

## Human Remains from the Kuntur Wasi, Huacaloma, Loma Redonda and Kolgitín sites in the Cajamarca Region, Peru

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**Abstract** Forty seven human skeletons dating Formative Period (2,000 B. C.-A. D 0) were recovered from the Kuntur Wasi, Loma Redonda, Huacaloma and Kolgitín sites in Cajamarca region, Peru. The artificial cranial deformities, which can be classified into the tabular erect type, were observed in nine skulls from these sites excepting the Kolgitín site. The dental caries was frequently found in the Kuntur Wasi people though less frequently than in the recent Peruvians. The facial morphology is not homogeneous, and the aristocratic features are found in some skulls from the Kuntur Wasi and Roma Ledonda sites. The sexual difference of estimated stature is great in the Kuntur Wasi and Huacaloma people. The squatting facets are present in all tali examined, suggesting that the inhabitants customarily sat in the squatting position or walked up and down rocky mountains.

**Key words:** Peru, Andes, Formative period, Human skeletons.

### Introduction

Since 1960 the Archaeological Mission of the University of Tokyo has been conducting a series of excavations at Formative Period sites (2,000 B. C.–A. D. 0) in the northern Peruvian highlands. One is the Kuntur Wasi site located on the western slope of the Andes at an altitude of 2,200 m above sea level. Others are the Loma Redonda, Huacaloma and Kolgitín sites situated in the Cajamarca Valley which extends from 2750 to 2500 m above sea level for a distance of some 20 km.

The preservations, identified sexes and ages, and results of some anthropological

examinations of the human skeletal remains recovered from the tombs in these four sites, are recorded in this article.

The chronological sequences in the Kuntur Wasi site consist of the Idolo phase (1200 B. C.–800 B. C.), Kuntur Wasi phase (800 B. C.–500 B. C.), Copa phase (500 B. C.–250 B. C.) and Sotera phase (250 B. C.–50 B. C.), while those in the sites at the Cajamarca Valley (Loma Redonda, Huacaloma and Kolgitin sites) include the Early Huacaloma phase (1500 B. C.–1200 B. C.), Late Huacaloma phase (1200 B. C.–500 B. C.), EL phase (500 B. C.–250 B. C.) and Layzon phase (250 B. C.–50 B. C.).

### **Preservations of Human Remains**

States of preservations of 47 skeletons from the Kuntur Wasi, Loma Redonda, Huacaloma, and Kolgitin sites are described bellow. The number of individuals in each site, classified into ages and sexes, are summarized in Tables 1 and 2. The cranial and limb bone measurements taken according to Martin and Saller (1957) and Howells (1989) are given in Tables 3–9. The well-preserved skulls are displayed in Figs. 1 and 2.

#### *The Kuntur Wasi Remains*

KW A3 Large Pit [90K-A-H1]

Date: Kuntur Wasi phase? Age: unknown. Sex: unknown.

There are several small fragments of the cranial vault and postcranial skeleton.

KW A3E2 [90K-A-H2]

Date: Copa phase. Age: young adult. Sex: male.

The remains are highly fragmented, consisting of about 30 small fragile fragments.

KW A3E2-3a [90K-A-H3(1)]

Date: Copa phase. Age: young adult. Sex: male.

There is the left half of the robust mandibular body with the first and second molars. The crown surfaces are slightly worn (Broca's 1st grade).

KW A3E2-3a [90K-A-H3(2)]

Date: Copa phase. Age: juvenile. Sex: unknown.

The remains consist of one vertebra, a small fragment of the long bone and the left talus.

KW A-Tm102 A201 N-Pit [90K-A-H4]

Date: Kuntur Wasi phase? Age: unknown adult. Sex: unknown.

This individual is represented only by the shaft of the left tibia and several small

Table 1. Numbers of human remains excavated from the Kuntur Wasi site.

Period Age \ Sex	Idolo			Kuntur Wasi			Copa			Unknown		
	♂	♀	?	♂	♀	?	♂	♀	?	♂	♀	?
Senile (60 years–)				1	1		1					
Mature (40–60)				2								1
Young Adult (20–40)				1			3			2	1	
Adult (age?)			2							1	1	3
Juvenile (7–20)									2			2
Infant (0–6)						3						
Total	0	0	2	4	1	3	4	0	2	3	2	6
Nonadults/Total	0/2			3/8			2/6			2/11		

Table 2. Numbers of human remains from the Huacaloma (HL), Loma Redonda and Kolgitin sites.

Site Periods Age \ Sex	Huacaloma			L. Redonda			Kolgitin		
	Huacaloma			Late HL			Late HL-EL		
	♂	♀	?	♂	♀	?	♂	♀	?
Senile (60 years–)									
Mature (40–60)	1	1		2	1		1		1
Young Adult (20–40)	1	2	1	1					
Adult (age?)									2
Juvenile(7–20)	1	1	2						
Infant (0–6)									2
Total	3	4	3	3	1	0	1	0	5
Nonadults/total	4/10			0/4			2/6		

fragments of some long bones.

#### KW A3 Large Pit [90K-A-H5]

Date: Kuntur Wasi phase? Age: young adult. Sex: male.

The remains are the small fragmentary radius, left ulna and left clavicle, the left femur whose proximal and distal ends are missing, the right patella, the shafts of the left and right fibulae, and several fragments of the metatarsals and phalanges.

## KW A202-5a Lower Layer [90K-A-H6]

Date: Idoro phase. Age: unknown. Sex: unknown.

This individual is represented only by a few fragments of the clavicle and some long bone.

## KW A-Tm102 A201 North Pit 2 (1) [90K-A-H8(1)]

Date: Kuntur Wasi phase? Age: infant. Sex: unknown.

Only the right femur, the right ilium and a fragment of the scapula are present.

## KW A-Tm102 North Pit 2 (2) [90K-A-H8(2)]

Date: Kuntur Wasi phase? Age: unknown adult. Sex: female.

The remains are in a poor state of preservation. Four fragments of the ilium, the proximal and distal ends of the right femur, a part of the scapula, and the nearly complete left clavicle are identified. Others are very small fragments of the skull and long bones.

