ical variations. In the study by Ward et al., was any assessment of patellar morphology made to ensure that the Insall-Salvati ratio provided an accurate measure of patellar height?

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References

S.R. Ward and C.M. Powers reply:
We would like to thank Benedict A. Rogers, MA, MSc, MRCS, for his insightful questions about our recent manuscript. Each point brought forth in the original letter is addressed below.

First, two papers by Møller et al.1,2 were referenced in our study. As Mr. Rogers correctly points out, one study (reference 6 in our manuscript) demonstrates the relationship between patellofemoral malalignment and histological signs of articular cartilage damage in a rabbit model. The second paper (reference 23 in our manuscript) demonstrates the relationship between patellar height and patellofemoral incongruence in human knees. Reference 6 was incorrectly cited in the introduction of our paper (line 18). We apologize for this oversight; however, a thorough discussion of our findings relative to Dr. Møller’s human data (correctly cited) is included in the Discussion section.

Second, one investigator measured the Insall-Salvati index in all cases. However, this investigator was blinded to the alignment and contact area measurements. The Insall-Salvati index has demonstrated interobserver reliability in our hands and has been shown to be comparable with measurements made on lateral radiographs of the knee.3

Third, the Insall-Salvati index4 was originally measured on lateral radiographs made with the knee flexed to 20° to 30° as Mr. Rogers correctly notes. The purpose of flexing the knee was to remove slack from the extensor mechanism and to allow the patella to engage with the trochlea. In our experiment, the leg was loaded in 0° of knee extension with 25% of the subject’s body weight, which removes slack from the extensor mechanism. Regarding engagement with the femoral trochlea, we measured the height of the patella with the knee in extension and at 20° of flexion in each subject and found these measurements to be nearly identical (intraclass correlation coefficient = 0.92).

Fourth, the Insall-Salvati index5 does lack sensitivity to patellar morphology as Mr. Rogers correctly notes. Interestingly, our original hypotheses about the lack of correlation between the height of the patella and the amount of patellofemoral malalignment included suboptimal measurements of patellar height. For this reason, we originally measured patellar height with use of a variety of published indices, including those noted in the report by Mr. Rogers and colleagues.6 However, none of them had associative values with malalignment and contact area that were as strong as the Insall-Salvati index. This was in direct contradiction to our original hypothesis. In response, we went back to our original data and determined that large Insall-Salvati indices were always driven by long patellar tendon lengths and not by patellar geometry.7 Although we acknowledge that this has been reported in the literature, it was not apparent in our data. Therefore, the most simple measurement (the Insall-Salvati index) explained the largest amount of the variance in alignment and contact area. Perhaps this is why the measurement has survived in practice for more than thirty-five years.

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These letters originally appeared in slightly different form, on JBJS.org. They are still available on the web site in conjunction with the article to which they refer.

Can Vitamin C Prevent Complex Regional Pain Syndrome in Patients with Wrist Fractures?
To The Editor:
We read with interest the paper “Can Vitamin C Prevent Complex Regional Pain Syndrome in Patients with Wrist Fractures? A Randomized, Controlled, Multicenter Dose-Response Study” (2007;89:1424-31) by Zollinger et al., and we would like to make the following points:

The paper cites an article by Kearns et al. to provide the steady-state level of ascorbic acid (vitamin C) with doses of 200 mg per day. However, Kearns et al. used Sprague-Dawley rats in their study. The muscles were analyzed after three hours of ischemia and one hour of reperfusion. We are not convinced that these data can be used to accurately determine the steady-state level of vitamin C in humans.

Instead, we think that monitoring of plasma vitamin-C levels would have been very useful in the study by Zollinger et al. for many reasons. Such monitoring would have detected noncompliance with regard to taking the medication. Noncompliance was likely to have occurred in the elderly female group studied. Monitoring of plasma vitamin-C levels would also have identified those patients who entered this study with vitamin-C deficiency and those who achieved above-normal serum vitamin-C levels.

The criteria used by the authors to diagnose complex regional pain syndrome were different from those used in other studies. Thus, it is not surprising that the incidence of complex regional pain syndrome stated in this study differed from those in previous studies.
One symptom (pain) and four signs (skin color, edema, skin temperature, and limited range of movement) were listed as diagnostic criteria for complex regional pain syndrome. It would have been difficult to assess these signs over the telephone at the final one-year assessment as described.

There are many confounding factors that could have affected the outcomes in the different groups. We suggest that the different groups that were studied needed to be corrected for the following variables: the adequacy of fracture reduction or surgical treatment; the compliance rate, known to be low in the elderly; and the different treatment rates for the different groups studied. Treatment (e.g., physiotherapy or treatment in a pain clinic) improves outcome after the development of complex regional pain syndrome. We suggest that the different groups studied needed to be corrected for the following variables: the adequacy of fracture reduction or surgical treatment; the compliance rate, known to be low in the elderly; and the different treatment rates for the different groups studied. Treatment (e.g., physiotherapy or treatment in a pain clinic) improves outcome after the development of complex regional pain syndrome.

References: