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Letter to the Editor

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Letter to the Editor

Dear Editor:

We have with interest read the article by Hambly and Griva titled "IKDC or KOOS? Which Measures Symptoms and Disabilities Most Important to Postoperative Articular Cartilage Repair Patients?" (September 2008, pages 1695-704) and the accompanying editorial by Bruce Reider. As pointed out in the article, there is no agreement regarding a gold-standard patient-assessed measure of the effect of cartilage repair surgery, and it is important to compare possible questionnaires. It would indeed improve interpretation of outcome in cartilage repair in particular, and in knee surgery in general, if consensus could be reached on a preferred patient-reported outcomes measure.

Our major concern with the current article is that 1 of the instruments, the Knee Injury and Osteoarthritis Outcome Score (KOOS),[2,4] has been used in a way it was never intended or recommended to be used.[3] In addition, the instructions associated with administration of the KOOS, the questions of the KOOS, and the time frame over which these questions pertain were all modified, without comparative testing with the original version of the KOOS. Consequently, it is unclear if the questions have the same measurement properties. There was also concern with the article with regard to how the KOOS was used because the authors state that "the KOOS has separate scores for different health dimensions, with higher scores signifying worse functioning in these areas." This is not the case; with the KOOS, higher scores signify improved functioning. Thus, readers need to use caution in interpreting the results of the study as a comparison of the KOOS to another questionnaire because the authors have not used the KOOS. Instead, they have created another version of this outcome measure that is very different.

Hambly and Griva point out that "any questionnaire used as a primary measure of outcome must reflect areas that are important to patients suffering from the specific disease or condition." The problem with knee injury is that structural lesions often are concomitant, and surgical procedures often address more than 1 lesion in the same session. As an example, most patients suffering an ACL tear sustain other simultaneous lesions such as meniscal tears or cartilage lesions. In the article by Hambly and Griva, 60% of the 58 participants with chondral repair had undergone another concomitant surgical procedure. Hence, it is unclear if the outcome measure data reflect the outcome of the chondral repair, the concomitant surgical procedure, or a combination of both. Given this difficulty in the current study and in many other studies of knee injury, it is challenging if not impossible to develop or apply outcome measure for a specific knee injury. Hence, the KOOS was developed to ensure a spectrum of activities relevant for patients with different knee injuries.

The KOOS was developed as a measure for people with knee injury resulting from an ACL tear, meniscal lesion, and/or chondral damage, all injuries known to be associated with an increased long-term risk of osteoarthritis. The idea was that the KOOS could be applied not only in short-term follow-up but also in long-term follow-up studies of knee injury. The initial literature review and expert panels identified items related to pain, other symptoms, knee-related quality of life, and functional difficulties relating to a higher and a lower activity level for inclusion.[3] Thus, the KOOS includes 2 separate subscales relating to physical function: activities of daily living (ADL) function and sport and recreation function. To be valid for persons with both high and low physical activity levels, and for use in long-term follow-up during which a decrease in activity level may occur, both subscales need to be included in the KOOS.

In the recent article by Hambly and Griva, the conclusion was primarily based on the results for mean importance ranking (MIR) and frequency important product (FIP) of the individual items included in the KOOS and the International Knee Documentation Committee (IKDC) score. When considering the way each measure is intended to be used, as separate subscales for the KOOS[4] or as a total score for the IKDC,[1] these results indicate that the best results were achieved for the KOOS subscales knee-related quality of life (3.72 and 3.57, respectively) and sport and recreation function (3.44 and 3.09, respectively). The corresponding results for the IKDC were 2.81 and 2.35, respectively. Although the MIR and FIP are interesting, these statistics do not include confidence intervals. The absence of confidence intervals combined with the small sample size of this study limits our ability to draw conclusions and makes it very difficult to interpret the relevance of these differences, at least from a statistical perspective. The MIRs for the other 3 KOOS subscales, pain, symptoms, and ADL function, were 2.16, 2.00, and 1.86, respectively. The corresponding FIPs were 1.58, 1.44, and 1.32, respectively.

Given these results, presented for each questionnaire as they are published, validated, and intended to be used, we suggest that readers interpret with caution the results and conclusion of Hambly and Griva's work. We particularly raise a cautionary note related to the conclusion that "the IKDC provides the best overall measure of symptoms and disabilities that are most important to this population of postoperative articular cartilage repair patients."

In summary, we find that in this study, 1 of the questionnaires was used in a way never intended, recommended, or validated. When the questionnaire was used as developed, in 5 separate subscales, the data provided do not support the conclusion. Further well-designed research is needed to reach consensus on the preferred outcome measures in cartilage repair in particular and in knee surgery in general.

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Authors' Response: We thank the authors of the letter for their interest in our article and for their considered comments to which we appreciate the opportunity to respond.

The major concern of the authors of the "Letter to the Editor" was that the Knee Injury and Osteoarthritis Outcome Score (KOOS)[5] was used in a way that it was never intended or recommended to be used. We believe that the authors of the letter misapprehended the focus of our study, as we did not and never did intend to use the KOOS as an outcome measure, but rather we evaluated the symptoms and disabilities within the KOOS items that were most important to postoperative articular cartilage repair patients.

