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Anthropometric measurements in Iranian men

Jaber Gharehdaghi[a], Maryam Baazm[b], Masoud Ghadipasha[a], Sadra Solhi[c], Farhoud Toutounchian[d,*]

[a] Legal Medicine Research Center, Legal Medicine Organization, Tehran, Iran
[b] Department of Anatomy, School of Medicine, Arak University of Medical Sciences, Arak, Iran
[c] School of Medicine, Arak University of Medical Sciences, Arak, Iran
[d] Department of Forensic Medicine and Clinical Toxicology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

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ABSTRACT

There is inevitable need for data regarding anthropometric measurements of each community's population. These anthropometric data have various applications, including health assessment, industrial designing, plastic & orthopedic surgery, nutritional studies, anatomical studies and forensic medicine investigations.

Anthropometric parameters vary from race to race throughout the world, hence providing an anthropometric profile model of residents of different geographic regions seems to be necessary. To our knowledge, there is no report of bone parameters of the Iranian population.

The present study was carried out to provide data on anthropomorphic bone parameters of the Iranian population, as a basis for future relevant studies. We calculated most of the known anthropometric parameters including skull, mandible, clavicle, scapula, humerus, radius, ulna, sacrum, hip, femur, tibia and fibula of 225 male corpses during a period of 2 years (2014–2016). Data expression was done as mean ± standard deviation. The results consist the first documented report on anthropometric bone measurement profile of Iranian male population, that can be considered a valuable source of data for future research on Iranian population in this regard.

1. Introduction

Forensic anthropology is defined as a part of biological anthropology. This branch of anthropology by using anatomical science has potential to investigate human remains excavated from some zones, sex and age determination and identification of unknown bodies.[1,2]In addition, by measuring some parameters in residual bones such as total lipids, iron, zinc and etc, estimating the time of death is possible.[3]

It is obvious that environmental and geographic conditions,[4] food intake[5,6] and lifestyle affect anthropometrics measurements.[7]Every community needs to have essential information about anthropological criteria from its population. These data provide basic information about physical characteristics of population that is necessary and helpful in industrial design, surgery, forensic and sport sciences.[8,9]

One of the most important usages of the anthropological measurements is determination of race, age and stature of unknown bodies. There are different kind of bones in each body and most of them can be used for this purpose.[4] Because of the differences between male and female pelvis, it provides good documents for sex determination.[10] Cranium is also as important as pelvis in sex determination.[11] The data acquired from long bones are more reliable in stature determination.[7,12]

It should be noticed that in identification of unknown bodies, the basic anthropometric data of every society is required, and without them the identification would not be reliable. To our knowledge, there is no report on the bone morphological parameters in Iranian male population.

The present study demonstrates the anthropometric measurements of bones in Iranian male population and provides a useful document for future studies.

2. Methods and materials

2.1. Sample collection

Within a two-year period (2014–2016) bone remains were collected from 225 bodies belonging to male soldiers killed during the Iran - Iraq war (1980-88) and aged between 18 and 70 years. The collected bones were transferred to the forensic medicine center and anthropometric

* Corresponding author.
E-mail addresses: jgharedaghi@IMO.ir (J. Gharehdaghi), Dr.baazm@arakmu.ac.ir (M. Baazm), m.ghadipasha@yahoo.com (M. Ghadipasha), s.solhi@yahoo.com (S. Solhi), ftootoonchian7431@yahoo.com (F. Toutounchian).

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Table 1
All bones measurements.

Dry Bone Measurement	No.	Minimum (mm)	Maximum (mm)	Mean ± SD (mm (mm)
Cranium				
Maximum Cranial Length	70	160.00	230.00	179.7 ± 9.9
Maximum Cranial Breadth	70	130.00	150.00	139.7 ± 5.2
Bizygomatic Breadth	57	100.00	170.00	128.9 ± 10.5
Biorbital Breadth	64	85.00	130.00	95.9 ± 6.7
Right Mastoid Length	58	20.00	38.00	30.8 ± 3.2
Left Mastoid Length	61	25.00	37.00	30.9 ± 2.9
Mandible				
Chin Height in Mandible	83	25.00	50.00	33.9 ± 3.5
Clavicle				
Right Clavicular Maximum Length	80	136.00	164.00	148.6 ± 6.6
Left Clavicular Maximum Length	83	130.00	173.00	150.9 ± 7.6
Scapula				
Right Scapular Height	77	134.00	177.00	151.3 ± 8.1
Left Scapular Height	66	137.00	186.00	153.9 ± 7.9
Right Scapular Breadth	79	94.00	121.00	107.1 ± 5.7
Left Scapular Breadth	64	94.00	180.00	107.2 ± 10.4
Humerus				
Right Humeral Maximum Length	116	289.00	360.00	321.7 ± 14.7
Left Humeral Maximum Length	107	232.00	370.00	318.2 ± 17.8
Right Epicondylar Breadth	148	47.00	82.00	61.8 ± 3.6
Left Epicondylar Breadth	145	52.00	73.00	61.5 ± 3
Right Maximum Diameter of Humeral Head	132	39.00	52.00	46.3 ± 2.5
Left Maximum Diameter of Humeral Head	131	39.00	51.00	45.6 ± 2.7
Radius				
Right Maximum Radius Length	106	219.00	269.00	244.6 ± 10.8
Left Maximum Radius Length	114	210.00	275.00	244.2 ± 12.2
Ulna				
Right Maximum Ulnar Length	93	241.00	289.00	264.4 ± 10.8
Left Maximum Ulnar Length	100	234.00	295.00	262.1 ± 11.7
Sacrum				
Anterior Sacral length	93	96.00	147.00	119.9 ± 11.2
Anterior Sacral Breadth	98	39.00	130.00	109.0 ± 16.5
Maximum Breadth of S1	91	36.00	58.00	49.4 ± 4.5
Hip				
Right Maximal Hip Height	93	116.00	234.00	210.9 ± 13.5
Left Maximal Hip Height	90	188.00	312.00	213.4 ± 14.1
Right Maximal Hip Breadth	94	121.00	175.00	153.2 ± 8.4
Left Maximal HipBreadth	99	130.00	173.00	154.3 ± 7.8
Right Greater Sciatic Notch Depth	103	33.00	76.00	45.1 ± 5.6
Left Greater Sciatic Notch Depth	101	33.00	60.00	44.4 ± 5.3
Femur				
Right Femur Maximum Length	95	401.00	503.00	448.2 ± 21.5
Left Femur Maximum Length	100	381.00	504.00	448.9 ± 22.2
Right BicondylarFemur Length	93	401.00	501.00	446.2 ± 21.2
Left BicondylarFemur Length	98	385.00	501.00	447.1 ± 22.2
Right Femur Epicondylar Breadth	129	60.00	90.00	81.4 ± 4.2
Left Femur Epicondylar Breadth	134	59.00	90.00	81.6 ± 4.2
Right Maximum Diameter of Head	154	40.00	54.00	47.4 ± 2.6
Left Maximum Diameter of Head	149	41.00	57.00	46.9 ± 2.5
Tibia				
Right Lateral Condylo-Malleolar Length	125	332.00	430.00	377.4 ± 20.2
Left Tibia Condylo-Malleolar Length	120	331.00	419.00	377.7 ± 19.5

(*continued on next page*)