2			0	0*				1	3	
11											0*		0*			0		
12								0										0
13					0	0	1	0*	0	0*	0	0*		0			0/1	0
37					0	0	0	0	0*			0*					0	0
50												0*				0		

Table 4.34: Spondylosis (adults); 0 none, 1 small/medium osteophytes and/or Schmörl nodes, 2 large osteophytes, compression

Tomb	Cervical			Thoracic			Lumbar		
	0	1	2	0	1	2	0	1	2
4		2							
9				3			3		
10			5	5		2			
37	5			12			4		

Table 4.35: Bone robustness (adults); ASP-S size of linea aspera, ASP–R morphology of linea aspera, POPLIT tibia, popliteal line, RAD–C radius, interosseus crest, RAD–T radial tuberosity, RAD–H measurements of the proximal articular surface in radius, MN minimum circumferential breadth, MX maximum circumferential breadth, HUM–D humerus, deltoid tuberosity, F-LAT femur, lateral tuberosity

T.	ASP-S		ASP-R		POPLIT		RAD-C		RAD-T		RAD-H		HUM-D		F-LAT	
	R	L	R	L	R	L	R	L	R	L	MN	MX	R	L	R	L
4	0	0	0	0			2	2	2	2	3	7.5				
9	0	0								2				0	0	
10	0		1						2	2	2	9	1	1	2	
11	2		2										2			
12	1	1	0	0	0											
13					1	0										
37	0	0	0	0	0	0	0		1		4.5	8	0			
39			0	0	0	0										
50	1	1	1	1					0				0		2	2

Table 4.36: Dental wear (permanent teeth, maxilla); scores after Buikstra & Ubelaker 1994; in molars min. and max. wear on 10-point scale. pm postmortem tooth loss, am antemortem tooth loss, + tooth fragment(s)

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4			9/10				7	7/8	7/8			7/8	6	9/10	4/9	
10				am	pm	pm	pm	8	am	pm						
11	4	4	pm	pm	pm				pm	pm	pm	pm	pm			
33	0	1	1	1	1			1		1	+	1		1	1	0
37			3	5	pm	pm	3/4	3	3/4	pm	5	4	6	4/7		3/4
50									pm	pm						
01-7																1

Table 4.37: Dental wear (permanent teeth, mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
4						8	7/8	7/8	6	6	6		6	5/6	am	am
10			am	pm	pm	pm	pm			pm	pm	pm	pm	am	pm	pm
11	4	4/5										pm	pm	pm		4
33	0	1	1	1	+	1	1		1/2	+	1	1	1	1	1	0
37	pm	am	am	pm	am	pm	3	3	3	3	4			am	am	3/4
50	8	5/7		6								5/6	5	am	4/5	4/5

Table 4.38: Germ development (permanent teeth, maxilla); scores after Buikstra & Ubelaker 1994

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
33	4														11	4
8							5	5	5	5						
41								2								

Table 4.39: Germ development (permanent teeth, mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
33	4		13	10		11	13					10	10		11	4
7								5								
8									6							
41						1	2/3			2/3	1					

Table 4.40: Enamel hypoplasia degree (maxilla); 0 none, 1 small to medium irregularity, 2 small to medium hypoplastic line(s), 3 more than one distinct hypoplastic line

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4							2						0			
11	2	0														
33		2	0	2	2			1		2	3	2		1	2	
37			0	0			2	0	1		1	1	0	0		0
8							2*	2*	2*	2*						
01-7																2

Table 4.41: Enamel hypoplasia degree (mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
11	1	0														1
33		1	1	3		3	2		2	2	3	3	3	0	2	
37							0	0	0	0	1					0
50	0	0		2								1			0	1
8									2							

Table 4.42: Enamel hypoplasia measurements (maxilla)

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4							2.1, 3.6									
11	1.4, 2.6															
33		1.1, 3.0		1.8, 3.2	1.8, 2.6			2.8, 4.8 5.6		1.4, 2.4 4.7	2.1, 3.5 4.7, 5.3	1.2, 3.8		3.3	1.2, 2.8	
37							1.6, 3.0 4.8		1.8, 4.3		2.1, 3.9	1.7, 3.4				
01-7																1.4, 2.5