## KW A104 LH Pit [90K-A-H9]

Date: Idoro phase. Age: unknown. Sex: unknown.

Only two small pieces of the calvaria are present.

## KW A-Tm102 (1) [90K-A-H10(1)]

Date: Kuntur Wasi phase? Age: young adult. Sex: male.

The nearly complete left humerus, the shaft of the right humerus, the distal end of the tibia, two fragmentary foot bones, and many small fragile pieces of the ribs, vertebrae and long bones are present.

## KW A-Tm102 (2) [90K-A-H10(2)]

Date: Kuntur Wasi phase? Age: infant. Sex: unknown.

The remains are fragile fragments of the infant skeleton, consisting of the right scapula, five fragments of the humeri, the almost complete right radius, the distal end of the left femur, a small piece of the tibia, a fragment of the left ilium, and the right maxillary left canine and first molar.

## KW A201 North Pit A-Tm102 [90K-A-H11]

Date: Kuntur Wasi phase? Age: unknown adult. Sex: male?

Only a piece of the parietal and several small fragments of the limb bones remain.

## KW A-Tm101 [90K-A-H12]

Date: Kuntur Wasi phase. Age: senile. Sex: female.

There remain many small fragile pieces of the cranial vault, facial bones and

mandibular body, and fragments of the left and right humeri, left femur, left and right tibiae, and 32 pieces of the finger bones. The preserved teeth are as follows. The crown surfaces are heavily worn out (Broca's 4th grade). The shovellings are marked in the upper central incisors.

X	X	X	P2	P1	C	I2	I1	I1	I2	C	P1	P2	X	X	X
X	X	X	X	X	/	/	/	X	I2	C	P1	X	X	X	X

X: socket closed, /: tooth and socket missing

#### KW A-Tm103 (1) [90K-A-H13(1)]

Date: Kuntur Wasi phase. Age: mature. Sex: male.

(Skull) The skull is almost complete. The cranium is very robust. The eyebrow ridges and glabella are prominent, and every muscle attachment area is strongly developed. The frontal is well leaning back. The zygomatic bones are large. The facial skeleton is low and wide. The orbital margins are round. The nasal root is deeply concave, while the nasal tip is well elevated. The coronal, sagittal and lambdoidal sutures are partially fused on the outer surfaces and completely fused on the inner surfaces. The skull had not been deformed artificially. The left temporal region was perforated in a round form, which can be identified as mechanically injured. The margin of the perforation suggests that this individual was attacked with an obtuse weapon or something like that. The following teeth are placed in the maxilla and mandible. The crown surfaces are moderately worn out (Broca's 2nd grade).

M3	M2	M1	P2	P1	C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
M3	M2	○	○	P1	C	X	X	X	X	X	P1	P2	M1	M2	M3

○:tooth missing but socket present

(Postcranial Skeleton) The remains are relatively in a good state of preservation. They consist of fragments of the left and right clavicles, very small fragments of the scapulae, the left humerus without the proximal end, the nearly complete right humerus, the shafts of the left and right radii, a pair of the nearly complete ulnae, a pair of the nearly complete femora, the shaft of the left tibia, the almost complete right tibia, the fibulae of both sides whose proximal and distal ends are broken, a pair of the nearly complete coxae, approximately 50 pieces of the vertebrae, a part of the sacrum, and many fragments of the ribs, hand and foot bones. The long bones are considerably large and robust. The squatting facets are present on the tali (the C and F types by Morimoto, 1971).

#### KW A-Tm103 (2) [90K-A-H13(2)]

Date: Kuntur Wasi phase. Age: infant around 5 years old. Sex: unknown.

The infant mandible in which some deciduous dentition are placed, and three fragments of the ribs are present.

KW B403-6a (1) [90K-B-H32(1)]

Date: Copa phase. Age: young adult. Sex: male.

Only the calvaria is well preserved. Sutures are not fused on both the inner and outer surfaces. The superciliary arches are prominent but the frontal is elevated perpendicularly. The skull had been artificially deformed into the tabular erect type, with the entire lambdoidal portion compressed.

KW B403-6a (2) [90K-B-H32(2)]

Date: Copa phase. Age: juvenile. Sex: unknown.

The shafts of the right humerus, right radius and left ulna are present.

KW A-Tm2 [9K-N-A128]

Date: Kuntur Wasi phase. Age: mature or senile. Sex: male.

(Skull) The cranium is morphologically gracile, as characterized by the narrow face, underdeveloped muscle attachment areas, indistinct temporal lines and nuchal lines, flat eyebrow ridges and glabella, and small mandibular body. The frontal is slightly leaning back. The coronal, sagittal and lambdoidal sutures are fused only on the inner surfaces. The skull had been artificially deformed into the tabular erect type. The following teeth are placed in the maxilla and mandible. The crown surfaces are heavily worn out (Broca's 3rd grade).

/	M2	M1	P2	P1	C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
X	X	M1	/	P1	C	I2	I1	/	I2	C	P1	P2	/	/	X

(Postcranial Skeleton) There are pairs of the fragmentary clavicles, incomplete scapulae, and humeri without the proximal ends, the proximal half of the left radius, the nearly complete right radius and left ulna, the proximal portion of the right ulna, the fragmentary coxae, and both sides of the femoral, tibial and fibular shafts, and pairs of the patellae and tali. Many fragmentary vertebrae and ribs also remain. The limb bones are relatively slender, while the muscle attachment areas are well developed, forming prominent ridges or deep fossae. The C and F types of squatting facets are present on the tali.

KW A-Tm3 [9K-N-A135]

Date: Kuntur Wasi phase. Age: senile. Sex: female?

There remain approximately 70 fragments of the cranial vault, the maxilla and mandible with the teeth, and about 80 small fragments of the limb bones. As far as the remaining alveoli are concerned, every tooth came off ante-mortally.

/	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
/	/	/	/	/	/	/	/	/	/	X	X	X	X	X	/	/

## KW A-Tm4 [9K-N-A137]

Date: Kuntur Wasi phase. Age: young adult. Sex: male.

