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JOINT EXAMINATION

1. Background and rationale

Knees and hands will be examined for key clinical findings which have been validated for use in defining osteoarthritis (OA). A trained examiner will perform a physical examination of the knee for crepitus, and a physical examination of the hand for palpable bony swelling of the interphalangeal joints and palpable squaring of the base of the thumb (first CMC joint - MAY DROP CMC).

Crepitus in the knee is a fairly reproducible sign that is useful in discriminating symptomatic OA from other forms of chronic arthritis and has been incorporated into the ACR clinical criteria for knee OA. The presence of nodes (palpable bony enlargements) of the interphalangeal joints is a physical sign which correlates well with radiographic changes in the hand, has relatively low inter- and intra-observer error, and is a viable substitute for hand radiographs.

Impaired internal rotation of the hip is a reproducible sign of hip osteoarthritis. We will assess internal and external rotation of the hip to identify subjects with a high probability of having hip OA. This test will also be useful in the analysis phase for discriminating knee pain from hip pain referred to the knee.

As part of the knee and hand examinations, we will administer standard questions about knee and hand symptoms. These questions are based on the ones asked at the baseline Health ABC examination. Those who report frequent, or activity specific, knee symptoms will be scheduled for MRI and x-ray examinations.

2. Equipment and supplies

- Long-armed goniometer

3. Safety and exclusions

There are no safety issues for this exam. Some participants may feel discomfort or pain during the knee or hip examination. If the participant experiences pain, ask if it is OK to continue with the exam. Even if pain is felt you will not injure the participant by performing the exam.

Other exclusions:

- Do not examine for crepitus on knees with total knee replacement.
- Do not assess range of motion on hips with total hip replacement.

4. Participant preparation

The knee examination should be performed on the bare knee. The participant should be wearing garments or slacks and undergarments that can be rolled up past the knee. If the examiner cannot access the bare knee, then pants and undergarments which cannot be rolled up past the knee should be removed and the participant asked to wear hospital pants. Shoes, stockings, and pantyhose should be removed, but socks may be kept on.

5. Detailed examination and measurement procedures

The following suggested script introduces the whole examination:

Now I am going to ask you some questions regarding any pain or stiffness in your joints. I will also be examining the joints of your hands and asking you to perform some motions with your knees and hips.

With the participant sitting on the edge of an examination table, ask questions to assess knee symptoms, then examine the knees and the hips. Ask the questions about hand symptoms, then examine the hands.

Examinations will be performed on both sides.

A. Knee Symptoms Assessment

Questions will be asked of participants regarding knee pain and stiffness. The participants' answers will be used to determine whether or not they are eligible to receive x-ray or MRI evaluations, and as the primary study data on knee symptoms. X-ray and MRI exams will be bilateral whether or not the symptoms are bilateral.

1. Introduce the knee exam:

These questions are about pain, aching or stiffness in, or around, your knee. This includes the front, back, and sides of the knee.

2. Read the instructions and then ask the participant Q1 and Q2 for the left knee. Knee symptoms will be felt in the immediate area of the knee. Do not include symptoms that are only felt in the thigh, calf or parts of the leg away from the knee.

Q1. In the past 12 months, have you had any pain, aching, or stiffness in the left knee?

If the participant answers "No", go to question 3 for the right knee. If they answer "Don't know" or refuse, ask Q2 about pain in the past 30 days.

If the participant answers "Yes," ask:

Q1a. In the past 12 months, have you had pain, aching, or stiffness in the left knee on most days for at least a month?

If the participant answers "Yes," schedule an x-ray and an MRI. Continue with Q2.

"On most days for at least a month" should be defined as ≥ 15 days of any 30-day period. The days with symptoms need not be consecutive. Symptoms may vary in intensity from day to day.

Q2. During the past 30 days, have you had any pain, aching or stiffness in the left knee?

If the participant answers "No or Don't Know" or refuses, go to Q3 for the right knee.

a. If the participant answers, "Yes," ask Q2a and Q2b.

Q2a. In the past 30 days, have you had pain, aching, or stiffness in the left knee on most days?

If the participant answers, "Yes," schedule an x-ray and an MRI. Continue with Q2b, even if they answered "No, don't know, or refused" to the above question: "On most days" should be defined as ≥ 15 of the last 30 days. The days with symptoms need not be consecutive. Symptoms may vary in intensity from day to day.

Q2b. In the past 30 days, how much pain have you had in the left knee for each activity I will describe.

- a) Walking on a flat surface
- b) Going up or down stairs
- c) At night while in bed
- d) Standing upright
- e) Getting in or out of a chair
- f) Getting in or out of a car

Read each activity separately. Show Response Card or read the answer choices: None, Mild, Moderate, Severe, Extreme, and Don't know. **If the answer for any of these activities is moderate, severe, or extreme pain, schedule an MRI.**

If the participant does not do the activity and can't answer, check "Don't know."