Table 4.43: Enamel hypoplasia measurements (mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
11	1.3															0.9
33		2.6, 3.4		1.6, 2.8 4.3		2.6, 3.8 5.0, 6.0	2.6, 3.8 5.1		2.6, 3.6	2.9, 3.9	2.5, 3.9 4.9, 5.9	1.4, 2.3 3.8	1.5, 3.1 4.1		1.5, 2.6	
50				1.3, 7.7								4.4				
8									1.2, 2.1 3.8							

Table 4.44: Dental caries (permanent teeth, maxilla); 0 none, 1 initial lesion (< 2 mm diam), 2 medium lesion (2 to 6 mm diam), 3 large lesion (> 6 mm diam)

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4			0				0	0	0			0	0	0	2	
11	0															
37			1				2	0	1		0	3	0	0		1
01-7																0

Table 4.45: Dental caries (permanent teeth, mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
4						0	0	0	0	0	0		0	1		
11	0	0														0
37							0	0	0	0	0					1
50	0	0		0								0			0	0

Table 4.46: Mesiodistal diameters (permanent teeth, maxilla)

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4													6.7			
11	7.9															
33	9.1	8.9		6.3	6.6			8.4		5.7		6.7		10.5	8.8	10.0
37			10.7				6.1	8.2	7.9		7.6	*6.7	6.3	10.3		6.9
8							7.2	9.7	9.6	7.2						
01-7																9.2

Table 4.47: Buccolingual diameters (permanent teeth, maxilla)

T.	RM^3	RM^2	RM^1	RP^2	RP^1	RC	RI^2	RI^1	LI^1	LI^2	LC	LP^1	LP^2	LM^1	LM^2	LM^3
4													8.9		*10.5	
11	9.3															
33	10.3	9.6			8.8			6.7				8.9		10.6	10.3	10.2
37			11.6				6.0	7.1	7.1		8.5		8.7	11.8		11.6
01-7																9.9

Table 4.48: Mesiodistal diameters (permanent teeth, mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
4														9.7		
11	10.5															
33	10.9	9.7	10.9	6.7		5.8	5.4		4.9		6.0	6.5	6.7	10.9	9.7	10.5
37							5.8	4.8	4.8	5.9	6.8					9.4
50	11.7	11.9		7.2								7.4	*7.6		12.4	10.8
8									5.5							

Table 4.49: Buccolingual diameters (permanent teeth, mandible)

T.	LM_3	LM_2	LM_1	LP_2	LP_1	LC	LI_2	LI_1	RI_1	RI_2	RC	RP_1	RP_2	RM_1	RM_2	RM_3
4									6.4	6.5	7.3			10.1		
11	9.1	10.2														9.0
33	9.4	9.2	9.8	7.5		6.7	5.4		5.3		6.6	7.7	8.0	10.1	9.3	9.3
37							6.2	5.1		5.8	7.6					9.8
50	12.1	11.7		*8.4								9.0			11.6	11.0

Table 4.50: Dental wear (deciduous teeth, maxilla)

Tomb	RM^1	rm^2	rm^1	rc	ri^2	ri^1	li^1	li^2	lc	lm^1	lm^2	LM^1
7			I	I	I	I/2	I/2	I	I	I		
8		I	I	I			I	I	I	I	I	
33											2	
50		I										

Table 4.51: Dental wear (deciduous teeth, mandible)

Tomb	LM_1	lm_2	lm_1	lc	li_2	li_1	ri_1	ri_2	rc	rm_1	rm_2	RM_1
7			1	1	1	1/2	1/2	1	1			
8		1	1						1		1	
33		2/3									2/3	
50		pm	1							pm	1	
L 68.2		1										

Table 4.52: Germ development (deciduous teeth, maxilla); scores after Buikstra & Ubelaker 1994

Tomb	RM^1	rm^2	rm^1	rc	ri^2	ri^1	li^1	li^2	lc	lm^1	lm^2	LM^1
7	6	11	12	11	12	13	13	12	11	12	11	6
8	6	9	12	10				12	10	12	9	6
15			4	2	5	5	5	5		4	2*	
32							5	5		4	2	
34		3/4			5							
35		3	5		6	6	6	6		5	3	
41	2/3	5	8	6			9	9	6	8	5	
49	3	5	7	5		9	9			7	5	
50	5/6	10										
A				2*	5	5	5	5			2	
B		2	4		5/6	5/6	5/6	5/6	3		2	

