HAGOS Could Be Important in the Evaluation of Patients Undergoing Hip Arthroscopy—Why Ignore It in a Sports Medicine Update When the Scientific Data Suggests Otherwise? Letter to the Editor

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Dear Editor:

It is with great interest that we read the Clinical Sports Medicine Update titled "High Degree of Variability in Reporting of Clinical and Patient-Reported Outcomes After Hip Arthroscopy" published in the *American Journal of Sports Medicine* by Stone et al.[7] We agree with the authors on the importance of head-to-head psychometric comparisons of patient-reported outcome (PRO) measures for patients undergoing hip arthroscopy.

To our surprise, though, Stone et al[7] conclude: "On the basis of our comparative responsiveness results and previously reported psychometric properties of the different PRO instruments, we recommend more widespread adoption of the iHOT [International Hip Outcome Tool] PROs instruments to assess hip arthroscopy outcomes." Only recommending the iHOT for widespread adoption is, however, not supported by the prespecified criteria and data presented by the authors themselves. In their responsiveness analyses, relative efficiency is compared between iHOT-12, the Hip Sports Activity Scale (HSAS), EuroQol-5D (EQ-5D), and the 6 individual subscales of the Copenhagen Hip and Groin Outcome Score (HAGOS) using predefined cut-off values of <0.80 and >1.20 as being indicative of *poorer* or *greater responsiveness*, respectively. However, what becomes evident when comparing the actual relative efficiency values from Table 7 is that only 2 subscales, HAGOS Symptoms and HAGOS ADL, display *poorer responsiveness* (relative efficiency <0.8) when compared with the iHOT-12. In fact, the remaining majority of HAGOS subscales, 4 out of 6, show *equal responsiveness*, with the HAGOS Quality of Life showing the highest effect size (1.43) and thus greatest relative efficiency of all the scales included in this analysis without getting mentioned in the Discussion or Conclusion of the article. In addition, Stone et al[7] discuss their results only in relation to previous research findings favoring the use of iHOT compared with the HAGOS,[2,5] while ignoring recent evidence from a systematic review,[8] data from a Delphi process,[6] and statements from an international agreement paper[1] highlighting that HAGOS is valid, important, and recommended as a PRO measure assessing young-aged to middle-aged adults undergoing hip arthroscopy.

Moreover, we find it inappropriate to include the HSAS score in a head-to-head comparison with iHOT-12 and HAGOS, as HSAS measures a different construct than these patient-reported measures of hip- and groin-specific disability. HSAS is an activity scale with 9 different sports activity levels, ranging from 0 (no recreational or competitive sport) to 8 (elite level).[4] As such, HSAS is not a comparable measure of self-reported hip disability. To obtain a large effect size on the HSAS scale, based on the available data included by Stone et al,[7] subjects were required to change from recreational noncontact sports, such as aerobics or jogging, to recreational contact sports, such as football or ice hockey. Such an increase in sporting activity and high-impact hip loading is probably not advisable, nor to be expected after hip arthroscopy—as also indicated by the data from Stone et al.[7]

In summary, we agree that increased use of validated PRO measures, such as iHOT, is important. Information obtained from specific HAGOS subscales can, however, provide additional valuable clinical information regarding persistent disability specifically related to sport function (HAGOS Sport), physical activity (HAGOS Physical Activity), and quality of life (HAGOS Quality of Life) after hip arthroscopy. For instance, the Danish Hip Arthroscopy Registry has established that HAGOS Sport, Physical Activity, and Quality of Life improve to a lesser extent in patients with severe acetabular cartilage damage (grade 3-4) compared with patients with no or minimal cartilage damage (grade 0-2) 2 years after surgery.[3] These data showing inferior results after hip arthroscopy in those with severe cartilage damage were further supported by a much smaller improvement in activity level (HSAS) in the same patients. Such precise and specific information on persistent disabilities presented by the HAGOS profile (6 different measurement domains), here exemplified with respect to sports function, physical activity, and quality of life, is paramount to guide future areas in research and clinical practice, especially in light of the fact that cartilage damage is present in the majority of hip arthroscopy patients.[3] Such detailed profiling cannot be provided by the combined and aggregated iHOT total score. It is unfortunate that the peer review process for a Clinical Sports Medicine Update does not realize that the authors are misinterpreting their findings. Our concern is that such misrepresentation of outcome findings (in this case, the value of HAGOS as a PRO tool measuring specific disability in hip arthroscopy patients) may end up misleading clinicians and researchers working in this area, potentially impeding important future clinical and scientific advances in the field of hip arthroscopy and rehabilitation.