2. Repeat the questions, this time for the right knee (Q3, 3a, Q4, 4a, 4b). Schedule X-rays and MRI as indicated on the form.

3. Ask Q5, 6 and 7 of all participants regardless of knee symptoms reported above.

Q5. In the past 30 days, have you limited your activities because of pain, aching, or stiffness in your knees?

If the participant answers "Yes," ask them:

Q5a. On how many days did you limit your activities because of pain, aching, or stiffness?

Include activity limitations that last for all or part of the day, and limitations that have occurred on one day or more. Sum the days with limitations regardless of the type of activity which is limited on different days. Include long-standing, or chronic, limitation as well as those that have begun recently. Include limitations that are due in part, or in whole, to knee symptoms.

Q6. Have you changed, cut back or avoided any activities in order to avoid knee pain or reduce the amount of knee pain?

This question is designed to identify people who, while saying they are not limiting their activities because of knee pain, are in fact doing things differently or avoiding certain activities in order to avoid having knee pain.

Q7. Have you ever injured your knee badly enough to limit your ability to walk for at least a week?

If the participant answers "Yes," ask which knee (Q7b).

Limited walking would include not being able to walk at all as well as having to cut back on the amount of walking that is done. The injury can have occurred at any age.

B. Knee Exam (Crepitus)

DEFINITION: Crepitus is defined as palpable continuous noise or sensation (numerous small clicks, pops or grinding), similar to rough sandpaper scratching, which is felt by placing the palm of the hand over the patella as the knee is flexed and extended, or at the sides of the knee (tibiofemoral knee joints). Crepitus is caused by fissured, cracked or irregular cartilage surfaces rubbing against one another as the knee is extended and flexed. It often occurs in one knee and not the other.

Exclusion from knee crepitus exam:

Before you examine the right knee, ask the participant if they have had a knee replacement in their right knee. If they answer "yes," check the "yes" response option on the Knee Crepitus Form (page 38 of the Year 2 Clinic Visit Workbook), do not do a knee exam on the right knee, and go to Question #3: "Have you had a knee replacement in your left knee?" If the participant answers "yes," check the "yes" response option, do not examine the left knee, and go on to the hip assessment.

Knee crepitus exam:

1. Participant is seated on the edge of the exam table with hips and knees flexed to 90° and feet dangling.

"I am going to examine your knee for a sign of arthritis, which is a grinding feeling in your knee cap when you move your leg. Let me know if moving your leg causes pain in your knee."

2. Examiner places their palm over the participant's patella with the MCP joints centered on the patella and fingers parallel to a line intersecting the lateral and medial femoral condyles. This line is known as the 'joint line.'

3. Examiner asks participant to actively move leg to extended position (zero degrees) and then back to 90° of flexion. This is done twice, then rest a moment, then twice more. Each movement to extension should take about 2 seconds. If the participant needs help, the examiner can help move the leg to the fully extended position or until the participant complains of pain.

If the examiner is uncertain of the result, it is OK to ask the participant to repeat the movements of the knee. It may sometimes be useful to test one side, then the other, and to compare the sensation in the two knees. To confirm crepitus that is only felt in an isolated part of the joint, put your fingertips directly on the area of the abnormal sensation.

4. Positive for crepitus is defined as a series of small clicks or pops or grinding sensations during extension. Multiple, nearly continuous clicking or popping is required to define crepitus. A similar sensations should be felt on all trials.

PLEASE NOTE: Check for crepitus during active extension of the knee by palpating the patellofemoral joint with the fingers pointing parallel to the joint line when the knee is in extension. Your MCPs should rest on the patella. Crepitus is a palpable or audible or crunching sensation evoked by movement. On palpation it may vary from fine to coarse. The sensation may vary from that experienced on using very fine sandpaper to coarse sandpaper to a frank rough grinding sensation. Fine crepitation may be palpated in inflammatory arthritides such as rheumatoid arthritis, and the sensation is confined to the area around the joint. Coarse crepitus occurs in inflammatory arthritis and more frequently in degenerative joint disease, and is caused by irregularity of the cartilaginous surfaces of the joints, which may be fissured or worn away. Crepitus should be distinguished from generally isolated cracking sounds. These are evoked by slipping of ligaments or tendons moving over bony surfaces or, as in the example of “cracking” one’s knuckles, by the sudden release of nitrogen gas into the joint space when the joint is subjected to distractive forces creating a negative pressure within the joint.

