

Public Abstract

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Title:Grasping pressures and phalangeal curvature in primates: An experimental in vivo approach

Anthropologists often rely on the shape of fingers and toes to reconstruct the locomotor behavior of fossil primates. It is thought that primates that spend a lot of time climbing have significantly more curved fingers and toes, because curved bones experience lower strains when grasping than straight bones. This suggests that grasping pressure should be correlated with digital curvature. To test this hypothesis, 4 adult lemurs (2 males, 2 females) were induced to move across an artificial substrate instrumented with a pressured pad and oriented for above-branch, below-branch, and vertical-branch locomotion. X-rays were then taken to compare the curvature of digits to the pressures exerted by those digits. No significant relationship was found between digital curvature and climbing pressures. Therefore, this study cannot support previous hypotheses. The relationship between climbing and digital form remains uncertain, and anthropologists should be reluctant to use digital curvature to reconstruct climbing behaviors in fossil primates until we have developed a more accurate model for digital grasping.