On completing a marathon and giving birth the same day

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IN THIS ISSUE, Zavorsky and Longo (1) present what is in effect a physiological case report about a young woman who, at 39 wk of gestation, gave birth some 8 h after completing a marathon on October 9, 2011. This story had already received some public attention, and as one might imagine, reactions ranged from admiration to outrage. For a journal editor, this article raises questions in four domains: scientific, editorial, medical, and ethical.

The scientific issues revolve around what was learned about the interaction between prolonged (6.5 h) moderate intensity exercise (average 4.1 miles/h walking) and full-term maternal and fetal physiology. This was not a scientific experiment, no data were collected to inform such a discussion, and there were no imposed controls on fluid/energy intake. Zavorsky and Longo estimate a variety of typical physiological responses the woman likely mounted, based on estimates and n = 1. Probably the strongest scientific conclusion is the de facto observation that, at the end of the day, an apparently healthy normal birthweight baby was delivered without reported complications. This leaves it as a (natural) proof of concept study: It is certainly possible to complete a marathon at this pace and deliver a baby on the same day. But, this should not be surprising—saber tooth tigers and other predators would likely not have extended professional courtesy to third trimester women of the past, implying the latter’s ability to exercise to escape being eaten. But were one to conduct a study on the physiology of prolonged exercise in near-term women, there would be many scientific questions related to fluid management, metabolic responses, thermoregulation, hemodynamics, and so on—for both mother and fetus—before one could conclude that the physiological milieu of mother and fetus stayed within normal bounds. It would not be good science to assume that what worked for this athlete would work for all. Or that, because the outcome was clinically benign, all was well physiologically. Indeed, a key goal of the Journal of Applied Physiology is to explore the full range of physiological potential for animals and humans using rigorous scientific methodology incorporating appropriate experimental design.

The editorial issues are several. First, whether this journal should have accepted such an article in the first place. We place a premium on papers that are innovative, impeccably executed, and described and which significantly advance the body of physiological knowledge. On many fronts, this article does not meet these criteria. It is descriptive, speculative, and lacking important empirical data. The journal has rarely if ever published what amounts to a case report. So why did we accept this article, albeit as a Viewpoint, not as a regular research paper?

As one of the “anonymous” peer reviewers as well as Editor-in-Chief, I thought the article might stimulate scientific discussion about an undoubtedly important area in which controlled physiological studies are uncommon to say the least. Additional issues for an editor include the implied ethical and medical positions of both the journal and the publisher (American Physiological Society) given that the authors conclude the woman’s accomplishment was “no big deal.” This kind of case report, with its limited data and cohort size, simply does not allow a valid assessment of risk/benefit to exercising pregnant women in general. Thus, by publishing this article, it must be made very clear that neither the journal nor APS is stating a position in either ethical or medical terms.

The medical issues raised by this article are substantial. Although this must not be equated with saying that the medical risks are necessarily substantial, it would obviously be untenable to claim that because this woman was successful in exercise and delivery the same day, every woman and fetus would fare as well. This is yet another example of genes, environment, and their interaction affecting outcome—how genetic makeup in factors affecting fluid and electrolyte balance, metabolism, thermoregulation, hemodynamics, and so on during prolonged moderate exercise must vary among women and their fetuses; what training the woman had previously undertaken; how the marathon was managed, especially in terms of fluid and electrolytes in relation to temperature and humidity on the day; and what monitoring/emergency procedures were in place in case of unexpected initiation of labor or other untoward medical event during the marathon.

Finally, the ethical issues are also substantial. Suffice it to say that the fetus had no voice in the decision and that ultimately the mother and father did. Other relatives and advisors may or may not have been involved. But the court of not-well-informed public opinion does not apply. Was the risk worth the benefit? Zavorsky and Longo report that the woman had been “medically cleared” to compete, but what this actually means was not defined. Nobody fully knows the risks of executing a marathon on the day of delivery nor the benefits to the woman/fetus/family/society at large—physiological or psychological—so one cannot make a rational ethical decision. Some will forever condemn the woman; others will point to her as a shining example. We should thank this young woman for showing us what is physiologically possible. However, whether it was medically or ethically advisable is debatable.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the author.

REFERENCES