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HAGOS Could Be Important in the Evaluation of Patients Undergoing Hip Arthroscopy—Why Ignore It in a Sports Medicine Update When the Scientific Data Suggest Otherwise? Response

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Authors' Response:

We thank Thorborg et al for their thoughtful inquiries regarding our recent article, "High Degree of Variability in Reporting of Clinical and Patient-Reported Outcomes After Hip Arthroscopy."[5] The authors raise concerns regarding the lack of recommendation for widespread adoption of the Copenhagen Hip and Groin Outcome Score (HAGOS) in our discussion. We do believe that the HAGOS outcome tool and its 6 subscales provide relevant information about the patient's condition and commend the authors' contributions to assessing hip arthroscopy outcomes; however, our discussion was a reflection of the particular results from our study and not meant in any way to encourage—or discourage—the use of any particular outcome score.

The data from our study consisted of a systematic review of the hip arthroscopy literature, and our analysis was conducted using established responsiveness thresholds. This method identified that the International Hip Outcome Tool (iHOT) was more responsive than were the HAGOS Physical Activity, Symptom, and Daily Activity subscales. The responsiveness of the iHOT was equivocal with regards to the HAGOS Quality of Life, Sport, and Pain subscales. The 6 HAGOS subscales did not demonstrate greater responsiveness than did the iHOT. Our findings are congruent with the systematic reviews of Ramisetty et al[3] and Kemp et al,[2] which demonstrated superior psychometric properties of the iHOT compared with several of the HAGOS subscales. These studies also demonstrated similar responsiveness of some HAGOS subscales to that of the iHOT. The responsiveness of the iHOT was supported by our data,[5] and in addition to the HAGOS, is also advocated for adoption by the referenced Warwick Agreement on Femoroacetabular Impingement Syndrome.[1] We agree with the authors that the HAGOS outcome tool is important and valid; however, we do not question the validity of the HAGOS nor recommend against its use.

We also respect the concerns of Thorborg and colleagues regarding omissions of certain studies in our data and analysis. Our systematic review was completed prior to the publication of the Delphi process[4]; as such, it was unfortunately not included in the analysis. Expert opinion studies[1,3] and systematic reviews[6] were also not included in the analysis as outlined in our study criteria; therefore, only the primary studies with patient-reported outcomes after hip arthroscopy were included.

The authors' concerns highlight the challenge in comparing a global score that measures both pain and function in one aggregate score, such as the iHOT, with an outcome tool that uses multiple subscales, like the HAGOS. It is possible that the responsiveness of the iHOT global hip score is a result of the same changes seen in the HAGOS Quality of Life, Sport, and Pain subscales. We do believe our conclusions of the responsiveness of the iHOT are supported by our methodology and data from the current hip arthroscopy literature.

We appreciate the concerns brought forth by Thorborg and colleagues. These concerns highlight the challenges we face in attempting to accurately report clinical outcomes of patients with femoroacetabular impingement in a comprehensive yet efficient manner. Moreover, these concerns highlight the importance of the need for continuing investigation into optimal methods for measuring clinical outcomes, so that ultimately we can maximize the value of our clinical and research efforts.

We hope that our response adequately addresses the authors' concerns, and we welcome any additional feedback or comments.

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