

41 Human body proportions: The problem of variation and the construction of population norms

R. Ward, School of Kinesiology, Simon Fraser University, Burnaby, British Columbia, Canada

The variation in human somatic proportions is a matter of interest for human biologists and of concern to clothing manufacturers. This paper concerning the quantification of human proportions is divided into two parts. Part one illustrates the variation in proportions by application of the Ross and Wilson Phantom tactic for proportionally assessment to four large anthropometric data sets. These data sets are:

- 1) COGRO - the Coquitlam Growth Study. 441 boys and 465 girls aged 6 – 18 years
- 2) CANAD - 199 university females and 221 University males aged 18 – 35 years.
- 3) MOGAP - Montreal Olympic Games Anthropological Project. 338 male and 149 female Olympic athletes.
- 4) LIFE - YMCA Lifestyle Inventory and Fitness Evaluation program - >19,000 males and females 15 - 75 years of age.

Significant differences in proportions of girths and limb segment lengths were shown with reference to differences in height, age, sex, race and athletic training. The second part of the paper addresses the need for large scale norms for comprehensive batteries of anthropometric measurements. The LIFE data is an example of a very large sample but with a limited (only 11) number of measurements.

Using regression equations developed in the smaller samples, measurements for new Variables were predicted for the LIFE data in order to produce a comprehensive anthropometric data base. The accuracy of these predictions was tested using a split-sample design on the main data sets. This approach was found to be satisfactory for the production of large scale norms based on known relationships in smaller samples. Recommendations were made on how norms for measurements pertinent to the clothing industry might be developed.