Reply to the Letter to the Editor

Hip Resurfacing Does Not Improve Proprioception Compared With THA

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To the editor:

We thank Dr. Julien Girard for his comments in his letter to the editor. Clearly, we all have a strong interest in finding an ideal surrogate to measure proprioception and investigate the alterations caused by hip and knee arthroplasty. As noted in our introduction, “there is no gold standard for measuring proprioception” [2]. This is particularly clear following our assessment of the arthroplasty patient population.

We relied on the findings by Allum et al. [1] as it relates to dynamic postural stability as the basis for our testing

apparatus, and their conclusion that “testing dynamic posturography using pure toe-up rotational perturbations tested under eyes-closed conditions” was appreciated. Beyond this, we recognized that proprioception has multiple components, including kinesthesia and joint position sense. While we did not include pre- and postoperative hip ROM to complement kinesthesia, the normalization of our data to the asymptomatic, nonoperative leg should have accounted for this. As it relates to joint position sense and the addition of an eyes-closed condition, we felt that this being the first study in arthroplasty patients with this device, the potential for injury from falls in an eyes-closed condition outweighed the benefit of further enhancement of proprioceptive data. This was reflected in the fact that most single-leg studies lasted a matter of seconds, well short of the one-minute goal for the testing apparatus. In this patient population, perhaps alterations in the programming of the device would allow for a safe, eyes-closed option in future studies. We also recognize that the surgical approach could affect the proprioceptive outcome after hip arthroplasty. All patients had a posterolateral approach and thus had similar affects to the surrounding musculature.

As we can all agree on, proprioception is a sense that relies on multiple inputs to a number of different bodily systems. My colleagues and I hoped this device would provide a summative assessment of proprioception and add to our current knowledge of whether the type of hip arthroplasty would allow for better preservation of proprioception in our postoperative patients. We applied newly available technology to the arthroplasty patient population and believe that our data gives valuable information while recognizing that further study is clearly needed. With future studies, we hope that we can further refine how best to measure proprioception and what affect the results of these testing measures have on clinical outcomes.

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