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Ergonomics International Journal
ISSN: 2577-2953

# Letter to the Editor: Digital Human Models Are Only as Honest as Their Anthropometric Inputs

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**Letter to Editor**

**Volume 10 Issue 3**

**Received Date:** August 20, 2026

**Published Date:** August 26, 2026

## Letter to the Editor

I read with interest the recent wave of articles celebrating digital human modeling (DHM) software as a near-complete substitute for physical mock-up testing in workstation design. I do not doubt the productivity gains these tools offer, and I have used several of the leading platforms in my own consulting work. But I want to register a concern that I think has been under-discussed in the enthusiasm surrounding this technology, namely the provenance of the anthropometric databases that these models draw on.

Many widely used DHM packages still rely, at their core, on anthropometric surveys conducted decades ago on specific national military or industrial populations. These datasets were valuable and rigorously collected for their time, but they were never intended to represent the global, increasingly diverse workforce that companies are now applying them to. A digital manikin generated from a 1980s military survey of a single country's young, healthy recruits is not a neutral stand-in for a present-day logistics warehouse employing workers across a much wider range of age, body composition, and regional stature. When a design passes a DHM reach and clearance check built on such a population, the confidence that check inspires may be larger than the confidence it deserves.

This is not a hypothetical concern. I have seen workstation designs validated entirely in simulation, with no physical trial population, proceed to installation and then require retrofitting within the first year because the modeled population did not adequately capture the actual range of body sizes on the floor, particularly at the smaller and larger percentiles where clearance and reach problems concentrate. The software performed exactly as specified. The specification was the problem.

I would ask the journal, and the broader research community publishing on DHM validation, to give more prominence to two things going forward. First, when publishing case studies or validation work involving DHM tools, authors should be explicit about which anthropometric database underlies the model and how recently and from what population it was collected, so that readers can judge applicability to their own context rather than assuming universal validity. Second, I would like to see more comparative work quantifying the gap between DHM-predicted outcomes and outcomes from physical trials with genuinely representative user groups, across a range of industries and geographies, rather than the vendor-sponsored validation studies that currently dominate the literature.

None of this is an argument against digital human modeling as a design tool. Used well and used with an honest accounting of its input assumptions, it remains one of the more useful additions to the ergonomist's toolkit in the past thirty years, and it has made iterative design testing far cheaper and faster than physical mock-ups alone ever allowed. My concern is narrower: that the convenience and visual authority of a rendered manikin can quietly outrun the quality of the data that manikin is built on, and that practitioners under commercial pressure to move quickly may not always pause to ask the question.

I would welcome a response from vendors and researchers working directly in this space, and I suspect I am not the only reader who would find such a discussion useful.



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