NPCC
National Police Chiefs' Council

The National Police Wellbeing Service
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College of Policing

Occupational Health assessment of new police officer applicants

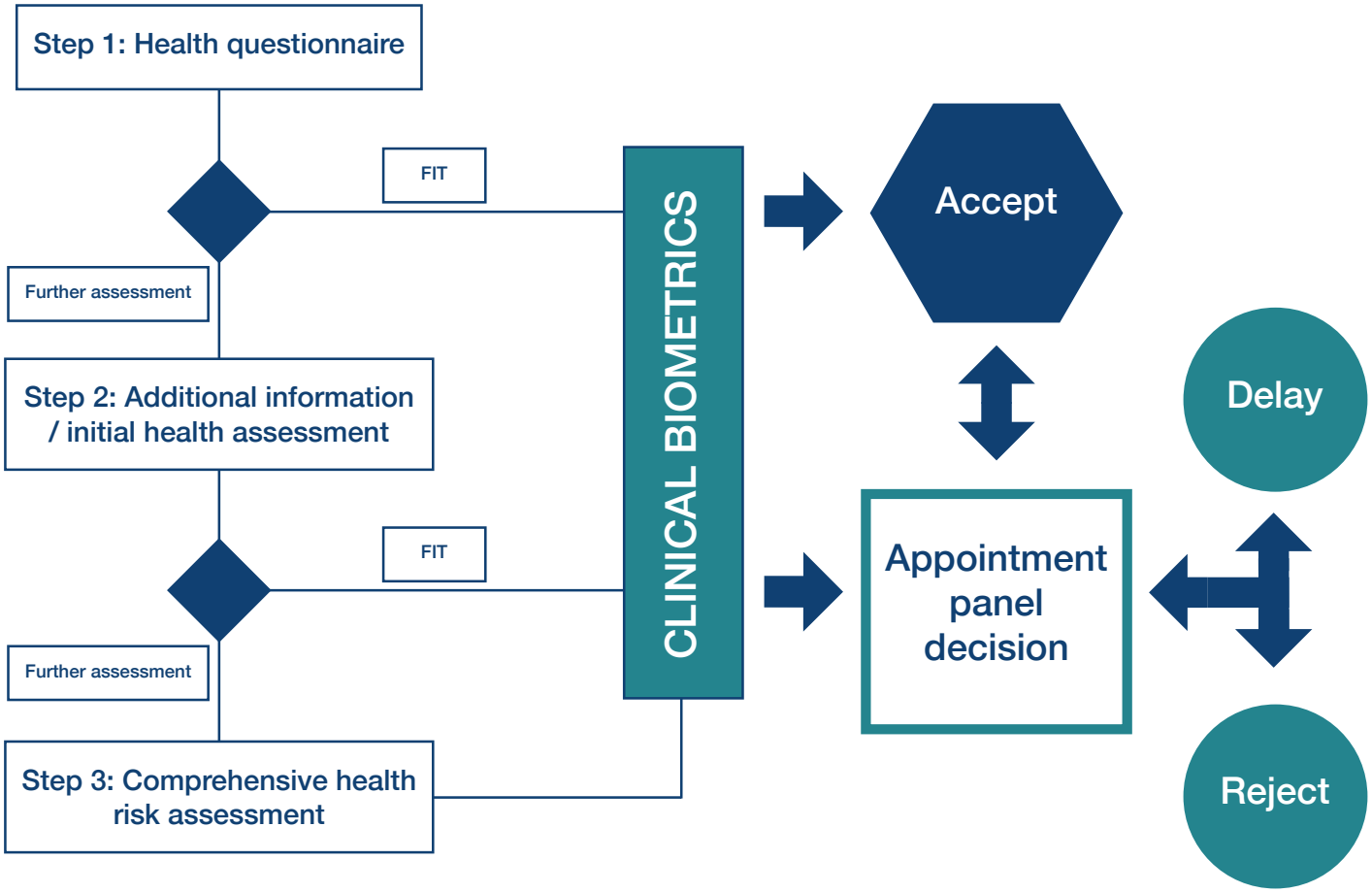
Annex A: Schema for neuromuscular assessment

Contents

Step two: Neuromuscular assessment – guidance and checklist

This schema is to help you to undertake an intermediate assessment of a candidate who declares a neuromuscular condition on the OH questionnaire. The tests you conduct will depend on what has been declared. Please consult with your senior OHA or FMA if you have any queries about this assessment.