Several decades of the small cranial fragments, the humeral shafts of both sides, the mid-shaft of the left femur, the shaft of the left fibula and approximately 30 small fragments of the limb bones are found.

## KW C-Tm2 [9K-N-CT1]

Date: Copa phase? Age: mature. Sex: female.

(Skull) The preservation is relatively in a good state of condition, but the nasal bones, a part of the left temporal, right parietal and sphenoids, and the superior part of the occipital are missing. The mandible is complete. The cranium is small and gracile. The eyebrow ridges and glabella are not prominent, and developments of muscle attachment areas are weak. The frontal is elevated perpendicularly. The skull had not been deformed artificially. The orbital margins are round. The coronal and sagittal sutures are not fused on both the inner and outer surfaces, while the lambdoidal sutures are partially fused only on the inner surfaces. The following teeth are placed in the maxilla and mandible. The crown surfaces are moderately worn out (Broca's 2nd grade). The crown of the upper left canines and premolars are missing due to the heavy dental caries. The dental caries are found also in the right lower second molar and all left lower molars. The shovellings are strong in the upper central incisors. The upper lateral incisors show peg shape.

M3	M2	M1	P2	P1	C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
M3	M2	M1	P2	P1	C	I2	I1	I1	I2	○	P1	P2	M1	M2	M3

(Postcranial Skeleton) The remains consist of the complete left humerus, the left and right radii without the proximal ends, the left ulna without the distal end, the shaft of the left femur, the left patella, the left and right scapulae and clavicles, the nearly complete coxae from both sides, 25 vertebrae and 94 pieces of the ribs. These bones are considerably small and gracile.

## KW C-Tm3 [9K-N-CT2]

Date: Copa phase? Age: unknown. Sex: unknown.

There are approximately 30 small pieces of the cranium, several fragmentary long bones and three permanent teeth.





X	M2	M1	P2	P1	C	/	I1		/	/	/	P1	P2	M1	M2	/
M3	M2	M1	P2	P1	C	I2	○		/	○	C	P1	P2	M1	M2	M3

(Postcranial Skeleton) The postcranial remains consist of the right and left humeri and radii, the right ulna without the distal end, a small piece of the ilium, the shafts of the right and left femora and fibulae, fragments of the scapulae, 20 pieces of the ribs, around 20 fragments of vertebrae, the right talus, and five pieces of the tarsals. The C, D and F types of the squatting facets are present on the talus.

#### LRIIIe-4a (2) [9L3-H5]

Date: Late Huacaloma phase. Age: mature. Sex: male.

(Skull) The cranium is highly fragmented. The tooth remains are identified as follows. Those crown surfaces are moderately worn out (Broca's 2nd grade)

M3	M2	/	/	/	C	I2	I1		I1	I2	C	/	/	/	M2	/
/	M2	M1	P2	○	C	I2	I1		I1	I2	C	P1	P2	M1	M2	M3

(Postcranial Skeleton) The left humerus without the proximal end, the shaft of the right humerus, the proximal portion of the right femur, the shafts of the left and right radii and ulnae are found.

#### LRIIIe (1) [9L3-H9(1)]

Date: Late Huacaloma phase. Age: mature. Sex: male.

The remains consist of the lambdoidal portion of the calvaria and four teeth. The sagittal and lambdoidal sutures are fused only on the inner surfaces. The flat lambdoidal portion of the cranium indicates that this skull was artificially deformed (tabular erect type). The tooth remains are identified as follows. The crown surfaces are well worn out (Broca's 2nd or 3rd grade). An extensive caries is found in the upper left second premolar.

/	/	/	/	/	/	/	/	/		I1	/	/	/	P2	/	/	/	
/	/	/	/	/	/	/	/	/		/	/	/	/	/	/	/	M2	M3

#### LRIIIe (2) [9L3-H9(2)]

Date: Late Huacaloma phase. Age: mature. Sex: male.

(Skull) Anterior half of the skull, a part of the occipital and the mandible are well preserved. The skull had been artificially deformed, showing the tabular erect type. The coronal suture is not fused on the outer surface but completely fused on the inner surface. The mastoid processes are moderate size. The glabella and superciliary arch-

es are slightly prominent. The temporal lines are not distinct. The facial skeleton is narrow and high. The nasal bones are markedly elevated. The maxilla is not well developed but the alveolar prognatism is marked. The following teeth are placed on the jaws. The crown surfaces are heavily worn out (Broca's 3rd grade).

M3	M2	M1	P2	P1	C	I2	I1		○	X	○	P1	P2	M1	M2	M3
/	/	/	P2	P1	C	I2	I1		I1	I2	C	P1	X	M1	M2	M3

(Postcranial Skeleton) The postcranial findings are the proximal half of the left humerus, the shaft of the right humerus, the shafts of the left and right radii, the shafts of the left ulna, the proximal half of the right ulna, the left femur without the proximal end, the right femur without the distal end, the right patella, the shaft of the right tibia, the left tibia without the proximal end, the proximal half of the left fibula, a pair of the tali, and many small fragments of the limb bones and ribs. On the tali, the C and F types of the squatting facets are present.

*The Huacaloma Remains*

HL-VIIγWest-2a-Conglomerate [8HH7-12]

Date: Late Huacaloma phase. Age: juvenile around 15 years old. Sex: male.

Only the complete right femur remains. The linea aspera on the dorsal surface of the femur is well-developed forming the pilastic structure.

HL-VIIγTm1 (1) [8HH7-13]

Date: Late Huacaloma phase. Age: juvenile around 9 years old. Sex: unknown.

(Skull) The calvaria is well preserved. The artificial deformity can be observed as the entirely flat lambdoidal portion (tabular erect type). The following permanent teeth are identified. The formation of the roots had been incomplete. The crown surfaces are not worn out.

M1	P2	P1	C	I2	I1		I1	/	C	P1	P2	M1
M1	P2	P1	C	I2	I1		I1	I2	C	P1	P2	M1

(Postcranial Skeleton) The left humerus without the proximal end, the left radius and ulna without those distal ends, two small pieces of the coxa, both sides of the femora and tibiae, and the left fibula are present.

