

## **The Copenhagen Hip and Groin Outcome Score (HAGOS): development and validation according to the COSMIN checklist**

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### **ABSTRACT**

**Background** Valid, reliable and responsive Patient-Reported Outcome (PRO) questionnaires for young to middle-aged, physically active individuals with hip and groin pain are lacking.

**Objective** To develop and validate a new PRO in accordance with the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) recommendations, for use in young to middle-aged, physically active patients with longstanding hip and/or groin pain.

**Methods** Preliminary patient interviews (content validity) included 25 patients. Validity, reliability and responsiveness were evaluated in a clinical study including 101 physically active patients (50 women); mean age 36 years, range 18-63.

**Results** The Copenhagen Hip and Groin Outcome Score (HAGOS) consists of six separate subscales assessing Pain, Symptoms, Physical function in daily living, Physical function in Sport and Recreation, Participation in Physical Activities and hip and/or groin-related Quality of Life. Test-retest reliability was substantial, with Intraclass Correlation Coefficients (ICC) ranging from 0.82-0.91 for the six subscales. The smallest detectable change ranged from 17.7-33.8 points at the individual level and from 2.7-5.2 points at the group level for the different subscales. Construct validity and responsiveness were confirmed with statistically significant correlation coefficients (0.37-0.73,  $p < .01$ ) for convergent construct validity, and for responsiveness from 0.56-0.69,  $p < .01$ .

**Conclusion** HAGOS has adequate measurement qualities for the assessment of symptoms, activity limitations, participation restrictions and quality of life in physically active, young to middle-aged patients with longstanding hip and/or groin pain, and is recommended for use in interventions where the patient's perspective and health-related quality of life are of primary interest.

**Key words:** hip, groin, patient-reported outcome, questionnaires, psychometric properties

**Trial registration:** ClinicalTrials.gov NCT00716729

<h1>HAGOS</h1> <h2>Questionnaire concerning hip and/or groin problems</h2>
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Today's date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Date of birth: \_\_\_\_/\_\_\_\_/\_\_\_\_

Name: \_\_\_\_\_

**INSTRUCTIONS:** This questionnaire asks for your view about your hip and/or groin problem. The questions should be answered considering your hip and/or groin function during the **past week**. This information will help us keep track of how you feel, and how well you are able to do your usual activities.

Answer **every** question by ticking the appropriate box. Tick only one box for each question. If a question does not pertain to you or you have not experienced it in the past week please make your "best guess" as to which response would be the most accurate.

### Symptoms

These questions should be answered considering your hip and/or groin **symptoms** and difficulties during the **past week**.

S1 Do you feel discomfort in your hip and/or groin?

Never  Rarely  Sometimes  Often  Always

S2 Do you hear clicking or any other type of noise from your hip and/or groin?

Never  Rarely  Sometimes  Often  All the time

S3 Do you have difficulties stretching your legs far out to the side?

None  Mild  Moderate  Severe  Extreme

S4 Do you have difficulties taking full strides when you walk?

None  Mild  Moderate  Severe  Extreme

S5 Do you experience sudden twinging/stabbing sensations in your hip and/or groin?

Never  Rarely  Sometimes  Often  All the time

## Stiffness

The following questions concern the amount of stiffness you have experienced during the **past week** in your hip and/or groin. Stiffness is a sensation of restriction or slowness in the ease with which you move your hip and/or groin.

S6 How severe is your hip and/or groin stiffness after first awakening in the morning?

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

S7 How severe is your hip and/or groin stiffness after sitting, lying or resting **later in the day**?

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

## Pain

P1 How often is your hip and/or groin painful?

Never                      Monthly                      Weekly                      Daily                      Always  
                                                                                       

P2 How often do you have pain in areas other than your hip and/or groin that you think may be related to your hip and/or groin problem?