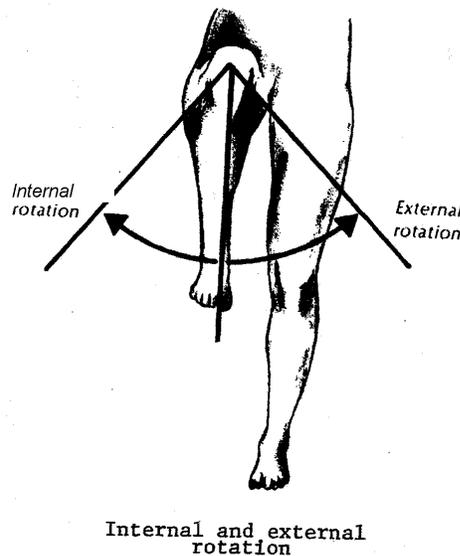
5. Crepitus is coded as :

<p>0 = absent on all trials</p> <p>1 = present on just one trial</p> <p>2 = present on two or three trials</p> <p>3 = present all four trials</p> <p>4 = uncertain</p> <p>7 = unable to examine due to knee pain</p> <p>8 = unable to examine for other reason</p>	<p>(Trial = extend knee and return to starting position.)</p>
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6. If the examiner remains uncertain after one or more attempts, the examiner should request a second certified examiner to perform the examination. A final score which represents the consensus of the two examiners is recorded.
7. Repeat with other knee.

C. Hip Examination/Internal Rotation

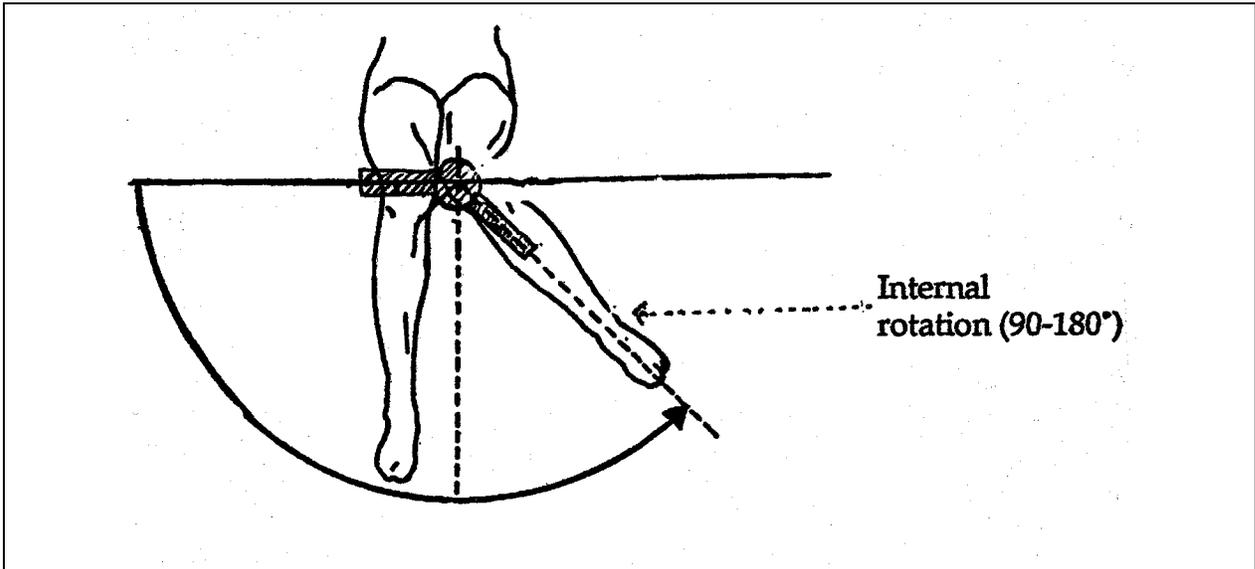
Internal rotation of the hip is the movement made by the femoral head in the acetabulum when the hip and the knee are both flexed to 90° and the lower leg is moved laterally away from the midline of the body (See figure below).



Goniometry for hip internal rotation. Internal rotation will be measured in degrees using a goniometer. Goniometry is the measurement of angles, in our study the measurement in degrees of the internal rotation of the hip. The measurement is taken while the pivot, or axis, of the goniometer is over the axis of motion of the joint, in this case, the patella. Since the axis of motion may shift somewhat when the joint is moved, care should be taken to be sure the pivot of the goniometer is as closely as possible over the axis of motion when the measurement is taken.

We will measure free and easy range of passive motion, which is defined as movement of the joint by the examiner up to the point of resistance to movement, or to the point where joint pain prevents further movement. For some participants this will mean moving the joint beyond the onset of mild discomfort.

IMPORTANT: For purposes of recording, the goniometer measurement will always be an angle between 90° and 180°. Always read the angle from the black numbered scale at the bottom of the goniometer dial. The 'stationary' arm of the goniometer is the arm attached to the circular dial calibrated in degrees. The moveable arm pivots around the circular dial.



Exclusions:

Before you examine the left hip, ask the participant if they have ever had a hip replacement on their left hip. If they answer “yes,” check the “yes” response option on the Joint Examination: Hip (Internal Rotation) Form (page 39 of the Year 2 Clinic Visit Workbook), do not do a hip exam on the left hip, and go to Question #4: “Have you ever had a hip replacement on your right hip?” If the participant answers “yes,” check the “yes” response option, do not examine the right hip, and go on to the hand joint assessment.

