***eLife’s* transparent reporting form**

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**Sample-size estimation**

* You should state whether an appropriate sample size was computed when the study was being designed
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* If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

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No explicit power analysis was used. For the animal experiments (results summarized in the caption of Figure 4 in the manuscript) we followed the accepted practices in the field: a minimum of three experimental sessions per animal with a minimum of 10 trials per conditions; in this study we exceeded these minimum numbers.

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* You should report how often each experiment was performed
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This information can be found in the captions of Figs. 1-4 and in the Results section of the manuscript.

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* Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
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The source code for the computer simulations and our data are available at https://simtk.org/projects/ue-reaching. A SimTK account is required to access the data, which can be created at <https://simtk.org/account/register.php>.