

Response to Reviewers' Comments

We would like to thank the reviewers for their helpful comments on the paper. We have implemented all of the suggested changes and respond to the individual comments inline below, with our responses shown in bold.

Thank you again for your efforts.

Sincerely,

- Thomas, Tracy, Emmanuelle and Aaron

Referee: 1

I found the revised manuscript improved by taking into account the comments from reviewers. Since the important points of the present study are now more obvious, I'd like to raise a few more points to be considered for the further revision.

The last sentence of the abstract reminded me a study on "primate archaeology" published in Nature (2009) by Haslam et al (doi:10.1038/nature08188). Stone-tool use can be considered as a continuum from non-human primates to fossil and modern humans.

Response: Thank you. A reference to Haslam et al. (2009) paper has been added to the Introduction.

Similarly, object manipulation can be also considered as a continuum. For fine manipulation on small object, the tip-to-tip precision grip may work well as highlighted in the present study. If the size and weight of object increases, the pad-to-pad precision grip may better suit for supporting and manipulating the object. For much larger object, a power grip with all digits may be more appropriate. Especially in order to perform percussive actions, the power grip (or even bimanual power grip) should be applied to stabilize the movement and get enough energy of percussion. In this sense, the present study proved the advantage of fossil and modern humans in manipulation of small object with tip-to-tip precision grip using thumb and index finger. Tool use can take a variety of forms even in chimpanzees (as reviewed in McGrew (2013) Phil Trans R Soc B 368: 20120422) and many types of grip and manipulation are involved to perform the variety of tool use. More precise categorization or specification of tool/manipulation types in relation to the present setting of the model will make the discussion part more feasible.

Response: We thank the reviewer for this thoughtful feedback and have cited McGrew (2013) in our Introduction.

Minor points to be corrected in the references

32. should be “Tonooka” (not Tbnooka)

Response: Thank you for catching this typo. We have made the correction.

“doi:doi:” is shown in 14, 41, 50, 57, and 61

Response: Corrected, thank you for catching this error.

Referee: 2

In the revised version of their text “Estimating thumb-index finger precision and manipulation potential in extant and fossil primates” by Feix et al., the authors address most of my original concerns and provide a very interesting approach and conclusions to the literature on hand capabilities of primates. There are only a couple of small issues that I urge the authors to address before the paper is accepted for publication. In both cases I only intend to promote clearness in the literature of this complex topic. Otherwise, I think this is a great work.

Response: Thank you for your positive words.

- page 3 and page 11 in discussion: “Napier [3] considered contact between the thumb and index finger to be the “acme” of human precision grasping.”

This is still misleading because as a part of the definition of human’s precision grip “acme”, Napier also specified “and hold them delicately yet securely between the opposed pulp surfaces” Napier 1960 (p. 652). This grip is what Marzke and others are calling “pad-to-pad precision grip”. I know the authors want to highlight the relevance of the grip they are studying (“tip-to-tip” precision grip), but it is not fair or even necessary to play with Napier’s words. It is just enough to say that thumb-index finger precision grip interactions are key for humans.

Response: We thank the reviewer for pointing out this ambiguity and agree. We have deleted this sentence from the manuscript, as the previous sentence already highlight the importance of thumb-index finger precision grips (citing Napier 1960). We have also altered reference to Napier’s work in the Discussion to reflect the reviewer’s comments.

- pages 5-6: I would like the authors to clarify in the text that although Alba et al., state in their text that they are using “AL333-7”, it can be clearly seen in their reconstruction that they actually used “AL333-32”. This will certainly help avoiding confusion in future discussions.

Response: We agree with the reviewer that it is not necessary to add confusion regarding Alba et al. (2003) and have deleted this sentence. We clearly state the specimens that we used in our Au. afarensis reconstruction, which is the necessary information needed for our paper.