

Apes, adaptations, and artifacts of anesthetics

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Shave et al. (1) provide a highly interesting comparison of cardiac form and function in humans and chimpanzees, but, while we agree that the circulation provides important constraints on exercise performance in animals, we are concerned regarding the validity of the central tenet of the high arterial blood pressure and its related measures in chimpanzees. Blood pressure measurements and echocardiography were performed on anesthetized chimpanzees, whereas the same measures were made on awake resting humans. Five different combinations of anesthetics were used on the chimpanzees, and 34 of 43 chimpanzees were injected with medetomidine, an alpha2-adrenergic agonist that induces vasoconstriction and thus elevates blood pressure (2). We appreciate the substantial difficulties involved in obtaining true resting blood pressures in chimpanzees. Nevertheless, we refer to the findings

on awake and freely moving mammals, including humans, where systemic blood pressures are less variable and more similar than when measured during anesthesia (3). Furthermore, Shave et al. (1) suggest that the functional measures in chimpanzee may be explained by the structural features of the left ventricle, such as a more trabeculated wall. Recent and comprehensive studies on humans, including athletes (4), however, demonstrate that the correlation of the natural variation in ventricular trabeculation to key functional measures, such as blood pressure, ejection fraction, and cardiac output, is either absent or even slightly positive (5–7). We are therefore worried that the reported differences in blood pressure and related measures are confounded by effects of anesthesia, and hence we remain doubtful regarding the professed correlation between functional measures and left ventricular structure.

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The authors declare no competing interest.

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