Hip Examination:

1. Participant sits on the exam table with legs over the side and knees flexed to 90°; knees about 8 inches apart. Participants hands are resting on knees to help hold the goniometer in place.

Ask participant to keep “equal weight on both buttocks and their bottom on the table” as you move their leg. Kneel, crouch or sit in front of participant.

2. Have the participant hold the goniometer with the pivot centered over the middle of the patella of the left knee and the stationary arm on a line between the patellae

of the right and left knees. (See figure above.) Ask them to keep the pivot centered over the knee while you are moving their leg.

3. Hold the left leg at the shin with your right hand and put your left hand on the top of the left knee to stabilize the joint. (Hand positions will be reversed if you use the “pulling” technique.) Before the motion, say:

“I’m going to rotate your leg by pushing [pulling] your lower leg up and outward. As I move your leg, tell me if you feel any pain in your hip or groin.”

Move the left leg (and the arm of the goniometer) counter-clockwise to the limit of motion or until the subject complains of pain. Buttocks should remain on the table and the stationary arm of the goniometer parallel to the table top. Apply firm pressure to the top of the knee to keep it from moving.

The resistance encountered at the limit of normal motion is typically “firm” - a firm or springy sensation that has some give as muscle is stretched. The typical limit of motion, as measured by the goniometer, is about 135° to 145°.

After reaching the limit of motion ask:

"Did that hurt in your hip or groin?"

PLEASE NOTE: The examiner may either squat in front of the participant and push their leg up and outward, or stand to the side of the participant and pull the lower leg up and outward. In either case, use the flat part of your hand or the ‘V’ between thumb and first finger to apply pressure. If pressure is applied with the finger tips, this may hurt the participant’s lower leg.

PLEASE NOTE: For some very large participants, it may be necessary to have one examiner hold the knee to stabilize it and the other to rotate the hip.

4. Read the angle from the black numbered scale at the bottom of the goniometer dial (between 90° and 180°; full ROM usually not more than about 135-145°).
5. Record pain and degrees of motion.
6. Reverse examiner hand and goniometer positions for the right leg. Align the stationary arm of the goniometer on a line between the patellae of the knees with the pivot over the right patella.

7. Move the right leg (and the descending arm of the goniometer) clockwise to the limit of motion or until they complain of pain. Before the motion, say

“As I move your leg, tell me if you feel any pain in your hip or groin.”
8. After reaching the limit of motion ask:
 "Did that hurt in your hip or groin?"

Many participants will feel some discomfort at the extreme range of motion, but not real pain.
9. Record pain and degrees of motion. The range of possible angles is the same as for the left leg.
10. Abnormal internal rotation is movement of less than 15° or movement with definite pain. (Subtract 90 from the measured angle to get degrees of rotation.)

D. Hand Pain Assessment

Questions will be asked of participants regarding hand pain.

- Q1. In the past 12 months, have you had pain on most days for at least one month in any of the joints of your hands?

“Pain on most days for at least one month” is defined as = 15 days of any 30 day period.

If the participant answers "No, Don't know, or Refused" ask:

- Q1. In the past 12 months, have you had pain lasting less than one month in any of the joints of your hands?

“Pain lasting less than one month” is defined as pain experienced for 1-14 days of any 30 day period.

If the participant answers "Yes" to either of the hand pain questions, show them the numbered diagram of the hands, and ask them to show you which joints of their hand or wrist have been painful in the past 12 months. Alternatively, the participant may point to the painful joints directly on their hand. Record on the data collection form which joints the participant points to on the diagram or their hand.

If the participant says their hands hurt all over, the first probe should be to ask if they can localize the pain to a particular row of joint (e.g. DIPs, PIPs, MCPs). Often they will be able to say that all the joints in the row hurt. If this doesn't work, the interviewer can ask if the pain is in the joints or in the bones. If the pain is in the joints, but they can't say which ones in particular, mark all the joints as painful. If the participant is unable to identify particular painful joints, check the response option labeled: "unwilling/unable to identify which joints are painful" on the Joint Examination: Hand Pain Form (page 40) in the Year 2 Clinic Visit Workbook.

