PRINT: ISSN 0975-1270 ONLINE: ISSN 2456-6306
JOURNAL OF
LIFE SCIENCES

J Life Science, 2(2): 65-71 (2010)
PRINT: ISSN 0975-1270 ONLINE: ISSN 2456-6306
DOI: 10.31901/24566306.2010/02.02.01

Anthropometric - Hormonal Correlation: An Overview

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KEYWORDS Anthropometry. Hormone. Body Composition. Female Sex Hormone

ABSTRACT Nearly all biological or physiological functions are in some way related to one or other aspects of morphology. The morphometric variables of human body can be measured by the fundamental techniques of anthropometry. To be more specific, biological anthropology is substantially enriched due to the contribution relating to application of anthropometry made by a number of scientific workers in the areas such as, anthropometry and growth, anthropometry and nutrition, anthropometry and ergonomics and anthropometry and sports. It is since the second half of this century that the importance of hormonal factors for growth processes and development of body shape has been reported. Body shape is determined by the nature of body fat distribution which, in turn, is significantly correlated with women's sex hormone profile, risk for disease, and reproductive capability. There is extensive evidence that sex hormones affect specific regional adiposity and regulate utilization and accumulation of fat. In the recent past, application of anthropometry revealed significant correlations between body measurements and sex hormone levels in male as well as in female subjects. It was found that gonadotropins, luteinizing hormone (LH), and follicle stimulating hormone (FSH) have significantly negative correlation with breadth measurements such as, biacromial breadth, chest breadth, waist breadth, pelvic breadth, bicondylar breadth and circumference measurements (as, upper arm circumference, hand circumference and thigh circumference). Studies show that estrogen levels have significantly positive correlation with breadth and circumference measures of trunk, thigh circumference and with body weight but, negatively with circumference of the extremities. Another hormone, progesterone was found to be correlated negatively with both breadth dimensions (biacromial breadth, chest breadth, pelvic breadth and bicondylar breadth) and with upper circumferences (upper arm circumference, hand circumference and chest girth). In postmenopausal women, sex- hormone concentrations in general were only found in connection with the appearance of individual symptoms; the climacteric syndrome. A study pointed out that there is a correlation between sex hormone concentrations and anthropometric breadth and circumference measurements in fertile and postmenopausal women. There are researches which reflect the role of hormones in various life processes (like, infertility and cancer) but, a few have investigated the relationship between anthropometric traits and hormonal changes. Moreover, research relating to the relationship between hormonal measures and anthropometric dimensions on Indian populations is almost unexplored.