It has been recommended that "for the purpose of outcomes research, patient-friendly and self-administered questionnaires proven valid to assess the patient's perspective should be used."[4] On the basis of a review of recent outcome studies of articular cartilage repair procedures, we identified the International Knee Documentation Committee (IKDC) subjective form[2] and the KOOS as being frequently used patient-reported outcome measures (page 1696). At the time of our study, neither the KOOS nor the IKDC had been proven valid to assess the patient's perspective for postoperative articular cartilage repair. We extracted symptoms and disabilities from items from the KOOS and IKDC as per a previously published methodology that evaluated the subjective portions of 11 knee-specific instruments for 3 populations—ACL ruptures, isolated meniscal tears, and osteoarthritis.[6]

We hope that we demonstrated in our article that the KOOS is a standardized instrument that is widely used and has been validated in several orthopaedic populations (page 1697). We are aware that the KOOS was not intended to be used as a total score as demonstrated by the fact that we cited this as 1 of the differences between the IKDC and KOOS in our article when we stated that "in contrast to the IKDC, in which the items are summed to produce a single index, the KOOS has separate scores for different health dimensions" (page 1697). However, we wanted to compare the results from our population with those in the Tanner et al[6] article. As the authors of that study analyzed the KOOS items as a total score,[6] we did the same, but, pertinently, we also undertook additional analyses of the symptoms and disabilities included in each of the KOOS subscales.

We did not seek to create another version of an outcome measure. We sought to provide an insight into the importance of the symptoms and disabilities contained within items from 2 existing outcome measures (KOOS and IKDC) for a population of people who had undergone articular cartilage repair of the knee. Although validated in several orthopaedic populations, the KOOS has not, to date, been validated for an articular cartilage repair population. Our study evaluated aspects of the face validity[1] of each of the instruments for the "typical" articular cartilage repair patient. On the basis of the results of our study, we agree with the authors that the profile of a typical articular cartilage repair patient is one that is frequently associated with concomitant injuries and surgical procedures. The authors stated that "it is unclear if the outcome measure data reflect the outcome of the chondral repair, the concomitant surgical procedure, or a combination of both." The data presented in our article reflect the symptoms and disabilities that people who have undergone articular cartilage repair procedures find important to them at their respective individual postoperative times. At no point were we looking to evaluate the outcome of a chondral repair procedure, and this point was made very clearly in our article in the first sentence under "Participant Recruitment" (page 1697). We valued Bruce Reider's insightful editorial comments[3] and concur that although the worth of considering the patients' perspectives by evaluating what is important to them in the present is acknowledged, there is an onus on clinicians to evaluate longer term health outcomes after knee surgery.

The authors state that "the absence of confidence intervals combined with the small sample size of this study limits our ability to draw conclusions and makes it very difficult to interpret the relevance of these differences, at least from a statistical perspective." We agree that not including confidence intervals was an omission on our behalf and thank the authors for highlighting this point. We have addressed this issue in providing the confidence intervals for the mean importance rankings and mean frequency important products in Table 1. The fact that none of the lower limits of the ranges were less than 1 and that the ranges are narrow (especially for the KOOS function in sports/recreation and knee-related quality of life subscales) provides statistical confidence to support the conclusions that we have drawn.

Finally, we did not suggest that the KOOS was inappropriate for our population, but we did highlight that some subscales were viewed by our participants as being more pertinent than were others. Our article clearly indicated in the "Results" section of the abstract (page 1695) that 2 of the KOOS subscales scored higher on mean importance ranking and frequency important product than did the overall IKDC score. However, overall the percentage of items that were experienced by patients were consistently higher for the IKDC compared to the KOOS (Table 3, page 1701), and symptoms and disabilities from 3 of the 5 KOOS subscales were not viewed as being as important to our population (Table 4, page 1701).

We recognize that there was an error in our article where we stated that higher KOOS scores signified worse functioning, as this should have read that lower KOOS scores signified worse functioning. The authors stated that the presence of this error means that readers need to use caution in interpreting the results of our study. This is not the case as we only referred to the KOOS scoring system in the overview of the instrument, and we never used the KOOS scoring system in our methodology. This error, although regrettable, has no bearing on the interpretation of the results of our study.

In summary, from a clinical utility perspective, the IKDC did provide the best overall measure of symptoms and disabilities that were the most important to this population of postoperative articular cartilage repair patients. Our interpretation of our results was based on the fact that the IKDC contained the highest number of items with symptoms and disabilities that not only were experienced but also were seen as being important by this group of patients. We are in agreement with the authors that further research is needed on patient-reported outcome measures in cartilage repair.

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TABLE 1
Mean MIR and Mean FIP for All Items in IKDC, Overall KOOS, and KOOS Subscales for the Total Cohort With 95% Confidence Intervals[a]

	Mean MIR			Mean FIP		
Instrument	Mean	SD	95% CI	Mean	SD	95% CI
IKDC items overall	2.81	0.74	2.62-3.00	2.35	0.83	2.14-2.56
KOOS items overall	2.31	0.85	2.09-2.53	1.81	0.99	1.55-2.07
KOOS subscales						
Pain	2.16	0.66	1.99-2.33	1.58	0.80	1.37-1.79
Other symptoms	2.00	0.47	1.88-2.12	1.44	0.59	1.29-1.59
Function in daily living	1.86	0.61	1.7-2.02	1.32	0.60	1.17-1.47
Function in sports/recreation	3.44	0.21	3.39-3.49	3.09	0.25	3.03-3.15
Knee-related quality of life	3.72	0.25	3.66-3.78	3.57	0.29	3.50-3.64

[a]CI, confidence interval; FIP, frequency importance ranking; IKDC, International Knee Documentation Committee; KOOS, Knee Injury and Osteoarthritis Outcome Score; MIR, mean importance ranking.

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