

Abstract Submitted  
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**Bone strength and athletic ability in hominids: *Ardipithecus ramidus* to *Homo sapiens*** SCOTT LEE, University of Toledo — A methodology for the evaluation of the athletic ability of animals based on the strength of their femur and their body mass is developed. The ability of the femur to resist bending stresses is determined by its midlength cross-sectional geometry, its length and the elastic properties of the mineral part of the bone. The animal's athletic ability, determined by a "bone strength index," is limited by this femoral bending strength in relation to the loads on the femur. This analysis is applied to the fossil record for *Homo sapiens*, *Homo neanderthalensis*, *Homo erectus*, *Homo habilis*, *Australopithecus afarensis* and *Ardipithecus ramidus*. Evidence that the femoral bone strength index of modern *Homo sapiens* has weakened over the last 50,000 years is found.

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