Clinical Utility and Psychometric Characteristics of the Measure of Intermittent and Constant Osteoarthritis Pain in Adults With Hip and Knee Osteoarthritis

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Osteoarthritis (OA) is a common articular condition among adults ≥60 years of age, with OA of the knee and hip resulting in significant chronic disability.1 The economic effect of OA is high as a consequence of lost productivity at work, the cost of treatment, and the frequent need for patients to adapt their lives and environment because of the disease.2 Because joint pain is a primary symptom of OA, it is important for clinicians to monitor the occurrence and intensity of joint pain in patients with OA. The Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP) is an 11-item patient-reported outcome measure that measures intermittent (6 items) and constant (5 items) pain among patients with OA. The assessment includes separate versions for the hip and knee joints. Items are scored using a 0 to 4 scale, with 0 representing no pain and 4 representing extreme pain.3 The ICOAP does not require any formal training, is free to use, and only requires the evaluation form and a writing utensil. Additionally, the ICOAP has been cross-culturally validated in >9 different languages.4 The ICOAP demonstrates excellent test-retest reliability,3,5 internal consistency,3,6 and convergent validity with similar instruments that assess osteoarthritis pain.3 A Rasch analysis indicated the ICOAP is a unidimensional measure of pain.7

BIBLIOGRAPHY


This abbreviated summary provides a review of the psychometric properties of the ICOAP in people with hip and knee joint OA. A full review of the ICOAP and reviews of nearly 375 other instruments for patients with various health conditions can be found at www.rehabmeasures.org.

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This instrument summary is designed to facilitate the selection of outcome measures by trained clinicians. The information contained in this summary represents a sample of the peer-reviewed research available at the time of this summary’s publication. The information contained in this summary does not constitute an endorsement of this instrument for clinical practice. The views expressed are those of the summary authors and do not represent those of authors’ employers, instrument owner(s), the Archives of Physical Medicine and Rehabilitation, the Rehabilitation Measures Database, or the U.S. Department of Education. The information contained in this summary has not been reviewed externally.

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**Measure Name:** Measure of Intermittent and Constant Osteoarthritis Pain  
**Acronym:** ICOAP  
**Population:** Hip / Knee Osteoarthritis

<table>
<thead>
<tr>
<th>Training Required</th>
<th>Required Equipment</th>
<th>Age Range</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Training Required</td>
<td>Pencil / Pen, ICOAP Form</td>
<td>Adults: 18 - 64 Years; Elderly Adults: 65+ Years</td>
<td>11</td>
</tr>
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**Purpose and Administration Instructions:**

The Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP) is a patient-reported outcome measure developed to assess pain in patients with osteoarthritis (OA). The ICOAP evaluates pain and the impact that OA pain has on patients mood, sleep, and other aspects that influence quality of life. There are two forms of the ICOAP; one evaluates OA hip joint pain and the second evaluates OA knee joint pain. As the name implies, the ICOAP has items that evaluate both constant pain (5 items) and intermittent pain (6 items) associated with OA.

- Each of the 11 items are scored on a range from 0 - 4, with 0 indicating no pain, and 4 indicating extreme pain.
- The “constant pain” sub-score ranges from 0 - 20; the “intermittent pain” sub-score ranges from 0 - 24. Total ICOAP scores range from 0 - 44, with higher scores indicating increased levels of pain.

**Validity:**

- Content / Face:
  - Established through the use of focus groups during the development of the ICOAP.\(^3\)\(^,\)\(^10\)

- Construct Validity:
  - Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC): Excellent (r = 0.81)\(^3\)
  - Knee Injury and OA Outcome Score (KOOS) symptoms scale: Excellent (r = 0.60)\(^3\)

**Floor / Ceiling Effects:**

- Knee OA Pain:
  - Floor Effects: Constant Pain (Adequate = 6.4%)\(^8\)
  - Floor Effects: Intermittent Pain (Excellent = 0.9%)\(^8\)
  - Ceiling Effects: Constant Pain (Excellent = 1.8%)\(^8\)
  - Ceiling Effects: Intermittent Pain (Excellent = 1.8%)\(^8\)

**Minimally Clinically Important Differences:**

- Total Pain Score: MCID = -18.5
- Constant Pain Score: MCID = -18.7
- Intermittent Pain Score: MCID = -18.4

**Reliability:**

- Test-Retest:
  - Hip OA Total Pain: Excellent (ICC = 0.86)\(^5\)
  - Knee OA Total Pain: Adequate (ICC = 0.63)\(^5\)
  - Knee / Hip OA Pain: Excellent (ICC = 0.85)\(^3\)

- Interrater / Intra-rater:
  - Patients with Knee / Hip OA Pain: Excellent (ICC = 0.75)\(^4\)

**Considerations:**

- Rasch analysis suggests that the Constant and Intermittent subscales of the ICOAP can be conceptualized as a unidimensional measures of pain.\(^7\)
- Responsive to changes in OA pain resulting from joint replacement surgery and pharmacologic interventions.
- Translated and cross-cultural validated in Czech, Dutch, French, German, Italian, Norwegian, Spanish, North and Central American Spanish, and Swedish.\(^4\)
- Translated into Portuguese, Greek, Romanian and Russian, but lack studies evaluating validity, reliability, and responsiveness.
- The ICOAP has been endorsed by the Osteoarthritis Research Society International / Outcome Measures in Rheumatology Initiative (OARSI/OMERACT).\(^5\)