The schema should be read in conjunction with the guidance Assessment of medical fitness of police officer applicants: a functional approach. The step two assessment is part of the stepped approach to the Occupational health assessment contained in the guidance and is shown in figure 1.



Step two: Neuromuscular assessment

It can be seen in figure 1 that step 2 occurs based on the responses to the health questionnaire, which every applicant must complete. It is an interim stage between the assessment by questionnaire and a thorough clinical assessment performed either by a suitably trained occupational health nurse or by the force medical advisor (FMA). Further information about this stage can be found in the 'what', 'how', 'why' and 'who' guidance.

What: This part of the process is to follow up the responses on the health questionnaire that require further information; it is carried out in addition to the basic biometric clinicals tests.

How: This might be by telephone, video call (TEAMS), or in-person assessment, or a combination of these. This will depend on what is required.

Why: These initial enquiries and / or health assessments may determine that the candidate is fit to join the police, subject to the performance of basic clinical biometric assessments; or may require further (step 3) assessment.

Who: Step Two assessment might be carried out by a suitably trained and supervised OH Technician, practice/clinic nurse, a junior occupational health nurse or physiotherapist.

The step two assessment of symptoms should focus on red flags and functional impairment relevant to the criterion tasks listed in appendix 2 of the main guidance.

Neurological

- Motor or sensory deficits
- Balance and coordination
- Fine motor movements
- Aphasia / dysphasia
- Strength / grip strength

Musculoskeletal

- Red flags
- Range of joint movement
- Evidence of hypermobility

Red flag symptoms

Neurological	Musculoskeletal[1]
• Change in balance or coordination • Numbness or tingling in the arms or legs • Decrease in movement of the arms or legs • Weakness • tremor • Injury to the head, neck or back. • Blurred or altered vision • Seizures • Intrusive headaches	• Thoracic pain • History of osteoporosis • History of severe trauma / previous spinal fractures • Past history of cancer • Unexplained weight loss

Musculoskeletal health

Musculoskeletal health. An overall rating of musculoskeletal health may be obtained using the Musculoskeletal Health Questionnaire (MSK-HQ[2]). The assessment is based on symptoms and functioning in the previous 2 weeks. The MSK-HQ is scored on a range of 0-56, with a better score indicating better MSK-HQ health status.[3] Enquiry about symptoms and level of functioning over a longer period (3 months, 6 months,12 months) will be required.

Generalized joint hypermobility

A question about generalized joint hypermobility (very flexible joints or “double jointed”) should be asked. The presence of generalized joint hypermobility may be assessed using the Beighton score. This should be carried out by a suitably trained clinician. (See appendix 4 in main guidance).[4]

1 Laura M Finucane et al, ‘International Framework for red flags for potential serious spinal pathologies’, Journal of Orthopaedic and Sports Physical Therapy 50, no. 7 (2020): pp. 350-372. International Framework for Red Flags for Potential Serious Spinal Pathologies (jospt.org)

2 MSK-HQ questionnaire for joint, back, neck, bone and muscle symptoms 2018 Oxford University Innovation Limited for Versus Arthritis

3 MSK-HQ Scoring Guide, Oxford University Innovation 2018

4 Peter R Reuter and Kaylee R Fichthorn, ‘Prevalence of generalized joint hypermobility, musculoskeletal injuries, and chronic musculoskeletal pain among American university students’, PeerJ (2019): e7625, doi: 10.7717/peerj.7625

Clinical tests of neuromuscular health

The tests below are to be used in tier two assessment only. They are intended as very basic tests of movement and neuromuscular health and are not linked to the functional screening tool.

