Reply to the Letter to the Editor

Acetabular Retroversion in Military Recruits with Femoral Neck Stress Fractures

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To the Editor,

I would like to thank Dr. Davis for his interest in our study. I would agree that the frequency and duration of the physical training is the major contributor to the development of a femoral neck stress fracture. Due to the retrospective nature of the study, we were unable to control for all the variables in the control group including activity level. This is certainly a weakness in the retrospective study design. Because of the rigorous level of activity of military recruits, a control group who has already had pelvic radiographs, as well as similar activity levels, would be difficult to construct outside of healthy military recruits or endurance athletes.

The average military recruit is 18 to 20 years old, and as the recruit has just passed a rigorous entrance physical, it is likely the recruit has few medical problems. Few recruits have imaging unless an injury is suspected. Therefore, we choose a group of comparable age for the closest match.

(RE: Kuhn KM, Riccio AI, Saldua NS, Acetabular Retroversion in Military Recruits with Femoral Neck Stress Fractures. *Clin Orthop Relat Res.* 2010;468:846–851.)

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We compared the study and control groups for the presence of a crossover sign using a Fisher's exact test. The crossover sign was significantly higher in the study group ($p = 0.009$). Within the study group, stress fractures occurred with and without the presence of a crossover sign. While significance was not reached ($p = 0.09$), statistics revealed a trend.

While this is an imperfect comparison, it certainly produced some interesting results, including a higher frequency of acetabular retroversion in the femoral neck fracture group and the control group as compared to those previously reported in the general population. In order to control for activity level, a prospective study of new military recruits who consented for a routine pelvic radiograph prior to beginning training would have to be undertaken. Those who developed femoral neck stress fracture could then be compared with the group who did not. This is a potential future project, but was beyond the scope of our original study design.

While I agree that our study does not demonstrate a causal relationship between acetabular retroversion and femoral neck stress fracture, it certainly raises the question of a relationship. This study was meant as pilot study to investigate a question based on a clinical observation and has fueled future research projects to further investigate this relationship. We are currently developing an acetabular retroversion model, which can be tested biomechanically so that strains across the femoral neck can be measured during cyclic loading.