

Abstract Submitted  
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**Femoral bone strength in large theropod dinosaurs: A study by genus** SCOTT LEE, University of Toledo — The locomotion of bipedal theropod dinosaurs is controlled by the strength of the femur to resist bending torques (caused by the foot striking the ground and the action of muscles on the femur). The section modulus at the narrowest part measures the ability of the femur to resist such torques. We present the results of our study of the femoral section moduli for six genus of large theropods: *Tyrannosaurus*, *Nanotyrannus*, *Gorgosaurus*, and *Albertosaurus* of the Late Cretaceous, *Acrocanthosaurus* of the Early Cretaceous, and *Allosaurus* of the Late Jurassic. These animals had femora of lengths between 65 and 134 cm. The corresponding section moduli varied between 23 and 570 cm<sup>3</sup>. Some species of *Tyrannosaurus*, *Gorgosaurus*, *Allosaurus*, and *Albertosaurus* had femora with lengths in the same 75 to 90 cm range. The section moduli of these animals are all in the same range, showing that the animals had the same abilities of locomotion. That is, *Allosaurus* of the Late Jurassic could locomote just as well as the Late Cretaceous *Tyrannosaurus*, *Gorgosaurus*, and *Albertosaurus*. There is no evidence that these later theropods had evolved to be any faster than similarly-sized theropods living about 80 million years earlier.

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