Test One-Legged Stance[5] [6]	
Aim	To measure balance on one leg
Protocol	The subject is asked to stand barefoot on the limb of their choice, with the other limb raised so that the raised foot was near but not touching the ankle of their stance limb. Each subject was asked to focus on a spot on the wall at eye level in front of him, for the duration of the eyes open test.
Equipment	Stopwatch
Time	1 minute
Normative values	Yes (Full normative data table in ACPOHE toolkit)
Validity	Reasonable validity in people with balance or proprioception issues that have difficulty standing on one leg.
Reliability	Excellent
Strengths	Simple test which is easy quick and cheap to perform in a clinical setting.
Weaknesses	No published research in relation to occupational health

TEST PROTOCOL – Description: Prior to raising the limb, the subject was instructed to cross his arms over the chest. The investigator uses a stopwatch to measure the amount of time the subject was able to stand on one limb. Time commences when the subject raised the foot off the floor.

The procedure is repeated 3 times and each time was recorded on a data collection sheet. The best and the average of the 3 trials were also recorded. Subjects performed 3 trials with the eyes open, and 3 trials with the eyes closed, alternating between the conditions. For example, 1 trial with eyes open followed by 1 trial with eyes closed equalled 1 trial set.

5 ACPOHE Functional Measurement Tests Toolkit (2016)

6 Col Barbara A Springer et al, 'Normative values for the Unipedal Stance Test with eyes open and closed' Journal of Geriatric Physical Therapy 30, 1 (2007): 8-15 doi: 10.1519/00139143-200704000-00003

Time ends when the subject either:

1. used his arms (i.e., uncrossed arms),
2. used the raised foot (moved it toward or away from the standing limb or touched the floor),
3. moved the weight-bearing foot to maintain his balance (i.e., rotated foot on the ground),
4. a maximum of 45 seconds had elapsed, or
5. opened eyes on eyes closed trials.
6. compare the results with the normative values below.

Scoring: ONE LEG STANCE - NORMATIVE DATA for appropriate age ranges (ACPOHE Toolkit 2016)

Age and gender groups	**Eyes open Best of 3 trails (secs) Mean(SE)**	**Eyes open Mean of 3 trails (secs) Mean(SE)**	**Eyes closed Best of 3 trails (secs) Mean(SE)**	**Eyes closed Mean of 3 trails (secs) Mean(SE)**
18-39				
Female (n=44)	45.1 (0.1)	43.5 (3.8)	13.1 (12.3)	8.5 (9.1)
Male (n=54)	44.4 (4.1)	43.2 (6.0)	16.9 (13.9)	10.2 (9.6)
Total (n=98)	44.7 (3.1)	43.3 (5.1)	15.2 (13.3)	9.4 (9.4)
40-49				
Female (n=47)	42.1 (9.5)	40.4 (10.1)	13.5 (12.4)	7.4 (6.7)
Male (n=51)	41.6 (10.5)	40.1 (11.5)	12.0 (13.5)	7.3 (7.4)
Total (n=98)	41.6 (10.2)	40.3 (10.8)	12.7 (12.9)	7.3 (7.0)
50-59				
Female (n=50)	41.6 (10.2)	36.0 (12.8)	7.9 (8.0)	5.0 (5.6)
Male (n=48)	41.5 (10.5)	38.1 (12.4)	8.6 (8.8)	4.5 (3.8)
Total (n=98)	41.2 (10.2)	37.0 (12.6)	8.3 (8.4)	4.8 (4.8)

Test -Timed Stands Test (x10)[7]	
Aim	To quantify lower extremity muscle strength
Protocol	Subject completes 10 full stands from a sitting position as quickly as possible. Use of upper limbs not permitted. Performed in flat shoes or bare feet. One practice permitted first.
Equipment	Firm chair (same chair should be used for each test). Chair (44.5cm high x 38cm deep), ideally placed against wall. Stopwatch.
Time	<1 minute
Normative values	Yes
Validity	Strong
Reliability	Good
Strengths	Quick, simple, low cost/equipment requirements, minimal learning required
Weaknesses	Not suitable for conditions which may be aggravated by rapid movements, but these subjects may already be excluded on clinical grounds.

