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IMPLICATIONS OF THE EVOLUTION OF THE HOMINOID THUMB FOR THE ORIGIN OF REFINED MANIPULATION IN HOMININS.

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The human pollical distal phalanx displays a set of features functionally related to pad-to-pad precision grasping. However, it is uncertain whether these features recently evolved as tool-making adaptations, or were already present in our Miocene ancestors. Here we test the latter hypothesis on the basis of the pollical distal phalanx morphology displayed by Miocene apes and hominins. Our results show that the stem hominid *Pierolapithecus* (ca. 12 Ma, Spain) was unlike extant apes, and that the fossil ape *Oreopithecus* (ca. 8 Ma, Italy) and the early hominin *Orrorin* (ca. 6 Ma, Kenya), both displaying convergent bipedal adaptations, already possessed the features functionally related to human-like precision grasping. This indicates that refined manipulation evolved with the advent of terrestrial bipedalism and unrelated to stone tool-making, merely resulting from the relaxation of locomotor selection pressures on the forelimbs. Most likely, stone tool-making did not play a significant role in hand evolution until the emergence of the genus *Homo*, such as by increasing joint and thumb robusticity. Moreover, it is most probable that the relatively short hands with long thumbs displayed by middle Miocene apes constitute the original morphotype from which the shortened hands of hominins and the elongated ones of extant great apes independently evolved. This research has been supported by the Generalitat de Catalunya, the U.S. National Science Foundation, the European Commission's Research Infrastructure and the Spanish Ministerio de Ciencia e Innovación.

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