HL-VIIγTm1 (2) [8HH7-14]

Date: Early Huacaloma phase. Age: young adult. Sex: female?

The remains are in a poor state of preservation. The calvaria is broken into 21 small pieces. The shaft of the left femur and eleven pieces of the tarsals from both sides are also present. The tooth findings are as follows. The crown surfaces are

slightly worn (Broca's 1st grade).

M3	M2	M1	P2	P1	C	I2	I1	I1	I2	C	/	P2	M1	M2	M3
M3	M2	M1	P2	P1	C	I2	/	/	/	C	P1	P2	M1	M2	M3

#### HL-VIIγTm2 [8HH7-15]

Date: Early Huacaloma phase. Age: juvenile. Sex: unknown.

The preservation is in a poor state of condition. Only small fragments of the calvaria, the right upper second molar and a small piece of the distal end of the femur are identified. Other remains consist of many small fragile fragments of the skull and limb bones.

#### HL-VIIγTm3 [8HH7-16]

Date: Early Huacaloma phase. Age: mature. Sex: male.

Only the nearly complete cranium remains. The zygomatic arches and a part of the occipital are broken. The mandible is missing. The skull had been artificially deformed into the tabular erect type. The cranium is robust with the large mastoid processes, well developed glabella, marked superciliary arches, and large zygomatic bones. The temporal lines are distinct. The facial skeleton is broad and low. The nasal bones are prominent. The orbital shape is low and broad. The coronal and lambdoidal sutures are not fused on the outer surfaces, but the sagittal suture and lambdoidal sutures are completely fused on the inner surfaces. The following teeth are placed in the maxilla. The crown surfaces are extremely worn out (Broca's 4th grade).

M3	M2	○	P2	P1	C	I2	I1	I1	○	C	P1	P2	M1	M2	M3
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

#### HL-VIIγTm4 [8HH7-17]

Date: Early Huacaloma phase. Age: young adult. Sex: female.

(Skull) The cranial remains consist of the nearly complete facial bones, anterior half of the calvaria, approximately 30 small pieces of other portions of the cranium and the mandible. The cranium is generally gracile. The glabella and superciliary arches are flat. The frontal is elevated perpendicularly. The temporal lines are not distinct. The nasal bones are not prominent. The alveolar prognathism is strong. Although the occipital is missing, the cranium seems to be artificially deformed at the lambdoidal portion (tabular erect type). The coronal and sagittal sutures are not fused both on the outer and inner surfaces. The following teeth are placed in the maxilla and mandible. The crown surfaces are well worn out (Broca's 2nd or 3rd grade). The shovelling are well developed both in the upper central and lateral incisors.

M3	M2	M1	P2	P1	C	I2	I1		I1	I2	C	P1	P2	M1	M2	M3
M3	M2	M1	P2	P1	C	I2	/		I1	/	C	P1	P2	M1	M2	M3

(Postcranial Skeleton) The postcranial findings consist of the nearly complete right humerus, the left humerus without the proximal end, the right ulna without the distal end, the nearly complete left ulna, both sides of the radii without the distal ends, the left pelvis except the ischium, the right coxa, the distal end of the left femur, the right femur without the distal end, the left and right tibiae without the proximal ends, the complete right patella, the shafts of the fibulae, the left and right calcaneus, 21 pieces of the vertebrae, a fragment of the sacrum, and the hand and foot bones. The limb bones are very short and gracile. The hand bones include the right scaphoideum, seven metacarpals, five proximal phalanges, and eight medial phalanges. The foot bones include the left talus, the left navicular, the left cuneiformia, nine metatarsals and several phalanges from both sides. The C and F types of squatting facets are present on the talus.

#### HL-VII $\gamma$ Tm5 [8HH7-18]

Date: Early Huacaloma phase. Age: juvenile around 18–20 years old. Sex: female.

(Skull) The skull is almost complete, but the right zygomatic arch is broken. The entirely flat occipital indicates that the cranium had been artificially deformed (tabular erect type). The mastoid processes are small, and the glabella and superciliary arches are not prominent. The frontal is slightly leaning. The temporal lines are not distinct. The nasal root and tip are moderately prominent. The coronal, sagittal and lambdoidal sutures are not fused both on the outer and inner surfaces. The following teeth are placed in the maxilla and mandible. The dental attrition is slight (Broca's 1st grade). The shovellings are marked in the upper central and lateral incisors.

M3	M2	M1	P2	P1	C	I2	I1		I1	I2	C	P1	P2	M1	M2	M3
M3	M2	M1	P2	P1	C	I2	I1		I1	I2	C	P1	○	M1	M2	M3

(Postcranial Skeleton) The identified remains are the left and right scapulae, the left and right clavicles without the proximal or distal ends, the left and right humeri without the distal ends, the proximal end of the left radius, a shaft fragment of the right radius, the left ulna without the distal end, the right ulna whose proximal end is missing, several pieces of the ischia and pubes, the right femur without the proximal end, the complete left femur, a pair of the patellae, a shaft fragment of the right tibia, the complete left tibia, the nearly complete left fibula, a shaft of the right fibula, 20 small fragments of the inominates, 25 fragmentary vertebrae, 54 small pieces of the ribs, the sternum, 11 pieces of the carpals, a pair of the tali and 11 pieces of other tarsals

and 34 pieces of the hand and foot phalanges. These skeletons are very gracile. On the tali, the C and F types of squatting facets are present.

#### HL-VII $\gamma$ Tm6 [8HH7-19]

Date: Early Huacaloma phase. Age: young adult. Sex: unknown.

Only the occipital is found. The lambdoidal sutures are not fused.

#### HL-VII $\gamma$ Tm7 [8HH7-20]

Date: Early Huacaloma phase. Age: young adult. Sex: male.

(Skull) The calvaria is well preserved, but the facial bones are broken into small pieces. The calvaria had been artificially deformed (tabular erect type). The Inca bone is present. The robust body of the mandible also remains. The following teeth are present. The crown surfaces are slightly worn (Broca's 1st grade). Dental caries is found in the upper left canine.