TEST PROTOCOL - Protocol Description: The Timed-Stands Test is a simple method used to quantify lower extremity muscle strength. The test requires the patient to compete 10 full stands from a sitting position as quickly as possible. Use of upper extremities is not permitted during the stands. The patient should either have their arms folded across their chest or hanging loosely by their side. One practice stand is allowed for positioning and learning the task.

Scoring: The score is the time it takes the patient to perform the 10 stands to the nearest tenth of a second. The time is then compared to the mean predicted time in the chart below for each age group and gender (age is rounded up and down accordingly).

7 ACPOHE Functional Measurement Tests (FMT) Toolkit 2016

Mean predicted time for performing sit to stand movements

Age (years)	Female maen (seconds)	Male mean (seconds)
20	10.9	8.8
25	11.8	9.8
30	12.6	10.8
35	13.4	11.7
40	14.3	12.7
45	15.1	13.7
50	15.9	14.7
55	16.8	15.6
60	17.6	16.6

Recording a locomotor assessment

	Movement	Normal	
		Yes	No
Neck			
Flexion	Chin to chest	☐	☐
Extension	Lean head back	☐	☐
Right rotation	Chin to right shoulder	☐	☐
Left rotation	Chin to left shoulder	☐	☐
Right lateral flexion	Ear to right shoulder	☐	☐
Left lateral flexion	Ear to left shoulder	☐	☐
Upper limb			
Shoulder flexion	Hold arms out in front	☐	☐
Shoulder extension	Move arms background	☐	☐
Shoulder elevation	Raise arms above head	☐	☐
Shoulder abduction	Move arm out to the side	☐	☐
Shoulder adduction	Move arm across body at the front	☐	☐
Shoulder external rotation	Hands to the back of neck (Both hands to touch back of neck)	☐	☐
Shoulder internal rotation	Hands to interscapular area (Hands to touch middle of upper back)	☐	☐
Elbow	Bend and fully strighten arm	☐	☐
Grip	Make a fist - fingers fully to palm	☐	☐
Manual dexterity	Pick up a paperclip	☐	☐
Back			
Flexion	Bend forwards with legs straight to touch toes – fingertips to at least mid-shins	☐	☐
Extension	Lean backwards	☐	☐
Right rotation	Twist to the right	☐	☐
Left rotation	Twist to the left	☐	☐
Right lateral flexion	Lean to the right	☐	☐
Left lateral flexion	Lean to the left	☐	☐
Lower limb			
Hip	Flexion	☐	☐
	Extension	☐	☐
	Abduction	☐	☐
	External rotation	☐	☐
	Internal rotation	☐	☐
Walk on heels	Lean on heals and walk a few steps	☐	☐
Walk on tiptoes	Walk on tiptoes a few steps	☐	☐
Kneel	Get down on knees and up again	☐	☐
Crouch	Bend knees and go as low as possible	☐	☐

Guidance on body movements for locomotor assessment (normal ranges)

Body movements

Ask the person to demonstrate that are able to perform the movements shown in the diagrams below. Note: Also look at rotation side to side neck movement (left and right)

