

# **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

# HAGOS

## Questionnaire concerning hip and/or groin problems

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

None	Mild	Moderate	Severe	Extreme
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Pain

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

Never	Monthly	Weekly	Daily	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P4 Bending your hip fully

None	Mild	Moderate	Severe	Extreme
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P5 Walking up or down stairs

None	Mild	Moderate	Severe	Extreme
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

None	Mild	Moderate	Severe	Extreme
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P7 Sitting or lying

None	Mild	Moderate	Severe	Extreme
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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.**