Table 4.53: Germ development (deciduous teeth, mandible)

Tomb	LM_1	lm_2	lm_1	lc	li_2	li_1	ri_1	ri_2	rc	rm_1	rm_2	RM_1
7		11	12	11	12	13	13	12	11	12	11	
8	6	9	12						10		9	6
15			4	2	5	5				4	2*	
32		2	4		5/6						2	
33		14									14	
34											3/4	
35		3	5	3	6	6	6	6	3	5	3	
41	3	5	8	6	9	10	10	9	6	8	5	3
49	3	5	7	5				8	5	7	5	3
50	5/6		12									5/6
A					5							
B		2	4	3	5/6	6	6	5/6	3	4	2	

Table 4.54: Mesiodistal diameters (deciduous teeth, maxilla)

Tomb	RM^1	rm^2	rm^1	rc	ri^2	ri^1	li^1	li^2	lc	lm^1	lm^2	LM^1
7	9.7	**7.1	6.5	6.2	4.6	5.7		4.5	6.4	6.4	8.0	9.8
8	12.0	10.0	8.0	6.9			7.5	5.5	7.3	8.1	9.9	11.5
35					5.0	6.7	6.6	5.0				
41		8.2	7.3	6.7			6.2	5.0	6.6	7.0	8.3	
49		8.3	6.7			6.1	6.1			6.5	7.9	
50	*10.9	9.0										

Table 4.55: Buccolingual diameters (deciduous teeth, maxilla)

Tomb	RM^1	rm^2	rm^1	rc	ri^2	ri^1	li^1	li^2	lc	lm^1	lm^2	LM^1
7	9.8	8.8	7.2	5.6	4.2	4.8	4.8	4.3	5.5	7.3	8.8	9.9
8	12.3	11.0	9.6	6.6			5.4	5.2	6.5	9.5	10.9	12.6
41		9.1	8.4				4.4	4.5		8.5	9.3	
49		8.7	7.8			4.8	4.7			7.9	8.8	
50	*11.8	10.0										

Table 4.56: Mesiodistal diameters (deciduous teeth, mandible)

Tomb	LM_1	lm_2	lm_1	lc	li_2	li_1	ri_1	ri_2	rc	rm_1	rm_2	RM_1
7		9.0		5.6	3.9	3.7	3.8	4.0	5.5	7.5	9.3	
8	12.0	11.1	8.8						6.1		11.1	11.9
33		9.3									9.3	
35					4.6	4.2	4.3	4.5				
41		9.6	8.0	5.5	4.7	4.1	4.0	4.7	5.6	8.0	9.5	
49		9.1	7.3					4.3		7.1	9.2	
50	*10.9		8.3								*10.2	*10.9
L 68.2		9.0										

Table 4.57: Buccolingual diameters (deciduous teeth, mandible)

Tomb	LM_1	lm_2	lm_1	lc	li_2	li_1	ri_1	ri_2	rc	rm_1	rm_2	RM_1
7		8.0	6.5	5.0	3.7	3.5	3.5	3.7	5.0	6.3	8.0	
8	11.3	9.3	7.5						5.7		9.5	11.1
33		8.6									8.5	
41		8.3	6.9		3.8	3.3	3.2	3.9		7.0	8.2	
49		8.0	6.7					3.8		6.8	8.1	
50	*10.2		6.7								*8.7	*10.3
L 68.2		8.3										

Table 4.58: Femoral and tibial shaft indices (adults); CB Chagar Bazar, MEV Middle Euphrates Valley (Tomczyk & Sołtysiak 2009)

Index	CB - females			CB - males			MEV - females			MEV - males		
	N	mean	SD	N	mean	SD	N	mean	SD	N	mean	SD
platymeric	2	71.3	5.83	1	80.0		21	82.3	8.30	19	82.2	8.23
pilastric	4	102.9	7.16	3	108.5	7.36	11	104.9	5.58	11	105.7	6.89
cnemic	**4**	**63.9**	**3.37**	1	69.3		**14**	**76.5**	**9.10**	12	69.9	3.85