

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Assessing Risk Factors for Early Hip Osteoarthritis in Activity-Related Hip Pain; a Delphi Study
AUTHORS	Jackson, Kate; Glyn-Jones, Sion; Batt, Mark; Arden, Nigel; Newton, Julia

VERSION 1 - REVIEW

REVIEWER	Rintje Agricola Erasmus Medical Centre Rotterdam, the Netherlands
REVIEW RETURNED	08-Feb-2015

GENERAL COMMENTS	<p>The authors presented an interesting article to define an appropriate clinical assessment, based on expert consensus using the Delphi method, to identify patients at-risk for early hip osteoarthritis among people with activity related hip pain.</p> <p>Abstract Conclusion abstract: 'This Delphi study provides a standardised approach to the assessment of patients with activity related hip pain'. Please consider to stress that this concerns a standardised approach for research purposes.</p> <p>The topic is nicely introduced, in the methods section the Delphi method has been explained clearly and I do not have any comment on the results. Regarding the literature search: was the search performed systematically and when was the search performed? Several recent studies concerning this topic haven't been described or congress abstracts were cited (while full texts are already available).</p> <p>I have some minor questions regarding the discussion: History: Gender: the association between gender and hip OA depends on the age category studied. In general, hip OA is more frequent in males in relatively young people (age <55 years), the prevalence becomes equal around the age of 65 years and afterwards females are more affected. Regarding the population of interest in the current study that present with activity related hip pain, wouldn't males be more likely to develop OA assuming that people are most often younger than 65 when they present with activity related hip pain?</p> <p>Injury: studies included in the systematic review of Richmond et al. (ref no 5) primarily include hip fractures or dislocation resulting from trauma in the definition of hip injury. This type of injury is quite different from knee injuries such as meniscal tears and anterior cruciate ligament ruptures. Please specify what is meant by 'previous injury'. Are these only fractures and dislocations?</p>
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	<p>Ref no 7 is a conference abstract.</p> <p>Level of activity: Also for level of activity results of studies vary widely based on the age group studied. I'd suggest to specifically focus on studies of people prior to the age of 50, as this is probably the age group of interest.</p> <p>Examination: BMI: Were other studies identified in the search regarding the relationship between BMI and hip OA? In the currently referenced study by Wang et al. people had to recall their weight at age 18-21 retrospectively, while ref 30 is a conference abstract. There are also other studies available on radiographic OA that do not show an association between BMI and hip OA (eg. Reijman et al. ARD 2007, Franklin et al. ARD 2009). If there is an association on an epidemiological scale, it is probably very weak. How can this be used in a personal approach to somebody that present with activity related hip pain?</p> <p>Impingement tests: please consider to discuss the recently published (ad higher level of evidence study)systematic review and meta-analysis of Reiman et al. BJSM 2014. Ref 34 ad 35 are the same.</p> <p>Investigations: Alpha angle: A recent study by Agricola et al. OA&C 2014 proposed an alpha angle threshold of 60 degrees for AP pelvic radiographs of the hip. Would that be of interest?</p> <p>Ref 8, 46 and 51 are congress abstracts. If I'm correct, some of these have now been published as full articles which might be interesting for the current discussion. Is it correct that the Hartofilakidis study is scored as level 2 evidence in table 1 (there are some significant flaws in this study)? Is there a distinction in level of evidence between retrospective, cross-sectional and prospective studies?</p>
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REVIEWER	Jackie Whittaker Faculty of Kinesiology University of Calgary Canada
REVIEW RETURNED	10-Apr-2015

