

**STUDIES ON ASTHI - SĀRA AND ITS SIGNIFICANCE  
IN RELATION TO INDIVIDUAL SKELETAL  
FRAMEWORK OF THE BODY WITH SPECIAL  
REFERENCE TO ANTHROPOMETRY.**



Thesis submitted for the degree of  
*DOCTOR OF MEDICINE (Ay.)*

**Basic Principles  
Group A. Śarīra Rachanā**

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## SUMMARY AND CONCLUSION

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1. The present study entitled “Studies on **Asthi Sāra** and its significance in relation to individual skeletal framework of the body with special reference to Anthropometry” was aimed to workout the correlation between the strength and dominance (prevalence) of the skeletal framework of an individual with his profession and socio-economic status.
2. Entire relevant materials pertaining to the subject matter have been worked out and presented under the headings like Introduction, Review of Āyurvedic Literature, Modern Literature, Material Methods, Results and Observations and finally the Discussion in the light of ancient postulations and modern approaches thereof.
3. The introductory portion of the present work highlights the significance of the bony framework of the body as envisaged by ancient and modern thinkers.

4. Basic endeavour in the present study was to evaluate the *Ashti Sāra Puruṣa* (Excellence of bone tissue) in individuals as characterised in ancient text by means of the latest Anthropometric technique as a universally accepted measure.
5. The review of Āyurvedic literature elaborates the aims and objectives of Āyurveda, ancient methods of examinations in terms of *Pramāṇas*, the tools and approaches employed by physician to find out the correct informations and management for the patient, *Doṣik Prakṛti* and *Vikṛti*, development of Anatomical Knowledge pertaining to the framework of the body along with the details of *Sāra Parīkṣā* and their objectives.
6. The chapter on Modern literature deals with the excellence of body tissues particularly the *Asthi Sāra Puruṣa* in terms of its developmental, structural, physical, functional and nutritional characteristics. The anatomical variations of individual as propounded by Hippocrates, Mills, Sheldon and Heath & Carter along with the details of the modern approaches towards structures and functions of the bone in terms of its nutritional supply, ossification, bone marrow and the vascular and nerves involvement have also been incorporated under this heading. Details of anthropometry and its uses to estimate the body composition and Mettaigka's Method of estimation of the body compartment have also been precisely narrated as per requirement of the study.

7. The chapter on Material and methods takes into account seventy five apparently healthy individuals aged between 20-40 years, belonging to Varanasi and adjoining eastern UP region who were randomly selected for the study and they were grouped, based on their professional and socio-economic background, into Doctors, Rickshaw pullers and Porters categories. Weighing Scale (Krup's Dial), Steel measuring tape (length 0-2000 mm), Anthropometer, Rod Compass, Spreading Calipers, (grading up to 300 mm and 600 mm), Sliding Caliper (grading up to 200 mm), were the instruments employed to record the thirty six measurements of the body as per respective methods dealt in the text and the findings were statistically analysed based on relevant formulae employed for the purpose.
8. The findings related to the socio-economic status, B.M.I., skeletal weight, types of physique, cephalic index, clavicle mid point width, bi-epicondylar width of humerus, width of the hand, width of the wrist, bi-condylar width of the femur, bi-malleolar width at the ankle, span, width of the foot, chest circumference and bi-gonial width of mandible have been given under the heading of Results and Observations. Range, mean, SD and P values etc. have also been statistically calculated and recorded. The bone measurements were correlated with B.M.I. and their

- significance in support of the excellence of osseous tissues (*Asthi Sāra*) were worked out to conclude upon the subject matter taken for the study.
9. The chapter on discussion revealed that the Porters had to have higher B.M.I. as per their profession, the Doctors, due to their sedentary habits and relatively less consumption of energy lead to obesity as compared to other two groups.
  10. Based on the width of the clavicle at its mid point, it is concluded that the Porters group has strongest and better morphological framework of the body, which can be attributed to their professional activity and is suggestive of excellence of *Asthi Sāra* in them, in comparison to other two groups.
  11. The skeletal weight calculated by Metaigka's formula suggested that the subjects having sound metabolic tissue transformation (*Dhātu Phoṣaṇa* process in the body) must be possessing an excellence of all the body tissues in terms of their respective strength and compactness to take up the physical work and its performance. Significant correlation, in between bony measurements and B.M.I. in the Porters and Rickshaw pullers groups of individuals, comparatively favour an excellence of *Asthi Sāra* in them.

12. The study on the physique of Individual, in all the three groups, revealed that the Rickshaw pullers were towards the thinner side of physique. These findings suggested that the well formed body in case of Doctors, despite of their sedentary profession, is due to better nutrition from the very childhood and in the case of Porters, it could be the result of constant hard working profession supplemented with a reasonably good food.
13. The cephalic index, in the all three groups revealed that the Rickshaw pullers and Porters were predominantly Dolichocephalic suggesting primitiveness race and the Doctors were predominantly Mesocephalic, suggesting the features of advance races and better mental abilities. However, these observation requires further verification by extension of work on larger cross section of population.
14. The measurements for the Bi-epicondylar width of Humerus, Clavicle mid point width, Wrist width, Bi-condylar width of the femur and Bi-malleolar width at the Ankle and Chest circumference supported the postulation of excellence of *Asthi Sāra*, which is getting directly influenced by the degree of the work-load on a particular bone and an adequate nutritional supplement. The measurements of the span, bi-gonial width of the Mandible could not give much substantial indications supporting the excellence of osseous tissue (*Asthi Sāra*) in all the three groups of the persons.

15. The positive findings of the present study can be employed to evaluate the *Asthi s̄ara* excellence of an individual.
16. The study highlights the similarities and differences within the three groups of subjects with a limited universe. The findings may further be substantiated within the larger universe having more samples of different characteristic and thus we could be able to propose an established formula to this effect. Finally the present study suggests that the subjects were of considerable Kinematic, Anthropometric and clinical interest and deserve more exploration.

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