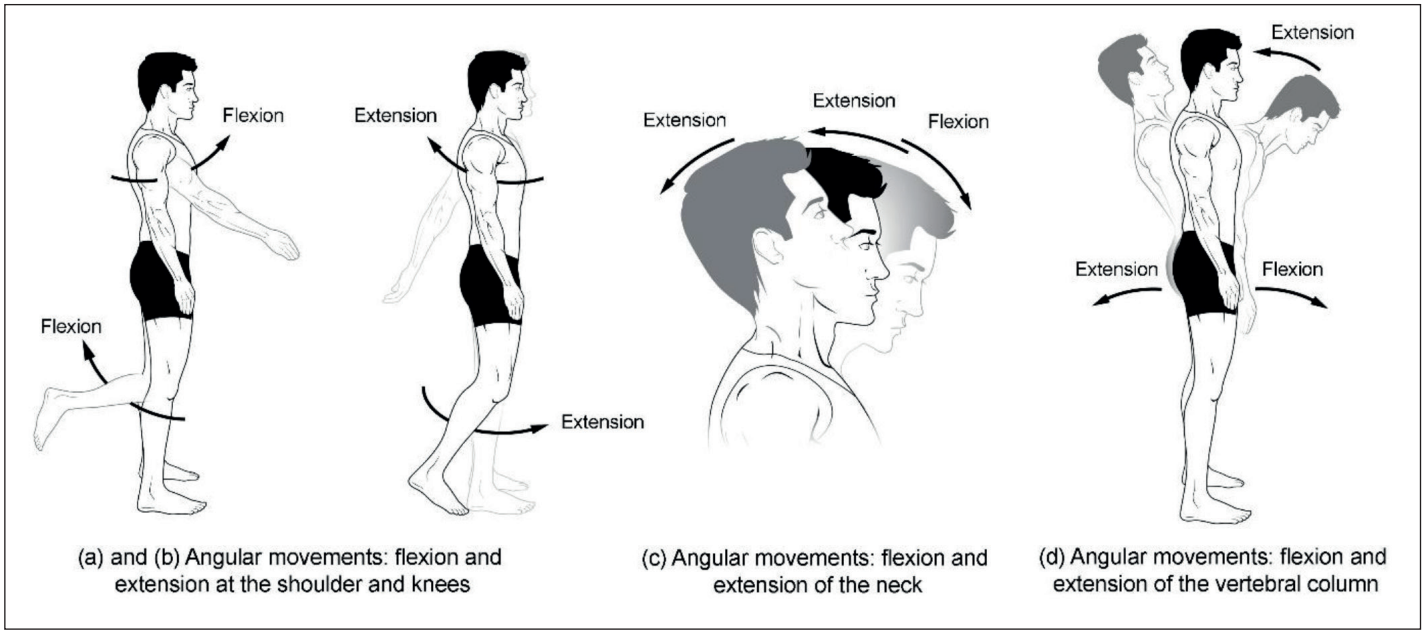


Diagram 1. Movements of the shoulder, knees, neck and lower back

Shoulder movements

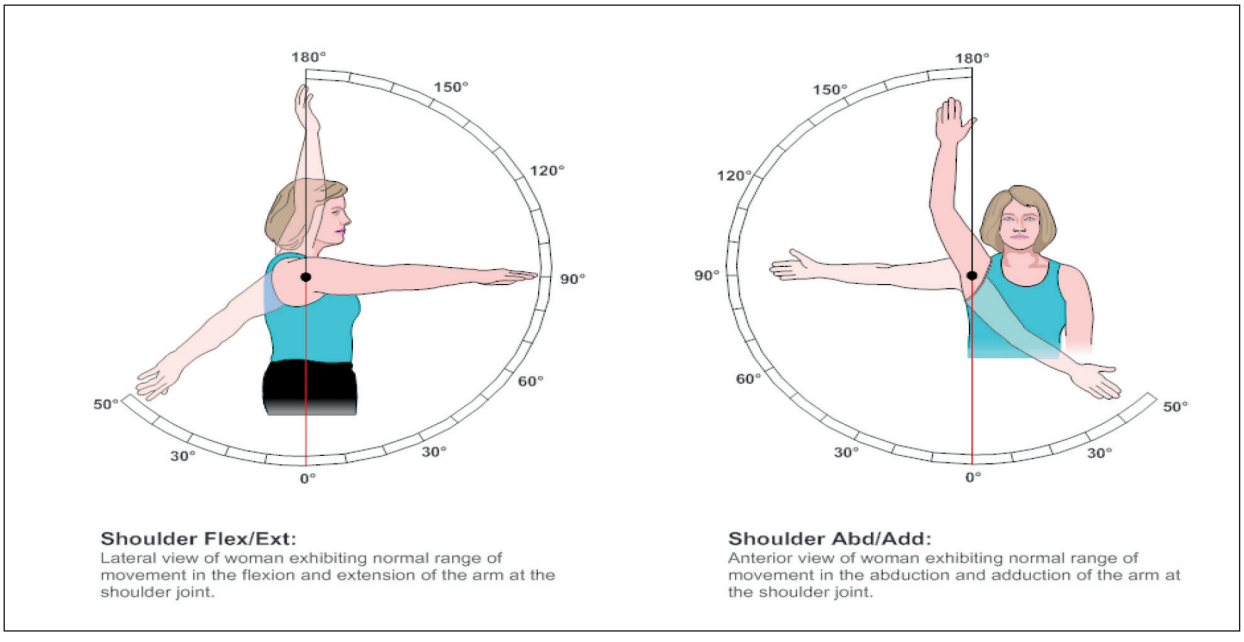


Diagram 2. Shoulder movements

Hip movements

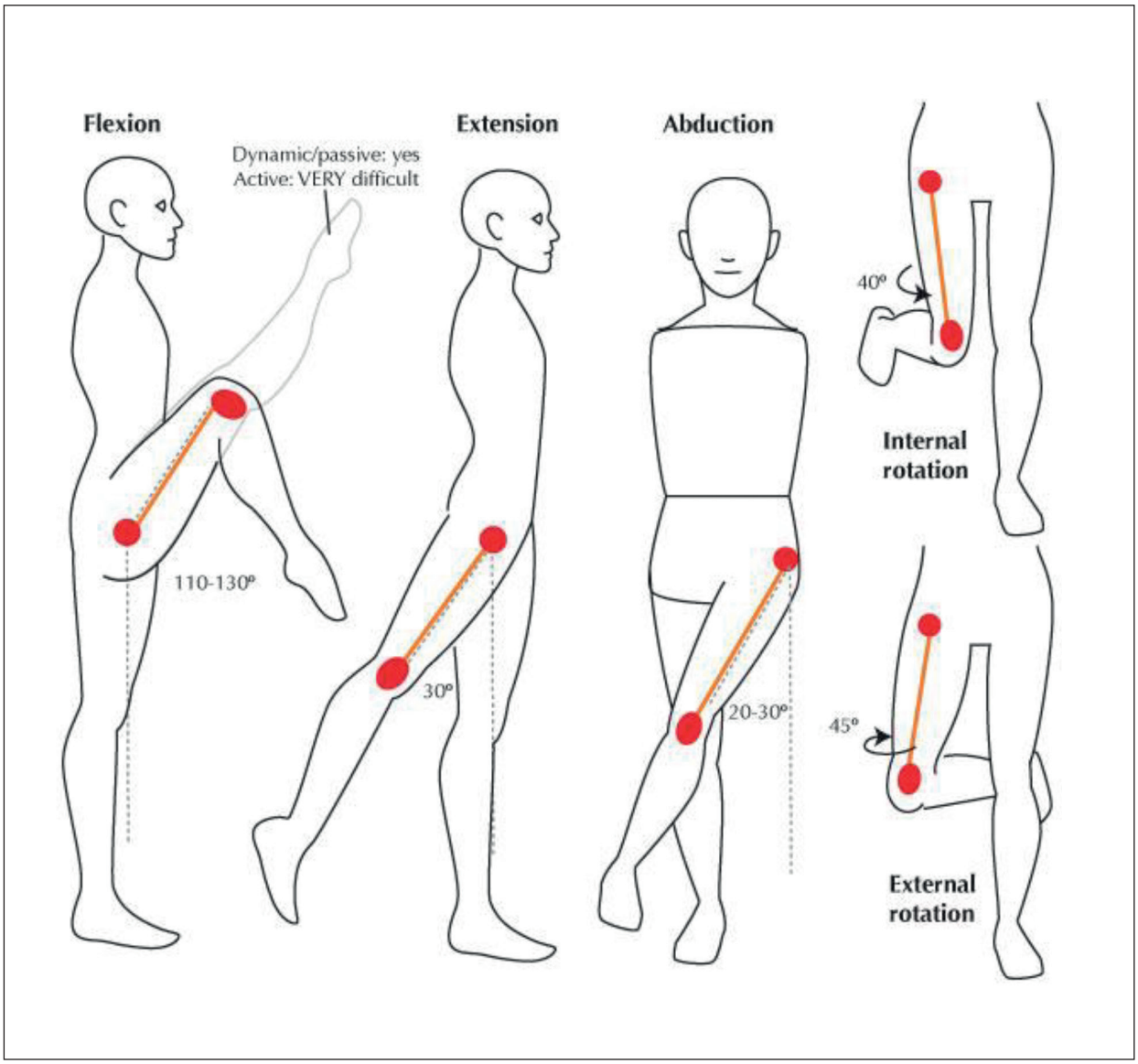


Diagram 3. Hip movements

Summary recording template

Step 2 assessment checklist

Date of assessment:	Reference:
Mode of assessment:	
Candidate name:	Date of birth:
Assessed by (name):	Job title:
Occupational health questionnaire reviewed	Yes No

Red flag symptoms

Musculo skeletal (is this current or past)	YES	NO
Thoracic pain		
History of osteoporosis		
History of severe trauma / previous spinal fractures		
Past history of cancer		
Unexplained weight loss		
Neurological (is this current or past)	YES	NO
