



Research Article

Symmetry in Biological System – A Study

Authors

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Introduction

Symmetry and chirality are two important characteristics cardinal features of biological systems. It is always astonishing that the body fat is getting symmetrically distributed in both halves of the body. In order to determine this attempt had been made to measure the various limb circumferences on body sides of the body.

Aim

To demonstrate the symmetry of fat distribution in undergraduate students.

Materials and Methods

Forty undergraduate students of medical lab technology in the age group of 17 to 22 years were selected for this study after taking their consent. A standard measuring tape was used for taking all the measurements. Height and weight were measured, and body mass index was calculated. The mid arm circumference was measured at the midpoint between the Acromion and Olecranon process on both sides. The mid forearm circumference was taken at the midpoint between the Olecranon and the wrist joint. The mid thigh circumference was taken at the midpoint between the iliac crest and lower border of patella. The mid leg circumference was taken at the midpoint

between the lower border of patella and the ankle joint. Exact measurements were taken holding the measuring tape perpendicular to the part being measured.

Observations

The Mid arm circumference was exactly equal on both sides in 36 students out of 40. Mid forearm circumference was equal in 36 students out of 40. Mid thigh circumference was equal on both sides in 32 students out of 40. Mid leg circumference was equal on both sides in 33 students. The mean mid arm circumference on the right side was 25.55 CM and on the left side was 25.375 CM. The mean mid forearm circumference on the right side was 20.8 CM and the left side was 20.725 CM. The mean mid-thigh circumference on the right side was 44.175 CM and on the left side 44.1 CM. The mean mid leg circumference on the right side was 30.025 CM and on the left side was 30 CM.

Conclusion and Discussion

In significant number of the students the measurements were bilaterally same indicating the fact that there is equal and symmetrical distribution of fat on both sides of the body. As all the students were young adults hormonal levels would define the fat distribution. Though each

circumference was constituted by bones, muscles and fat much of the bone and muscle mass were already defined as they were young adults. The point to be observed here is the symmetrical distribution of the third component, the fat. This demonstrates to us that fat is getting symmetrically distributed on both sides of the body. What exactly is determining this deposition? Is the blood on both sides carrying an equal amount of fat? Or is the number of adipose cells equal on both sides of the body? Or is the fat being taken up by each adipose cell the same? Are the hormones defining the symmetry of distribution? Whatever may be the reason, there is amazing precision in the biological system right from the microscopic genetic framework to the macroscopic growth and development thus defining the symmetry.

Declaration

Ethics and concerns: Informed consent was taken from each student.

Competing interest: Nil

Funding: Self

Acknowledgement

I express my sincere gratitude to all my students who participated in this study