GENERAL COMMENTS	<p>The purpose of this study was to gain expert consensus on key clinical measures to help predict the risk of early hip osteoarthritis in individuals presenting with activity-related hip pain. This study is well explained however there is some vital missing information that is required before a full decision about the manuscript can be made.</p> <p>Participants 1. It would be helpful for the reader to better understand how the experts were selected to ensure that the 'experts' were indeed individuals with subject expertise. How was expertise determined? Did the participants need to have published in the area (if so how much)? Did the participants need to have practiced in the area for any length of time? Did the clinicians have to provide any evidence that they understood how to interpret the evidence and that they</p>
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	<p>incorporated best evidence in their practice? 2. It would be nice to know a bit more about the 'experts' and how they were chosen. How many experts were invited? How did those that chose to participate differ from those that did not? What were the characteristics of those that dropped out and what were the reasons for participant drop out? How many, and which countries were represented in the expert panel?</p> <p>Literature search and Summary of Evidence The authors are commended for their incorporation of the evidence-base into the agreement process. With that said a bit more information is required to fully understand how the evidence was incorporated into the 'experts' decisions.</p> <p>1. Did the authors consider any outcomes or measures that were not suggested by the experts but have a high level of evidence? Meaning other than the suggestions provided by the experts did the authors independently consult the evidence-based before making their recommendations to ensure that nothing with a high level of evidence was missed? It might be useful to include this as a limitation at the end of the paper.</p> <p>2. It would be useful if the authors could include the search strategy that they used for each of the literature searches that were performed as well as the selection criteria for evidence included in the summary provided to the 'experts' (i.e. population, construct, measurement instrument, measurement properties)? Did the authors provide the experts with information about the clinimetric properties of the tests (i.e. intra, inter and test retest reliability, known measurement error, validity, responsiveness and interpretability) as per the COSIM instrument? Did the experts all understand what the requirements were for each level of CEBM evidence? What was the process used to determine the level of evidence represented by each paper? Who rated the level of evidence represented by each paper? Was there more than one rater and if not what was the agreement amongst raters regarding the level of evidence represented by each paper? Were all studies included in the literature summary or only those above a certain level of evidence? Basically what is needed here is some explanation to ensure that literature review provided was not biased and contained the information that an expert would need to answer questions about whether to include or exclude a test.</p> <p>Limitations Please consider including a short limitations section for the manuscript. Perhaps addressing some of the issues highlighted above.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer Name Rintje Agricola
 Institution and Country Erasmus Medical Centre Rotterdam, the Netherlands

Abstract

Conclusion abstract: 'This Delphi study provides a standardised approach to the assessment of patients with activity related hip pain'. Please consider to stress that this concerns a standardised approach for research purposes.

Response: Thank you we have added clarification (see abstract conclusion)

Regarding the literature search: was the search performed systematically and when was the search performed?

Response: This was not performed as a systematic review as we did not have a second reviewer and therefore did not comply with the PRISM guidelines. However, the searches were performed systematically for each suggestion from Round 1 using 5 databases and common core search terms: coxarthrosis, osteoarthritis, arthrosis, hip, risk, predict*. (Methodology section has been edited to reflect this with a Table of all suggestions added as an Appendix). The searches were performed between Sept and Nov 2013 (this has been added to manuscript – see Methods)

Several recent studies concerning this topic haven't been described or congress abstracts were cited (while full texts are already available).

Response: We have not used any papers published since the original search in 2013 which may explain the use of congress abstracts that are now published. We are grateful for the comments below on relevant recent published papers and will incorporate them in the discussion as indicated below.

I have some minor questions regarding the discussion:

History:

Gender: the association between gender and hip OA depends on the age category studied. In general, hip OA is more frequent in males in relatively young people (age <55 years), the prevalence becomes equal around the age of 65 years and afterwards females are more affected. Regarding the population of interest in the current study that present with activity related hip pain, wouldn't males be more likely to develop OA assuming that people are most often younger than 65 when they present with activity related hip pain?

Response: The studies identified in the search did not identify this stratification with age. The Scher et al study looking at a large American military population found a higher prevalence in females through all age stratifications although we appreciate this is not a representation of the general population. However, our understanding is that there is no consensus in the literature regarding the gender stratification with younger age? This was our reason for not drawing this point out in the paper.

Injury: studies included in the systematic review of Richmond et al. (ref no 5) primarily include hip fractures or dislocation resulting from trauma in the definition of hip injury. This type of injury is quite different from knee injuries such as meniscal tears and anterior cruciate ligament ruptures. Please specify what is meant by 'previous injury'. Are these only fractures and dislocations?