Change in balance or coordination		
Numbness or tingling in the arms or legs		
Decrease in movement of the arms or legs		
Weakness		
Tremor		
Injury to the head, neck or back.		
Blurred or altered vision		
Seizures		
Intrusive headaches		
MSK-HQ (Score if YES)		
Generalised joint hypermobility(reports very flexible joints or double jointed)		
Beighton score (to be carried out if indicated by a suitably trained clinician)		
Notes:		

Physical tests

One-legged stance (3 tests)			
Eyes open		**Eyes closed**	
Test 1		Test 1	
Test 2		Test 2	
Test 3		Test 3	
Best		Best	
Mean		Mean	
Normal range	Yes ☐ No ☐	Normal range	Yes ☐ No ☐
Sit stand (10 stands)			
Time to complete			
Normal range for age		Yes	No
Locomotor assessment			
Neck normal range		Yes	No
Upper limb normal range		Yes	No
Back normal range		Yes	No
Lower limb normal range		Yes	No
Notes:			

Outcome

1. Able to proceed (subject to clinical biometrics)	
2. Refer	
Sign off- person undertaking the assessment:	
Name:	Signed:
Job title:	Date:
Checked- supervisor if required:	
Name:	Signed:
Job title:	Date:

12 Adjustment disorders. Mayo Clinic.

Appendix 1: Musculoskeletal health questionnaire (MSK HQ)

This questionnaire is about your joint, back, neck, bone and muscle symptoms such as aches, pains and/or stiffness. Please focus on the particular health problem(s) for which you sought treatment from this service.

For each question tick one box to indicate statement best describes you over the last 2 weeks.

