Limitations of the "Normal" Body Weight as a Criterion of Normality[1]

Josef Brožek and Ancel Keys

The Laboratory of Physiological Hygiene, University of Minnesota, Minneapolis

In attempting to characterize the physical or nutritional status of an individual, the gross body weight is widely used as the first criterion. ''Standard'' tables are available that purport to give the ''normal'' body weight for the individual's sex, height, and age. Most, if not all, of the tables for adults cited in American textbooks—frequently without indicating the original source of information and lacking consistency in the recommended adjustment for clothing—go back to the Medico-actuarial Mortality Investigation of 1912. These tables indicate that body weight continues to increase, on the average, even after the growth in height is completed. This trend is incorporated in the standards.

In the course of studies on ageing, carried out since 1947 at the Laboratory of Physiological Hygiene, with special emphasis on the cardiovascular system and its disturbances, we became acutely aware of the misleading nature of the height-age-weight standards. In terms of quantitative morphology a middle-aged man, retaining his relative position in the distribution of weight for men of a given height, differs markedly from his physical status in his early twenties.

TABLE 1

QUANTITATIVE CHARACTERISTICS OF FATNESS IN YOUNGER AND OLDER MEN WITH NORMAL RELATIVE BODY WEIGHT

	Younger men (N = 37)	Older men (N = 66)
Age range, years	19–25	45–55
Mean age, years	22.1	49.1
Range of relative body weight, actual, as percentage of standard weight	95.0–104.9	95.0–104.9
Mean relative body weight	100.2	100.0
Skinfolds, in mm		
Abdomen	13.7	25.3
Chest	11.4	25.4
Back	11.7	20.3
Arm	10.4	14.3
Thigh	8.1	10.2
Specific gravity*	1.079	1.056
Body fat, as percentage of body weight	9.8	21.0

* Corrected for residual air in the lungs.

Table 1 presents data on two groups of men, 19–25 and 45–55 years of age, respectively. Both groups were drawn from larger samples, restricting the selection to those individuals whose actual body weight was within ± 5% of their standard weight. The mean values of the relative body weight in the two groups are very close (100.2 and 100.0, respectively). Nevertheless, the amount of body fat, determined both in terms of the thickness of the skinfolds (*1*) and estimated on the basis of specific gravity (*2*, *3*), is strikingly larger in the older men. Although both groups are ''normal'' in respect to their body weight, they differ markedly in terms of the composition of the body.

The concept of ''normal'' body weight, defined actuarially, tends to obscure the profound changes taking place in the process of ageing. The latter involves not only an additive accumulation of body fat but also, very likely, replacement of some of the muscle (and other ''active tissues'') by fatty tissues.

It is a current practice to express the rates of physiological processes, such as the basal metabolic rate, and to prescribe pharmacological dosages in reference to the total body weight or to the body surface, the latter being estimated in turn from body weight and height. In view of the variations in the composition of the body at the same weight and the differences in the metabolic properties of muscles and the depot fat, it appears that the expression ''per kg of body weight'' may lead to erroneous conclusions. The vexing problems of physiologically sound reference points for the basal metabolic rate were discussed in some detail in connection with studies on prolonged starvation and nutritional rehabilitation (*4*).

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Hypotension in the Rat Following Limitation of Potassium Intake[1]

S. Charles Freed and Meyer Friedman[2]

The Mount Zion Hospital, Harold Brunn Institute for Cardiovascular Research, San Francisco, California

There is an increasing amount of evidence that an adequate intake of potassium is necessary for the anatomical integrity of the myocardium and kidneys (*1*, *2*). Data on the functional aspects of this relationship are scanty, however. The following experiments suggest that potassium deficiency has a profound effect on circulatory dynamics as reflected in blood pressure changes.

Four groups of Long-Evans rats (age, 45 days) were treated as follows: Group I (12 rats) received a synthetic diet in 1 g of which there was 0.1 mg of potassium. Group II (8 rats) received the same diet, but were permitted to drink a 1% solution of potassium chloride. Group III (10 rats) received a restricted amount of Purina Chow laboratory ration in an amount that allowed

[1] Preliminary report.

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