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2014

Prevalence and Incidence Rates Are Not the Same: Letter to the Editor

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Prevalence and Incidence Rates Are Not the Same: Letter to the Editor

Dear Editor:

I recently became aware of an article by Weisenthal et al,[2] "Injury Rate and Patterns Among CrossFit Athletes," published in the April 2014 issue of your journal. Considering this is a topic of interest to me, I read the article with great expectations and detail. I commend the authors for their fantastic job, both in their methodology as well as in their interpretation of their findings. They truly did a great job explaining their definition of what constituted an injury, which has been lacking in several studies, as well as providing great recommendations for the "safe" participation in this training modality. However, considering how controversial this topic has become among health care professionals, fitness enthusiasts, and the mainstream media, it is important to point out a major flaw of this study, which is significant. In addition, it is also important for anyone else reading the article to understand the limitations of the data provided and their interpretation.

Unfortunately, the authors seem to have fallen victim to a common misconception of these epidemiological measurements, which is the confusion between *prevalence rate* and *incidence rate*. In their study, even though the authors refer to "injury rates" throughout the manuscript, what they actually report are prevalence rates, which cannot be interpreted the same way as an incidence rate.

Per its definition, prevalence "represents the number of individuals in a population (group) that exhibits the outcome of interest at a specified period in time."[2] On the other hand, incidence "provides a measure of the rate at which people without a condition develop such a condition (number of new cases) over a specified time interval (eg, 1 year)."[1] To examine incidence rates, we need to know the total time of exposure for the condition, not just the total population as we do with prevalence rates. Therefore, in order to report incidence rates of injury we must know how long the participants were "exposed" to the condition—in this case CrossFit—over the period of the study recalled, not just merely their participation. This would take into consideration those who train multiple times a day and compare them equally to those who only participate once a day. The "risk" of injury should be higher for someone who is exposed to the condition (CrossFit) more often than others, not necessarily because the condition is dangerous, but merely because they participate more often. Prevalence measures do not provide this distribution of time and risk of injury.

Here is an example that may better illustrate the difference between the two measures:

> Say in the last 6 months, 50 individuals in a total sample of 100 reported a CrossFit-related injury. The entire sample completes 24 weeks of training, attending three 1-hour sessions per week ($24 \times 3 = 72$ hours per person). Therefore, the total time of exposure is 3600 hours of CrossFit (50 injury cases $\times$ 72 hours per person).

This means that the *incidence rate of injury* in this sample of the population would be 0.014 per training hour, or 14 injuries per 1000 training hours (50 injury cases/3600 hours of CrossFit). Whereas prevalence numbers are merely proportions and provide an indication of how severe a problem can be by providing the number of existing cases of a condition (eg, 50 individuals of the 100 were injured [50%]), incidence rates give us the actual measurement (14 in 1000 training hours). Unfortunately, the authors did not calculate this incidence rate, and based on their findings, their data could be misinterpreted by other readers and the media.

It is not my intention to critique the great work of the authors, which have provided new insight to this relative new training modality. Considering the controversial issue, however, it is important for researchers to accurately depict the risks and explain these measurements so that there is no confusion in their interpretation.

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REFERENCES

1. Friis RH, Sellers TA. Measures of morbidity and mortality. In: *Epidemiology for Public Health Practice*. Burlington, MA: Jones & Bartlett Learning;2014:107-155.
2. Wisenthal BM, Beck CA, Maloney MD, DeHaven KE, Giardano BD. Injury rate and patterns among CrossFit athletes. *Ortho J Sports Med*. 2014;2(4). doi:10.1177/2325967114531177.