## AUTHOR'S REPLY:

This study was funded and designed to isolate the effects of the Riddell (Elyria, OH) helmet and shoulder pads used by National Football League linemen. Its design highlights small differences in heat gain, but it does not translate well to on-field football training because the treadmill exercise was performed to exhaustion (in 9 of 10 participants in full gear), and participants were not given any chance to rest, drink fluids, or remove the helmet. The extrapolation upward of the top line in revised Figure 2 is speculation, not science. One could equally speculate that the middle line has no plateau and so extrapolate it upward. In contrast to this heat-chamber study, on-field football training in the heat is stop and go, with regular breaks, sometimes cooling breezes, fluids encouraged, and the helmet often removed during rest breaks, teaching times, and sideline waits. For these reasons, other researchers find that core temperature on field during football training waxes and wanes in response to varying activity levels and that rest breaks allow for adequate heat dissipation.[1] Also, in another heat-chamber study, designed to mimic drills by linemen in practice, the heat-gain effect of football gear, compared with that of shorts alone, was variable and minimal, perhaps because the collegiate players in the study partly offset the cost of added gear by lowering their intensity, as could occur in a real field setting.[2] And recall that the college fullback who died from heat stroke after an intense workout in the summer of 2001 wore no football gear, just a T-shirt and shorts. All things considered, although more research is needed, this study does not show that the helmet and shoulder pads pose a substantial risk for heat stroke in football training.

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