E. Hand Exam

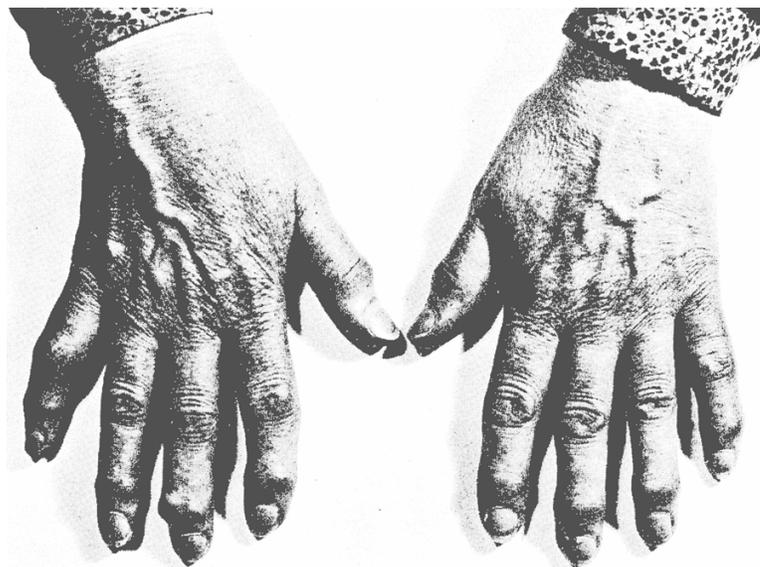
Abbreviations:

DIP=Distal Interphalangeal joint;
PIP=Proximal Interphalangeal joint;
1st CMC=First carpometacarpal

1. Participant is seated in chair or on an examination table in a relaxed comfortable position with palms downward under adequate lighting.
2. Examiner visually inspects dorsal aspects (back) of both hands for obvious signs of OA (bony enlargement).
3. The joints are felt for bony enlargements. The examiner supports the examined hand (right) with one hand and feels the IP joints of the right hand, then the DIP, and PIP joints of the fingers in sequence (fingers 2 [index] through five). Feel the upper sides and tops of each joint for bony enlargements.

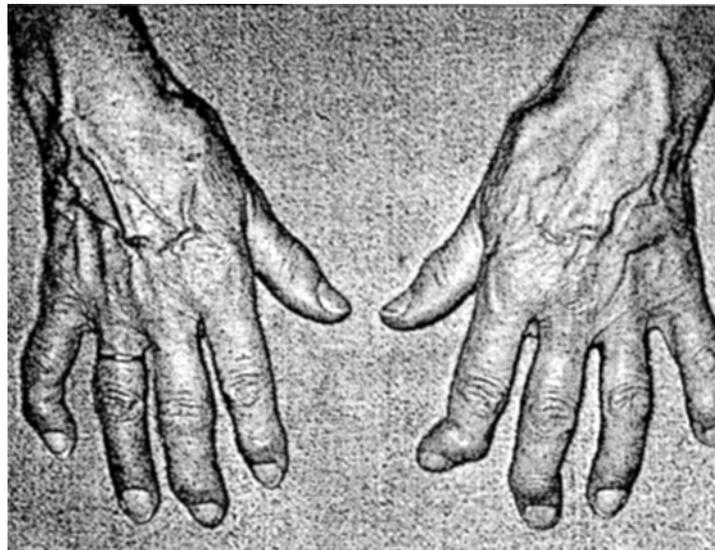


4. Definition: Bony enlargements are palpable, abnormal growths of bone around the margins of the finger joints (IP, DIP, PIP, CMC). Bony enlargements are often asymmetric (not on both sides of the joint, or not on the same joint on opposite hands), hard and non-tender. Distinguish between bony enlargements and synovial swelling by palpation. The bony enlargements will be hard while the synovial swelling will be spongy. Refer to photographs for examples of bony enlargements (below)





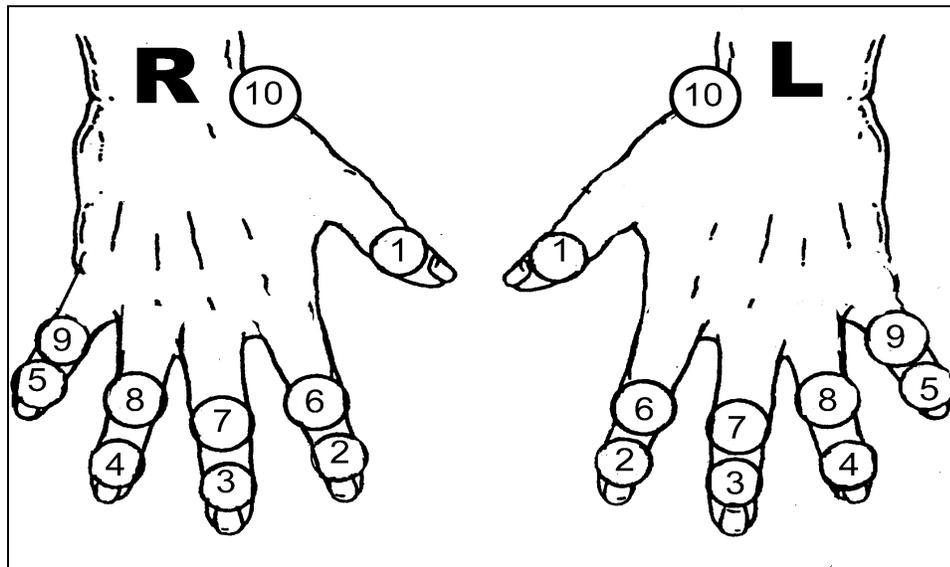
Bony enlargement of the CMC joint (thumb base) will appear as angulated bone (squaring) at the base of the thumb (see figure below). Palpate the CMC joint to confirm bony squaring.



