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Stance and gait in theropod dinosaurs

Samuel Tarsitano
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The stance and gait of theropod dinosaurs are in terpreted within the framework and constraints of functional morphology and biomechanics. The morphology of theropods is compared to known functional locomotory systems in extant lizards, crocodilians and birds. From these comparisons it was determined that muscle scars found on the bones of theropods represented a muscle pattern more similar to crocodilians than to the other two taxa. This conclusion all ows the determination of the most likely posture of the many proposed for theropod dinosaurs. The traditional, almost erect stance, as well as the modern "avianlike" stance are rejected because they are biomechanically unsound. The running stance arrived at in this study is one in which the presacral vertebral column is held approximately 20 degrees above the horizontal. The tails of theropods probably were well off the ground and were likely pivoted from side to side in synchrony with the movements of the legs.

Key words: locomotion, functional morphology, theropod.

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