M3	○	○	P2	P1	C	/	/	/	I2	C	P1	○	M1	M2	/
/	M2	M1	P2	P1	C	I2	I1	○	I2	C	P1	P2	M1	M2	○

(Postcranial Skeleton) The left and right scapulae, fragments of the clavicles, the left and right humeri, proximal halves of the left and right ulnae, distal half of the left radius, six small fragile fragments of the coxae, the left and right femora, the right patella, the shaft of the right tibia, small pieces of the fibula, several small pieces of the calcaneus, metatarsals and phalanges and the fragmentary ribs are present.

#### HL-VII $\beta$ Tm8 [8HH-7-21]

Date: Early Huacaloma phase. Age: mature. Sex: female.

The remains are highly fragmented. There are 38 small fragments of the cranium, five small fragments of the mandible, both sides of the scapulae and clavicles, the complete left humerus, the mid-shaft of the right humerus, the complete left ulna, the shaft of the right ulna, both sides of the radii, both sides of the coxae, a pair of the femoral shafts and the femoral heads, the left patella, both sides of the tibial shafts, the distal half of the left fibula, 11 pieces of the carpals, the left and right tali, 13 pieces of the tarsals, 13 pieces of foot phalanges, the sternum, 25 fragmentary vertebrae and the sacrum, and 94 pieces of the fragmentary ribs. On the tali, the C, D and F types of the squatting facets are present. The following teeth are placed in the maxilla and mandible. The crown surfaces are heavily worn out (Broca's 3rd grade).

M3	M2	M1	/	/	C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
M3	M2	M1	P2	/	C	I2	I1	/	I2	C	P1	P2	/	/	M3

*The Kolgitin Remains*

KG-VI Tm1 [9KG-H-5]

Date: EL phase — Late Huacaloma phase. Age: infant around 2 years old. Sex: unknown.

The remains are of the infant skeleton. The calotte is well preserved but the basi-crania, facial bones and parietal are missing. Seven deciduous and 12 permanent teeth are also found. The postcranial skeleton is in a very poor state of preservation. Only four small fragmentary limb bones are present.

KG-VI Tm2 [9KG-H-7]

Date: EL phase — Late Huacaloma phase. Age: senile. Sex: unknown

This individual is represented by several postcranial bones and teeth only. There are the distal half of the right humerus, the proximal end of the ulna, the shafts of the left and right femora and tibiae, and five fragmentary vertebrae. Only the maxillary teeth are also present as follows. The crown surfaces are heavily worn out (Broca's 3rd or 4th grade).

/	M2	M1	P2	/	C	/	I1		/	/	/	P1	P2	/	/	/
/	/	/	/	/	/	/	/		/	/	/	/	/	/	/	/

KG-II R2, Pit at Outside Basement [9KG-H-9]

Date: Late Huacaloma phase. Age: infant around 6 months old. Sex: unknown.

The remains are highly fragmented. The cranial remains consist of the parietals, maxilla and mandible. The postcranial findings are parts of the scapula, six small pieces of the humerus, four fragments of the coxae, 12 pieces of the ribs and others. Six deciduous and five permanent teeth are also present.

KG-VI Tm3 (2) [9KG-H-10(1)]

Date: Late Huacaloma phase. Age: mature. Sex: unknown.

Several fragments of the calvaria and mandible are identified.

KG-VI Tm3 (2) [9KG-H-10(2)]

Date: Late Huacaloma phase. Age: mature. Sex: male.

The calvaria is present, but is broken into small pieces. Other findings consist of the fragmentary maxilla, the mandibular body, the shafts of the left and right humeri, the shaft of the left ulna, the proximal end of the right ulna, the proximal end of the left femur, the shaft of the left tibia, the distal half of the right tibia, a fragment of the left fibula, fragments of the coxae, the complete right patella, a pair of the tali and some tarsals. On the tali, the C and F types of squatting facets are present. The following teeth are placed in the jaws. The crown surfaces are well worn out (Broca's

3rd grade).

M3	M2	/	/	/	C	/	/	/	/	/	C	/	/	/	/	/
/	/	/	/	/	/	/	/	/	/	/	○	○	○	MI	○	/

KG-IV, W-6.7.2 Block Lane South-6a [9KG-H-11]

Date: unknown. Age: unknown adult. Sex: unknown.

Only fragile fragments of some long bones are found.

### Notes on Some Anthropological Studies

#### *Artificial Cranial Deformation*

The artificial deformities are found in three skulls from the Kuntur Wasi site, two skulls from the Loma Redonda site and four skulls from the Huacaloma site. All the deformed skulls are obviously caused by compression on the lambdoidal portion of the calvaria, which are classified into the “tabular erect” type of Imbelloni (1938). The similar type of the cranial deformity was already found by Morimoto & Yoshida (1985) in their samples from the Huacaloma site.

#### *Variation of Facial Morphology*

Another notable tendency observed in the cranial features is great variation of facial morphology between the individuals from the four sites. Some skulls show gracile facial structures having the prominent nasal roots and tips, relatively narrow faces, flat glabella and eyebrow ridges and underdeveloped mandibular bodies. On the other hand, others present robust features possessing the large zygomatic bones, broad and low faces, very prominent glabella and eyebrow ridges and concave nasal roots. The most representative contrast in such facial morphologies is shown, for example, between the two males, A-Tm2 and A-Tm103 (1), from the Kuntur Wasi site (Fig. 1). The gracile skull of A-Tm2 was excavated from the tomb beneath the central platform of the shrine with offerings of numerous articles including golden products, implying that the buried person belonged to a peculiar position of social state. On the other hand, the robust skeleton of A-Tm103 (1) was found from the tomb located outside of the central platform in association with somewhat poor offerings, suggesting a much lower social status than that of the former person. The artificial cranial deformation is not negligible as a cause of the difference of facial morphology. However, the gracility and robustness observed in the facial morphology might have resulted from the differences of social states rather than as the effects of the artificial deformities.

The variation in the facial characteristics caused by difference of social position is well known in the case of early modern Edo Japanese. According to Suzuki (1969),



Fig. 1. Anterior and lateral aspects of the three skulls from the Kuntur Wasi, site. (Left: KW A-Tm103 (1) male, Middle: KW A-Tm (2) male, Right: KW C-Tm5 male).