5. Repeat with left hand.

6. Code the results of the examination by marking the box next to the appropriate category on the Joint Examination Data Collection Form in the Year 2 Clinic Visit Workbook.

Normal
Bony enlargement
Uncertain
Unable to examine



7. If the examiner is uncertain for two or more joints, the examiner should request a second certified examiner to perform the examination. A final score which represents the consensus of the two examiners is recorded.

6. Alert values/follow-up reporting to participants

There are no alert values for these examinations.

Participants can be told at the time of the examination the results of the examination for crepitus, hip range of motion and bony enlargements of the hand.

If the participant has crepitus, the examiner should explain what crepitus is: "Crepitus is defined as a palpable continuous noise or sensation (clicking, popping or grinding) similar to sandpaper scratching sensation which is felt by placing the palm of

the hand over the patella as the knee is flexed and extended, or at the sides of the knee.” Studies show that it is a common finding in people with osteoarthritis of the knee, but that it also occurs in people who do not have osteoarthritis of the knee. If the participant has both knee pain and crepitus, they may have knee OA according to the American College of Rheumatology clinical criteria. Crepitus without knee pain is of unknown significance.

Impaired internal rotation of the hip is less than 15°, (or less than 105° based on the goniometer measurement made in this study). If the participant has an impaired range of motion, or if the participant has hip pain during the internal rotation exam, and also has hip pain on most of a recent month they may have hip OA according to the American College of Rheumatology clinical criteria. Studies show that this is a common finding in people with osteoarthritis of the hip, but that it also occurs in people who do not have osteoarthritis of the hip. Limited internal rotation without hip pain is of uncertain significance.

If the participant has bony enlargement of the finger joints, they can be told that this is a sign of osteoarthritis of the hand. If an x-ray were taken of the hand, it would probably reveal bony growths, called osteophytes, which are also a sign of osteoarthritis of the hand. Many people have bony enlargement of the finger joints without having joint pain and this does not require treatment.

Treatments for OA include medications to reduce pain and inflammation (aspirin and nonsteroidal antiinflammatory drugs) exercise, and for the knee, weight control. Provide those with any of the above findings with a copy of the NIH Age Page “Arthritis Advice” (Appendix 1)

7. Quality assurance

7.1 Training

Experience in musculoskeletal examinations is preferred but not required. Training includes:

- Read and study operations manual chapter
- Attend training session
- Practice on elderly volunteers (elderly participants are much more likely to have the findings) and compare findings with other examiners.
- Discuss problems with a study rheumatologist

7.2 Certification requirements

- Fulfill training requirements
- Conduct exam on two elderly participants with more experienced examiner and reach consensus on findings

7.3 Quality control checklist

Knee Pain Assessment

- Correctly asks questions regarding knee pain and stiffness.
 - Reads activities separately for Q2b and Q4b.
 - Reads answer categories and/or used Card for Q2b and Q4b.
- Follows skip patterns correctly
- Accurately records participant's responses on questionnaire.

Knee exam

- Examination done on bare knee
- Participant sitting, knee able to move freely
- Palm cupped over knee
- Participant fully extends knee
 - with assistance of examiner, if needed
- Two trials, momentary rest, then two more trials
- If score is uncertain, consensus obtained with another examiner

Hand Pain Assessment

- Correctly asks questions regarding hand pain.
- Follows skip pattern in clinic visit workbook hand pain questionnaire.
- Accurately records participant's responses on questionnaire.

Hand exam

- Participant instructed to place hands with palms downward
- Examiner feels joints in hands for bony enlargements
- Joints are coded correctly
- If score is uncertain, consensus obtained with another examiner

Hip exam

- Participant sitting on edge of exam table, lower leg able to move freely
- Goniometer positioned properly, participant instructed to hold in place
 - Pivot remains over patella during the exam
- Left leg tested first
- Examiner moves lower leg counterclockwise
 - left hand on left knee, right hand grasping shin and arm of goniometer
- Participant asked about hip pain before and after movement
- Examiner pushes limb to limit of motion or until participant complains of discomfort
- Participants buttocks do not rise up off table
- Record range of motion in degrees and pain for left
- Reverse goniometer and hand position and repeat for the right leg
- Record range of motion in degrees and pain for right

APPENDIX 1 NIH Arthritis Advice

Arthritis Advice

Half of all people age 65 and older have arthritis. There are over 100 different forms of arthritis and many different symptoms and treatments. We do not know what causes most forms of arthritis. Some forms are better understood than others.