	Not at all (4)	Slightly (3)	Moderately (2)	Fairly severe (1)	Very severe (0)
1. Pain/stiffness during the day: How severe was your usual joint or muscle pain and/or stiffness overall during the day in the last 2 weeks?	☐	☐	☐	☐	☐
2. Pain/stiffness during the night: How severe was your usual joint or muscle pain and/or stiffness overall during the night in the last 2 weeks?	☐	☐	☐	☐	☐
3. Walking: How much have your symptoms interfered with your ability to walk in the last 2 weeks?	☐	☐	☐	☐	☐
4. Washing/Dressing: How much have your symptoms interfered with your ability to wash or dress yourself in the last 2 weeks?	☐	☐	☐	☐	☐
5. Physical activity levels: How much has it been a problem for you to do physical activities (e.g. going for a walk or jogging) to the level you want because of your joint or muscle symptoms in the last 2 weeks?	☐	☐	☐	☐	☐
6. Work/daily routine: How much have your joint or muscle symptoms interfered with your work or daily routine in the last 2 weeks (including work & jobs around the house)?	☐	☐	☐	☐	☐
7. Social activities and hobbies How much have your joint or muscle symptoms interfered with your social activities and hobbies in the last 2 weeks?	☐	☐	☐	☐	☐

	Not at all (4)	Slightly (3)	Moderately (2)	Fairly severe (1)	Very severe (0)
8. Needing help: How often have you needed help from others (including family, friends or carers) because of your joint or muscle symptoms in the last 2 weeks?	☐	☐	☐	☐	☐
9. Sleep: How often have you had trouble with either falling asleep or staying asleep because of your joint or muscle symptoms in the last 2 weeks?	☐	☐	☐	☐	☐
10. Fatigue or low energy: How much fatigue or low energy have you felt in the last 2 weeks?	☐	☐	☐	☐	☐
11. Emotional wellbeing: How much have you felt anxious or low in your mood because of your joint or muscle symptoms in the last 2 weeks?	☐	☐	☐	☐	☐
12. Understanding of your condition and any current treatment: Thinking about your joint or muscle symptoms, how well do you feel you understand your condition and any current treatment (including your diagnosis and medication)?	☐	☐	☐	☐	☐
13. Confidence in being able to manage your symptoms: How confident have you felt in being able to manage your joint or muscle symptoms by yourself in the last 2 weeks (e.g. medication, changing lifestyle)?	☐	☐	☐	☐	☐
14. Overall impact: How much have your joint or muscle symptoms bothered you overall in the last 2 weeks?	☐	☐	☐	☐	☐

Physical activity levels

In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your heart rate? This may include sport, exercise and brisk walking or cycling for recreation or to get to and from places, but should not include housework or physical activity that is part of your job.

0 day	1 day	2 days	3 days	4 days	5 days	6 days	7 days

Thank you for completing this questionnaire.

MSK-HQ – Questionnaire for joint, back, neck, bone and muscle symptoms

Appendix 2 – Musculoskeletal Health Questionnaire scoring guide

User (scoring) guide for the Arthritis Research UK musculoskeletal health questionnaire (MSK-HQ)

On the questionnaire, the following guidance is given in the preamble at the top of the form:

“Please focus on the particular health problem(s) for which you sought treatment from this service.”

If this is not relevant to your use of the MSK-HQ, please delete this sentence. It will not affect the formatting or the results of the questionnaire.

No other changes to the formatting, order or content of the MSK questions and responses, or the copyright message, should be made without the written permission of the Clinical Outcomes team at Oxford University Innovation.

Scoring the musculoskeletal health questionnaire (MSK-HQ)

All of the questions in the MSK-HQ are laid out in the same way, with a small number to the right of each response option box. This associated number, corresponding to the ticked response, is to be used to score the MSK-HQ.

The MSK-HQ is scored on a range of 0-56, with a better score indicating better MSK-HQ health status. In order to find out the total score, add the numbers next to the box that the respondent has ticked on the questionnaire form. The total of all of these scores, will give the overall result of the MSK-HQ.

Minimally important change (MIC)

The minimally important change has been calculated as 5.5 (95% CI 2.7 – 8.3). This was calculated using results from a study of 610 individuals recruited from 4 MSK clinical pathways; patients treated with physiotherapy for a range of MSK conditions in primary care and patients undergoing hip replacement, knee replacement or shoulder surgery in secondary care.

For all enquiries please contact the Clinical Outcomes team at Oxford University Innovation:-

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