Fig. 2. Anterior and lateral aspects of the three skulls from the Huacaloma, site. (Left: HL Tm4 female, Middle: HL Tm3 male, Right: HL Tm5 female).

Table 3. Cranial measurements (mm) of the Kuntur Wasi (KW), Loma Redonda (LR) and Huacaloma (HL) series.

Sample No.	KW		KW		KW		LR		HL		HL	
	A-Tm103 (1)	A-Tm2	C-Tm2	C-Tm5	C-Tm5	Ille (2)	Ille (2)	Tm3	Tm4	Tm5	Tm4	Tm5
Sex	Male	Male	Female	Male	Male	Male	Male	Male	Female	Female	Female	Female
1 Maximum cranial length	179	158	166	176	164							158
5 Basion-nasion length	110			123	99							125
8 Maximum cranial breadth	143	135	136	142	150	159						141
9 Minimum frontal breadth	106		90	95	100	99					92	93
17 Basion-bregma height	133		141	124	131							
40 Basion-prosthion length	112		110	141	105							126
45 Bizygomatic breadth	146	(150)			(142)							(122)
48 Upper facial height	68	77	55	73	73						65	64
51 Orbital breadth	43	39	38	38	40						38	37
52 Orbital height	38	38	33	33	32						33	31
54 Nasal breadth	25	25	27	27	29	23					25	24
55 Nasal height	46	53	40	40	51	49					45	42
Bifrontal breadth (FMB)	101	97	91	97	101	94					95	97
Nasio-front subtense (NAS)	7.1	14.7	13.6	9.9	19.1	17.0					17.1	20.1
Simotic chord (WNB)	9.0				13.5	11.2					9.5	8.4
Simotic subtense (SIS)	3.9				4.4	5.2					4.5	3.2
Bimaxillary breadth (ZMB)	97	107	87		108	101					95	98
Zygomaxillary subtense (SSS)	24.8	24.8	27.6		27.3	27.4					21.2	20.2

Table 4. Measurements of the humeri (mm).

Sample No.	KW	KW	KW	KW	KW	KW	KW	KW	HL	HL	HL	HL	HL
	A-Tm 102 (1)	A-Tm 103 (1)	A-Tm 103 (1)	A-Tm4 103 (1)	A-Tm4 103 (1)	C-Tm2 103 (1)	C-Tm5 103 (1)	C-Tm5 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Tm7 103 (1)
Sex	M	M	M	M	M	F	M	M	M	F	F	F	M
Side	L	R	L	R	L	L	R	L	L	R	R	R	L
1 Maximum length	289					248				243			
4 Breadth of the distal epiphysis		57				52							
5 Maximum mid-shaft diameter	20	25	22	20	21	17	23	20	19	20	19	20	20
6 Minimum mid-shaft diameter	19	19	18	14	16	13	19	18	15	14	16	15	15
9 Transverse head diameter										31			
10 Longitudinal diam. of the head		41								35			35

Table 5. Measurements of the radii (mm)

Sample No.	KW	KW	KW	KW	KW	KW	KW	HL	HL	HL	HL	HL	HL
	A-Tm 103 (1)	A-Tm 103 (1)	C-Tm2 103 (1)	C-Tm2 103 (1)	C-Tm5 103 (1)	C-Tm5 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Illc (2) 103 (1)	Tm7 103 (1)
Sex	M	M	F	F	M	M	M	M	M	F	F	F	M
Side	R	L	R	L	R	L	R	L	R	L	R	L	L
1 Maximum length								186		221			
4 Transverse shaft diameter	15	15	11	11	15	16	12	12	12	13	13	13	13
5 Sagittal shaft diameter	12	12	9	9	11	11	12	11	11	9	9	9	10





the feudal lords “Tokugawa Shoguns” and their families are characterized by extremely narrow face and nose, high orbits, narrow and prominent nasal root, prominent nasal bridge, underdeveloped body of the jaw, etc. which are not observable in common people in this period. This facial peculiarity, so-called “aristocratic” feature, is considered to be caused by poor development of their masticator organs due to the peculiar dietary life. The skull from A-Tm2 at the Kuntur Wasi site is also considered to possess the aristocratic facial feature. Another example of this feature can be observed in the skull of LRIII e (2) from the Loma Redonda site.