Arthritis causes pain and loss of movement. It can affect joints in any part of the body. Arthritis is usually chronic, meaning it can occur over a long period of time. The more serious forms can cause swelling, warmth, redness, and pain. The three most common kinds of arthritis in older people are osteoarthritis, rheumatoid arthritis, and gout.

Common Forms of Arthritis

Osteoarthritis (OA), at one time called degenerative joint disease, is the most common type of arthritis in older people. Symptoms can range from stiffness and mild pain that comes and goes to severe joint pain and even disability.

OA usually affects the hands and the large weight-bearing joints of the body: the knees and hips. Early in the disease, pain occurs after activity and rest brings relief; later on, pain occurs with very little movement, even during rest.

Scientists think that several factors may cause OA in different joints. OA in the hands or hips may run in families. OA in the knees is linked with being overweight. Injuries or overuse may cause OA in joints such as knees, hips, or hands.

Rheumatoid arthritis (RA) can be one of the more disabling forms of arthritis. Signs of RA often include morning stiffness, swelling in three or more joints, swelling of the same joints on both sides of the body (both hands, for example), and bumps (or nodules) under the skin most commonly found near the elbow. RA can occur at any age and affects women about three times more often than men.

Scientists don't know what causes RA but think it has something to do with a breakdown in the immune system, the body's defense against disease. It is also likely that people who get RA have certain inherited traits (genes) that cause a disturbance in the immune system.

Gout occurs most often in older men. It affects the toes, ankles, elbows, wrists, and hands. An acute attack of gout is very painful. Swelling may cause the skin to pull tightly around the joint and make the area red or purple and very tender. Medicines can stop gout attacks, as well as prevent further attacks and damage to the joints.

Treatments

Treatments for arthritis work to reduce pain and swelling, keep joints moving safely, and avoid further damage to joints. Treatments include medicines, special exercise, use of heat or cold, weight control, and surgery.

Medicines help relieve pain and reduce swelling. Acetaminophen or ACT should be the first drug used to control pain in patients with osteoarthritis (OA). Patients with OA who don't respond to ACT and patients with RA and gout are most commonly treated with nonsteroidal anti-inflammatory drugs such as ibuprofen. People taking medicine for any form of arthritis should limit the amount of alcohol they drink. (For more information, see the *Age Page* "Arthritis Medicines.")

Exercise, such as a daily walk or swim, helps keep joints moving, reduces pain, and strengthens muscles around the joints. Rest is also important for the joints affected by arthritis. Physical therapists can develop personal programs that balance exercise and rest.

Many people find that soaking in a warm bath, swimming in a heated pool, or applying **heat or cold** to the area around the joint helps reduce pain. **Controlling or losing weight** can reduce the stress on joints and can help avoid further damage. When damage to the joints becomes disabling or when other treatments fail to reduce pain, your doctor may suggest **surgery**. Surgeons can repair or replace damaged joints with artificial ones. The most common operations are hip and knee replacements.

Unproven Remedies

Arthritis symptoms may go away by themselves but then come back weeks, months, or years later. This may be why many people with arthritis try quack cures or remedies that have not been proven instead of getting medical help. Some of these remedies, such as snake venom, are harmful. Others, such as copper bracelets, are harmless but also useless. The safety of many quack cures is unknown.

Here are some tipoffs that a remedy may be unproven: claims that a treatment like a lotion or cream works for all types of arthritis and other diseases too; scientific support comes from only one research study; or the label has no directions for use or warnings about side effects.

Common Warning Signs of Arthritis

- Swelling in one or more joint(s)
- Morning stiffness lasting 30 minutes or longer
- Joint pain or tenderness that is constant or that comes and goes
- Not being able to move a joint in the normal way

- Redness or warmth in a joint
- Weight loss, fever, or weakness and joint pain that can't be explained

If any one of these symptoms lasts longer than 2 weeks, see your regular doctor or a doctor who specializes in arthritis (a rheumatologist). The doctor will ask questions about the history of your symptoms and do a physical exam. The doctor may take x-rays or do lab tests before developing a treatment plan.

Resources

For more information on arthritis contact:

National Institute of Arthritis and Musculoskeletal and Skin Diseases

Building 31, Room 4C05

Bethesda, MD 20892

(301) 496-8188

The Arthritis Foundation

P.O. Box 19000

Atlanta, GA 30325

(800) 283-7800

For a list of free publications from the National Institute on Aging (NIA), contact the NIA Information Center, P.O. Box 8057, Gaithersburg, MD 20898-8057; 1-800-222-2225; (1-800-222-4225 TTY); e-mail:niainfo@access.digex.net

National Institute on Aging

APPENDIX 2 MRI Controls / Random Sample

We would like to obtain MRIs on an additional 500 Health ABC participants without knee symptoms. The goal is to recruit one willing participant without knee symptoms per day, on average, for an MRI control group, or 5 per week, at each field center.

