

Body Mass in Lowland Gorillas: A Quantitative Analysis

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ABSTRACT Body proportions and tissue composition (e.g., relative contributions of muscle, skin, bone, and adipose to total body mass) were determined through dissection of four adult captive lowland gorillas. The relative contribution of bone varies little among the four animals (10.2–13.4%) despite considerable range in body weights (99.5–211 kg). In tissue composition, three animals have on average 37.3% muscle relative to body mass. Maximum estimates of body fat range between 19.4–44%. Differences in age, sex, and life history events partially explain the observed variation in body proportions and tissue composition among the four animals. Although gorillas are considered extremely sexually dimorphic in body weight and canine size, differences in tissue are not as dramatic as body mass differences suggest. This study found sex differences mostly in the upper body; males have relatively heavier forelimbs, including heavier deltoid, trunk-binding, and deep back muscles compared to the younger female. The old, obese female had one half the muscle tissue of the other three animals (16% vs. 37.3%), and twice the body fat (44%); forelimbs and upper body musculature were relatively well-developed to compensate for the restricted hip-joint movement due to arthritis. Data on the variation in tissue composition and body proportions in gorillas provide a basis for comparison with other hominoids, including humans. For example, compared to highly dimorphic orangutans, gorillas have more muscle, less adipose tissue, lighter forelimbs and heavier hindlimbs. Such analyses complement studies of the skeleton and contribute to our understanding of human evolution and adaptation. *Am J Phys Anthropol* 113:61–78, 2000. © 2000 Wiley-Liss, Inc.