Response: The Richmond et al paper identified 4 studies that looked at hip OA and injury. The largest study (n=1321) defined hip injury as self-reported trauma including fracture and internal derangement, the second largest (n=611) defined hip injury as occurring at least a year prior to onset of hip pain and causing an inability to weight-bear for at least one week. The third study (n=185) is unclear and the fourth, smallest study (n= 138) defined hip injury as one that resulted in a medical consultation. Cooper et al (1998) was the second largest study and found that previous hip injury was associated with an overall 4.3-fold increase in the risk of hip osteoarthritis, the element of risk being substantially greater among men (odds ratio (OR) = 24.8, 95percent confidence interval (CI) 3.1-199.3) than among women (OR = 2.8, 95 percent CI 1.4-5.9). (The varied definition of injuries in the studies identified has been clarified and expanded – see Discussions section 'History')

Ref no 7 is a conference abstract.

Response: the reference now reflects this.

Level of activity: Also for level of activity results of studies vary widely based on the age group studied. I'd suggest to specifically focus on studies of people prior to the age of 50, as this is probably the age group of interest.

Response: We agree with this comment.

Examination:

BMI: Were other studies identified in the search regarding the relationship between BMI and hip OA? In the currently referenced study by Wang et al. people had to recall their weight at age 18-21 retrospectively, while ref 30 is a conference abstract. There are also other studies available on radiographic OA that do not show an association between BMI and hip OA (eg. Reijman et al. ARD 2007, Franklin et al. ARD 2009). If there is an association on an epidemiological scale, it is probably very weak. How can this be used in a personal approach to somebody that present with activity related hip pain?

Response: Thank you we have amended reference 31 to show it is a conference abstract. There is a conflict in available published data and we have now reflected this more fully by adding further references to the Grotle et al 2008 study.

Impingement tests: please consider to discuss the recently published (ad higher level of evidence study)systematic review and meta-analysis of Reiman et al. BJSM 2014.

Response: Thank you for highlighting this recent SR which we have now included in our discussion.

Ref 34 ad 35 are the same.

Response: These have now been removed.

Investigations:

Alpha angle: A recent study by Agricola et al. OA&C 2014 proposed an alpha angle threshold of 60 degrees for AP pelvic radiographs of the hip. Would that be of interest?

Response: This has been added to the discussion.

Ref 8, 46 and 51 are congress abstracts. If I'm correct, some of these have now been published as full articles which might be interesting for the current discussion.

Response: Thank you. We have added these to the discussion section and referenced them.

Is it correct that the Hartofilakidis study is scored as level 2 evidence in table 1 (there are some significant flaws in this study)? Is there a distinction in level of evidence between retrospective, cross-sectional and prospective studies?

Response: We scored this paper based on EBM Levels of Evidence 2009 as Level 2b (retrospective cohort study) but appreciate the grading levels have their own flaws and are not perfect. We tried to balance this by highlighting the identified limitations in the text regarding lack of information regarding activity levels and type of surgery performed.

Reviewer Name Jackie Whittaker
Institution and Country Faculty of Kinesiology
University of Calgary, Canada

Participants

1. It would be helpful for the reader to better understand how the experts were selected to ensure that the 'experts' were indeed individuals with subject expertise. How was expertise determined? Did the participants need to have published in the area (if so how much)? Did the participants need to have practiced in the area for any length of time? Did the clinicians have to provide any evidence that they understood how to interpret the evidence and that they incorporated best evidence in their practice?

Response: The selection of the Delphi panel was discussed at length at the start of the study. We aimed for representatives from clinical and research backgrounds and from a breadth of sports. The criteria agreed by the authors were the following:

- Chief Medical Officer (or equivalent) of Sporting National Governing bodies and/or
- Ten years clinical experience in relevant specialty (rheumatology, orthopaedics, sports medicine) and/or
- Researcher who has published in the area of activity-related hip pain or hip osteoarthritis

We have added this information to the Participation section of the Methods.