In order to confirm the above consideration on the facial variation by the met-

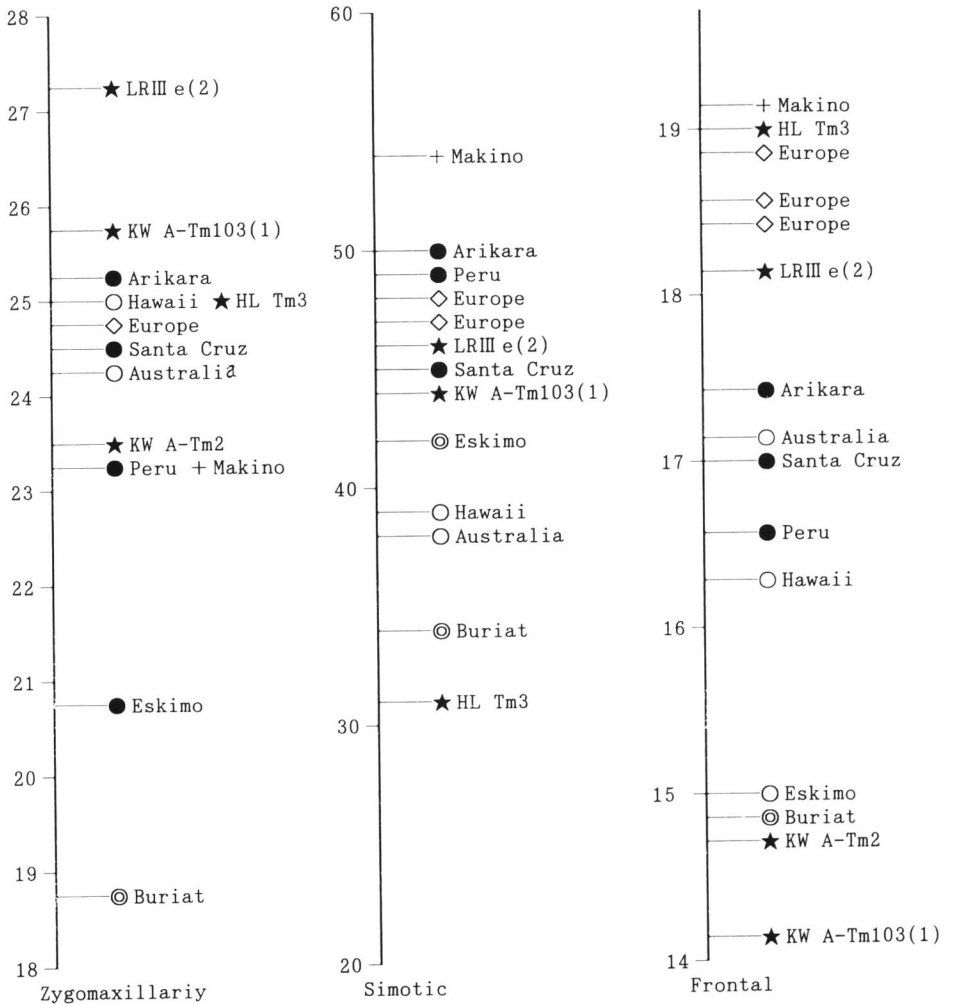


Fig. 3. Facial flatness indices of the Peruvians and comparative samples.

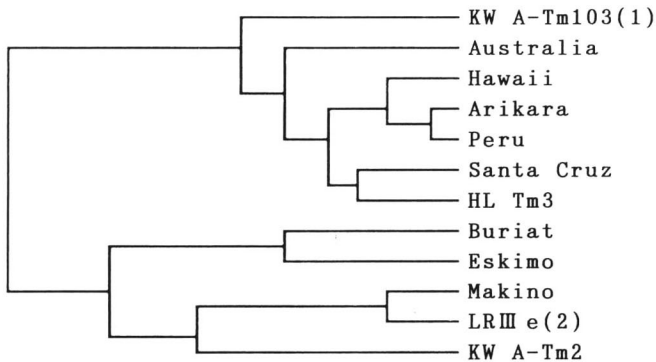


Fig. 4. Dendrogram of cluster analysis applied to the Penrose's shape distances based on the seven measurements related to the facial skeletons (48, 54, 55, FMB, NAS, ZMB, SSS).

rics, the facial flatness indices were compared between the Peruvian males examined in this study and several population samples. Figure 3 represents the frontal indices (frontal subtense/chord), simotic indices (simotic subtense/chord) and zygomaxillary indices (zygomaxillary subtense/bimaxillary breadth) of the four individuals from the Kuntur Wasi, Loma Redonda and Huacaloma sites and several comparative population samples given by Howells (1989) and the "Makino" sample (the seventh lord "Tadatoshi") which is one of the local feudal lords in Japan (Kato & Takeuchi, 1986). The differences of the zygomaxillary indices are not marked between the samples from the Kuntur Wasi (KW), Loma Redonda (LR) and Huacaloma (HL) sites and the recent Amerindians such as the Arikara, Santa Cruz and Peru, while those of the frontal and simotic indices are very variable between the Peruvian samples. The samples plotted at the lower extreme of the scale tend to possess flat faces. The simotic indices show that the HL Tm3 sample from the Huacaloma site has a flat nasal bridge similar to the Buriats. In the frontal indices, the LR III e (2) from the Loma Redonda site and the HL Tm3 samples are plotted on the upper extreme of the axis together with the Europeans and Makino sample, indicating that the nasal roots of those samples are considerably prominent against the zygomatic bones. On the other hand, two samples from the Kuntur Wasi site, which are plotted on the lower extreme of the axis, possess quite concave nasal roots.

Using the seven measurements relating to the facial skeleton (upper facial height, nasal breadth and height, bifrontal breadth, nasio-front subtense, bimaxillary breadth and zygomaxillary subtense) which are commonly comparable between the four Peruvian individuals, Penrose's shape distances were calculated. Figure 4 displays a dendrogram based on the distance matrix computed. The dendrogram consists of two major clusters. The samples belonging to the upper major cluster are considered to possess relatively low, broad and rugged faces, compared with the samples of the lower cluster. The KW A-Tm103 (1) from the Kuntur Wasi site and the HL Tm3

