TO THE EDITOR: We thank Dr. Böning for his comments (1) on our recent paper (2). Our blood-interstitial model predicts that fluid contraction of these fluids by any cause, exercise, heat stress, hemorrhage, etc., would cause an alkalosis as shown experimentally. A muscle (cell) compartment could be added to the model to more accurately predict the fluid and electrolyte effects of exercise and other phenomena.

We also thank him for explaining the reasons for two of our model results. First, we suggested the possibility that the additional muscle work of hyperventilation could explain the resulting metabolic acidosis. However, he has shown that it is due to lactic acid production because of increased glycolysis. At present, metabolic phenomena are not present in the model, but they could be added in the future to simulate such processes. Second, he pointed out that the reason the model predicts lower bicarbonate concentrations than the early experimental determinations cited is that the latter data did not take into account CO₂ binding to hemoglobin. We agree, but the use of different solubility constants and pK values also explains some of these differences.

We appreciate Dr. Böning’s interest in our work and thank him for his insight.

DISCLOSURES
No conflicts of interest, financial or otherwise, are declared by the author(s).

REFERENCES

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