2. It would be nice to know a bit more about the 'experts' and how they were chosen. How many experts were invited? How did those that chose to participate differ from those that did not? What were the characteristics of those that dropped out and what were the reasons for participant drop out? How many, and which countries were represented in the expert panel?

Response: We sent out introductory letter and Plain Language Statement to 33 potential Delphi panel experts and 23 experts responded and participated. One invitee declined to participate and there were a further 9 non-respondents (5 clinicians, 3 clinical researchers and one non-clinical researcher). There were two drop-outs during the study. They did not provide a reason, but failed to respond to reminder emails to complete the surveys. The final panel represented an international panel from the UK, Australia, China, Japan, Sweden and Denmark.

We have added this detail to the Participant Identification section of the Methods.

Literature search and Summary of Evidence

The authors are commended for their incorporation of the evidence-base into the agreement process. With that said a bit more information is required to fully understand how the evidence was incorporated into the 'experts' decisions.

1. Did the authors consider any outcomes or measures that were not suggested by the experts but have a high level of evidence? Meaning other than the suggestions provided by the experts did the authors independently consult the evidence-based before making their recommendations to ensure that nothing with a high level of evidence was missed? It might be useful to include this as a limitation at the end of the paper.

Response: The authors did not identify additional risk factors from their knowledge of the literature or through the search of the current literature. This has been added to the Literature Search section of the Methods.

2. It would be useful if the authors could include the search strategy that they used for each of the literature searches that were performed as well as the selection criteria for evidence included in the summary provided to the 'experts' (i.e. population, construct, measurement instrument, measurement properties)? Did the authors provide the experts with information about the clinimetric properties of the tests (i.e. intra, inter and test retest reliability, known measurement error, validity, responsiveness

and interpretability) as per the COSIM instrument? Did the experts all understand what the requirements were for each level of CEBM evidence? What was the process used to determine the level of evidence represented by each paper? Who rated the level of evidence represented by each paper? Was there more than one rater and if not what was the agreement amongst raters regarding the level of evidence represented by each paper? Were all studies included in the literature summary or only those above a certain level of evidence? Basically what is needed here is some explanation to ensure that literature review provided was not biased and contained the information that an expert would need to answer questions about whether to include or exclude a test.

Response: Each search was performed systematically using the same core search terms on each of the databases (Pubmed, Cinahl, Embase, AMED and PEDro). Each study included was rated as per Centre for Evidence Based Medicine Levels of Evidence 2009 guidelines. This rating was performed by KJ and reviewed by JN. This reference was provided to the panel for those not familiar with its use. All studies Level 4 and above were included in the evidence tables. In the absence of robust studies in young, active populations, the selection criteria for evidence included risk factors for hip OA in all populations (not restricted by age or activity level). The population characteristics were stated in the evidence tables to allow appropriate interpretation of the study results by the expert panel. We did not provide clinimetric information to the experts for suggested clinical examinations. We have added detail to the Literature Search section of the Methods.

Limitations

Please consider including a short limitations section for the manuscript. Perhaps addressing some of the issues highlighted above.

Response: Thank you for this suggestion. We have added a limitations section to the end of the manuscript.

VERSION 2 – REVIEW

REVIEWER	Rintje Agricola Erasmus University Medical Centre, the Netherlands
REVIEW RETURNED	23-May-2015

GENERAL COMMENTS	The authors addressed all comments sufficiently
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REVIEWER	Jackie Whittaker University of Calgary, Canada
REVIEW RETURNED	17-Jun-2015

GENERAL COMMENTS	<p>The authors had sufficiently addressed all previous feedback. The only lingering suggestion may be to consider a change in the title of the manuscript as the current one implies that we know what the risk factors for Early Hip OA are. Something such as 'A standardized approach to assessing patient at risk of hip OA in activity related hip pain: A Delphi study' may be more representative.</p> <p>The manuscript will make welcomed addition to the evidence base and the authors should be commended on their efforts here.</p>
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