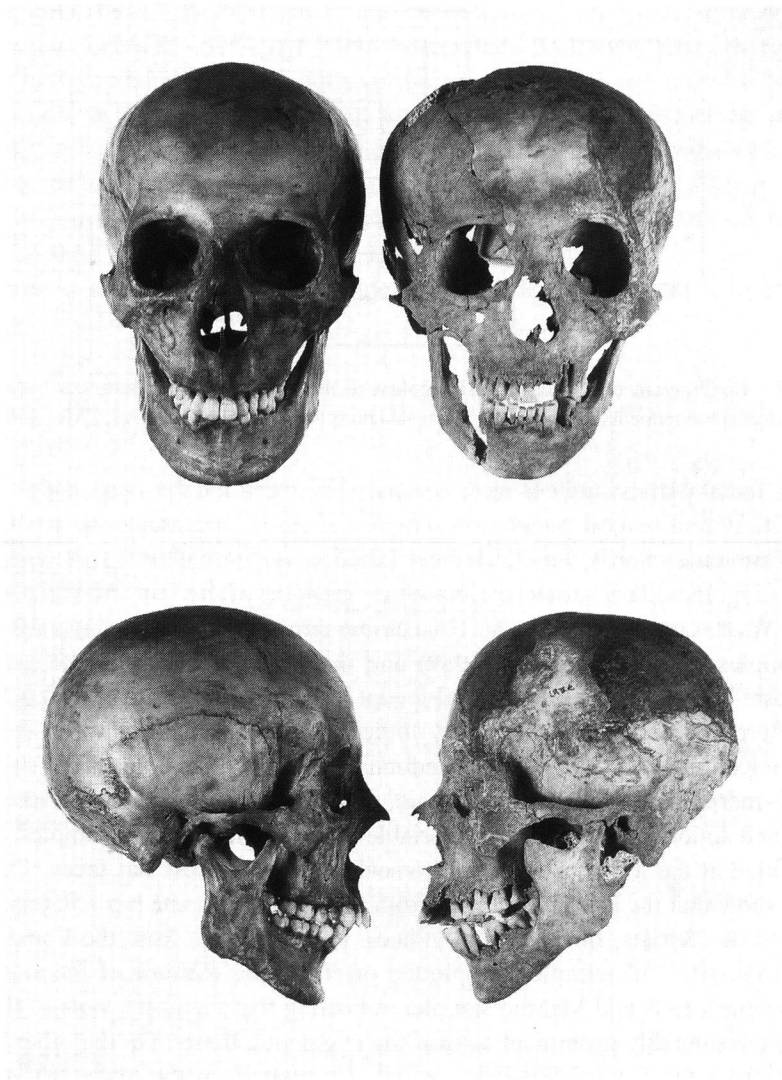


Fig. 5. Anterior and lateral aspects of the skull of Makino Tadatoshi (left) and the skull of LRIIIe (2) male from the Loma Redonda site (right).

from the Hucaloma site are included in the upper cluster together with other American Indians. Another major cluster seems to consist of the samples possessing proportionally higher or narrower face than the upper clustered samples. In this cluster, the Buriats and Eskimo, which are characterized by very flat faces, are lumped together forming a sub-cluster, while the LRIIIe (2) sample from the Loma Redonda site, the KW A-Tm2 sample from the Kuntur Wasi site are separated from the sam-



ples with the flat face, and clustered with the Makino sample possessing the prominent face. Thus the two Peruvian skulls, which are considered to carry the aristocratic facial features, were extracted by the facial measurements. Figure 5 shows the skulls of LRIIIe (2) and the Makino (Tadatoshi) for the comparison.

### *Dental Caries*

The caries were frequently found in the permanent dentition from the Kuntur Wasi site, as shown in Table 10. The frequency is less than that among modern Peruvians (Miura *et al.*, 1988), but is comparable with that of Pre-Columbian Huari Peruvians (dating A. D. 600–A. D. 1,100; Drusini, 1991). The tendencies of caries frequencies are not obvious for the Huacaloma, Loma Redonda and Kolgitin series because of the small sample size.

### *Estimated Stature*

Concerning the individuals whose long bones are well preserved, the statures were estimated on the basis of the maximum lengths of the long bones using Genoves'(1967) equations which were calculated on the Mesoamericans. The results are given in Table 11. The estimated statures of the Kuntur Wasi and Huacaloma males tend to be slightly shorter than the average of the pre-Columbian Huari Peruvians (Drusini, 1991), while the statures of females are much shorter than the Huari average. Consequently, the Kuntur Wasi and Huacaloma people had a greater sexual difference in the stature than the coastal Peruvians of the subsequent period.

### *Squatting Facets*

The squatting facets are remarkable in the lower limb bones from all the four sites. Tables 12 and 13 give the frequencies of presence of the squatting facets on the femora, tibiae and tali examined. The cervical fossa of Allen and the Charles' facet on the femur, the inferior fossa or facet on the tibia, and the facet on the talus were

Table 10. Carrier of the dental caries.

Site	Non-carr.	Carrier	Freq.
Kuntur Wasi	5	4	44%
Huacaloma	5	0	0%
Loma Redonda	4	0	0%
Kolgitin	2	1	33%
Total	16	5	24%
Huari (AD 600–1100) 45% (N=40) Drusini, 1991			
Peruvian (modern) 80% (N=115) Miura <i>et al.</i> , 1988			

Table 11. Estimated statures by Genoves' formulae (1967).

Males		Females	
Kuntur Wasi			
A-Tm102 (1)	155.8 cm	A-Tm101	144.1 cm
A-Tm103 (1)	162.7 cm	C-Tm2	139.9 cm
A-Tm2	154.0 cm		
C-Tm5	157.0 cm		
Huacaloma			
Tm7	151.7 cm	Tm4	133.4 cm
		Tm5	136.5 cm
Mean	156.24 cm		138.47 cm
Huari (AD 600–1100) (Drusini, 1991)			
	(N=15) 158.7 cm		(N=17) 145.4 cm

Table 12. Numbers and frequencies of presence of the squatting facets on the femora and tibiae.

	Absent	Present	%
Cervical Fossa of ALLEN (Femur)	0	6	100%
CHARLES' facet (Femur)	0	2	100%
Inferior fossa and facet (Tibia)	1	8	89%

Table 13. Frequencies of presence of the squatting facets on the tali. (Types by Morimoto, 1981)

Type	A	B	C	D	E	F
Frequency	0%	0%	100%	22%	0%	100%
Number	0	0	9	2	0	9

observable in most skeletons. Regarding the facet on the talus, the criteria of classification by Morimoto (1981) were followed. The C-type (medial facet) and the F-type (facet on the neck) are present in all the tali examined.

The observed facets suggest that these Andean peoples habitually sat in a squatting position. As stated by Takayama (1982) in his study of another Huacaloma sample, frequent up and down walking in rocky mountains is also considered as another cause of the facet formation.

## Conclusion

For the 27 individuals excavated from the Kuntur Wasi site, 10 individuals from the Huacaloma site, 4 individuals from the Loma Redonda and 6 individuals from the Kolgitín site, states of preservations were recorded together with some anthropological notes.

The artificial cranial deformities were observed in nine skulls from these sites excepting the Kolgitín site. All the deformities are classified into the tabular erect type which was caused by lambdoidal compression. The dental caries was frequently found in the Kuntur Wasi people though less occasionally than the recent Peruvians. The facial morphology in the skulls from the four sites are not homogeneous, and aristocratic features are found in some individuals which are considered to belong to high social states. The sexual difference of the estimated stature is great in the Kuntur Wasi and Huacaloma people. The squatting facets are present in the all tali examined. This implies that the people customarily sat in the squatting position or walked up and down rocky mountains.

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