Abstract Submitted
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Femoral bone strength in bipedal and quadrupedal dinosaurs. SCOTT LEE, University of Toledo — The section modulus Z measures the strength of a bone to resist bending torques. Such torques are more likely to break a bone than a compressive stress since they induce a tensile strain. We report the evaluation of the section modulus versus length for the femora of 94 theropods, 18 sauropods, 16 ceratopsians, 98 large mammals, and 95 small mammals. The largest theropod dinosaur is *Tyrannosaurus rex* and the largest sauropod dinosaur is *Dreadnoughtus schrani* with estimated masses of 7,000 and 40,000 kg, respectively. The largest mammal is *Loxodonta africana* (with a mass of about 5,500kg) and the mammal with the shortest femur is *Herpestes griseus*. For these groups of animals, the section modulus Z is found to be related to its length L via a power law. The theropods, sauropods and large mammals all have the same exponent for the power law: about 3.48. The exponent is about 3.13 for the ceratopsians and about 2.83 for the small mammals. Possible explanations for these values of the exponent will be discussed.

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