Never                      Monthly                      Weekly                      Daily                      Always  
                                                                                       

The following questions concern the amount of pain you have experienced during the **past week** in your hip and/or groin. **What amount of hip and/or groin pain have you experienced during the following activities?**

P3 Straightening your hip fully

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

P4 Bending your hip fully

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

P5 Walking up or down stairs

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

P6 At night while in bed (pain that disturbs your sleep)

None                      Mild                      Moderate                      Severe                      Extreme  
                                                                                       

P7 Sitting or lying

None                      Mild                      Moderate                      Severe                      Extreme

The following questions concern the amount of pain you have experienced during the **past week** in your hip and/or groin. **What amount of hip and/or groin pain have you experienced during the following activities?**

P8 Standing upright

None  Mild  Moderate  Severe  Extreme

P9 Walking on a hard surface (asphalt, concrete, etc.)

None  Mild  Moderate  Severe  Extreme

P10 Walking on an uneven surface

None  Mild  Moderate  Severe  Extreme

### Physical function, daily living

The following questions concern your physical function. **For each of the following activities please indicate the degree of difficulty you have experienced in the past week due to your hip and/or groin problem.**

A1 Walking up stairs

None  Mild  Moderate  Severe  Extreme

A2 Bending down, e.g. to pick something up from the floor

None  Mild  Moderate  Severe  Extreme

A3 Getting in/out of car

None  Mild  Moderate  Severe  Extreme

A4 Lying in bed (turning over or maintaining the same hip position for a long time)

None  Mild  Moderate  Severe  Extreme

A5 Heavy domestic duties (scrubbing floors, vacuuming, moving heavy boxes etc)

None  Mild  Moderate  Severe  Extreme

## Function, sports and recreational activities

The following questions concern your physical function when participating in higher-level activities. Answer **every** question by ticking the appropriate box. If a question does not pertain to you or you have not experienced it in the past week please make your “best guess” as to which response would be the most accurate. **The questions should be answered considering what degree of difficulty you have experienced during the following activities in the past week due to problems with your hip and/or groin.**

SP1 Squatting

None  Mild  Moderate  Severe  Extreme

SP2 Running

None  Mild  Moderate  Severe  Extreme

SP3 Twisting/pivoting on a weight bearing leg

None  Mild  Moderate  Severe  Extreme

SP4 Walking on an uneven surface

None  Mild  Moderate  Severe  Extreme

SP5 Running as fast as you can

None  Mild  Moderate  Severe  Extreme

SP6 Bringing the leg forcefully forward and/or out to the side, such as in kicking, skating etc.

None  Mild  Moderate  Severe  Extreme

SP7 Sudden explosive movements that involve quick footwork, such as accelerations, decelerations, change of directions etc.

None  Mild  Moderate  Severe  Extreme

SP8 Situations where the leg is stretched into an outer position

(such as when the leg is placed as far away from the body as possible)

None  Mild  Moderate  Severe  Extreme

## Participation in physical activities

The following questions are about your ability to participate in your preferred physical activities. Physical activities include sporting activities as well as all other forms of activity where you become slightly out of breath. **When you answer these questions consider to what degree your ability to participate in physical activities during the past week has been affected by your hip and/or groin problem.**

PA1 Are you able to participate in your preferred physical activities for as long as you would like?  
Always  Often  Sometimes  Rarely  Never

PA2 Are you able to participate in your preferred physical activities at your normal performance level?  
Always  Often  Sometimes  Rarely  Never

## Quality of Life

Q1 How often are you aware of your hip and/or groin problem?  
Never  Monthly  Weekly  Daily  Constantly

Q2 Have you modified your life style to avoid activities potentially damaging to your hip and/or groin?  
Not at all  Mildly  Moderately  Severely  Totally

Q3 In general, how much difficulty do you have with your hip and/or groin?  
None  Mild  Moderate  Severe  Extreme

Q4 Does your hip and/or groin problem affect your mood in a negative way?  
Not at all  Rarely  Sometimes  Often  All the time

Q5 Do you feel restricted due to your hip and/or groin problem?  
Not at all  Rarely  Sometimes  Often  All the time

**Thank you very much for completing all the questions  
in this questionnaire.**