To recruit participants for the MRI control group observe the following protocol:

- Every day, attempt to recruit the first participant not eligible for MRI based on answers to the “symptoms” questions. Please refer to the Year 2 Clinic Visit Workbook, page 35-36, questions #1-4.
- If the participant agrees to undergo a MRI, administer the Knee MRI Eligibility and Tracking Form (Year 2 Clinic Visit Workbook, page 44) to identify exclusions.
- If the an eligible participant (refer to calendar for available race/gender group) refuses or is excluded based on the Knee MRI Eligibility and Tracking Form, attempt to recruit the second eligible participant, and so on.
- If no eligible persons are successfully recruited on a given day, attempt to recruit two participants to the MRI control group the following day, and so on, so that the goal of recruiting five participants per week is attained.
- Each calendar week will still be designated for the recruitment of a specific race/gender group. For example, week 1 will be focused on recruitment of black women, week 2 white women, etc. However, if a white women is identified as being eligible and willing to be enrolled during week 1 (the designated “black women” week), the field centers are now encouraged to enroll this white woman and to check off any “white woman” box on the calendar, in spite of the actual day of the week. This is how the protocol has been modified.
- Replacement of no-shows/cancellations: If a recruited person drops out of the control group by failing to show for an MRI scan and is not rescheduled, immediately attempt to recruit another person regardless of the week. Please refer to the calendar to determine which race/gender group still needs to be filled.
- We encourage you to keep track of the recruitment results by posting the attached calendars on a bulletin board accessible to all staff. Please indicate

on the attached calendars the successful recruitment of an MRI control by marking an “X” in the appropriate box. At the end of each month, please fax these calendars to Susan Rubin (fax: 415/597-9213).

MRI CONTROL GROUP

September						
<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
		1	2	3	4 <input type="checkbox"/> BF	5
6	7 Holiday	8 <input type="checkbox"/> BF	9 <input type="checkbox"/> BF	10 <input type="checkbox"/> BF	11 <input type="checkbox"/> BF	12
13	14 <input type="checkbox"/> WF	15 <input type="checkbox"/> WF	16 <input type="checkbox"/> WF	17 <input type="checkbox"/> WF	18 <input type="checkbox"/> WF	19
20	21 <input type="checkbox"/> BM	22 <input type="checkbox"/> BM	23 <input type="checkbox"/> BM	24 <input type="checkbox"/> BM	25 <input type="checkbox"/> BM	26
27	28 <input type="checkbox"/> WM	29 <input type="checkbox"/> WM	30 <input type="checkbox"/> WM			

1998

Version 1.0, 8/31/98

APPENDIX 3 Report of Knee x-ray Findings to Participants



HABC Enrollment ID #				Date of reading:			
H					/		/
				Month	Day	Year	

KNEE RADIOGRAPH PARTICIPANT REPORT

Participant name: _____

This report describes what the HEALTH ABC arthritis specialist (rheumatologist) found when they looked at your knee x-rays. If you have any questions about this report, please contact your doctor. This exam was conducted for research purposes only, and was not performed to diagnose any medical conditions.

The examiners were looking for the following:

- Osteoarthritis** develops when the cartilage in the joints starts to wear away. This is usually accompanied by changes in the bone near the joint which can be seen on an x-ray. It is the most common form of arthritis.
- Osteophytes** are bony growths which form around a joint affected by osteoarthritis.
- Joint space** narrowing is a decrease in the space between the joints which occurs when the cartilage wears away.
- Cysts** are fluid-filled sacs in the bone near joints affected by osteoarthritis.

1 OSTEOARTHRITIS

A.	Tibiofemoral joint	LEFT KNEE	RIGHT KNEE
	Normal	<input type="checkbox"/>	<input type="checkbox"/>
	Mild (definite osteophytes)	<input type="checkbox"/>	<input type="checkbox"/>
	Moderate (osteophytes, definite loss of joint space, possible sclerosis and cysts)	<input type="checkbox"/>	<input type="checkbox"/>
	Severe (large osteophytes, moderate to severe loss of joint space, definite sclerosis, cysts, or subluxation)	<input type="checkbox"/>	<input type="checkbox"/>
B.	Patellofemoral joint		
	Normal	<input type="checkbox"/>	<input type="checkbox"/>
	Mild (definite osteophytes)	<input type="checkbox"/>	<input type="checkbox"/>
	Moderate (osteophytes, definite loss of joint space)	<input type="checkbox"/>	<input type="checkbox"/>
	Severe (large osteophytes, moderate to severe loss of joint space, subluxation)	<input type="checkbox"/>	<input type="checkbox"/>

2 OTHER FINDINGS

Chondrocalcinosis	<input type="checkbox"/>	<input type="checkbox"/>
Paget's disease	<input type="checkbox"/>	<input type="checkbox"/>
Loose bodies (osteochondromatosis)	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>

Version 1.1, 9/24/98