

## HAND PHOTO EXAMINATION

### TABLE OF CONTENTS

1.	Hand photograph .....	2
2.	Equipment and supplies.....	2
3.	Hand photograph detailed procedures.....	3
3.1	Checks before performing the exam.....	3
3.2	Administration of hand photo.....	5
3.3	Archiving and Data Transfer .....	7
4.	Quality assurance .....	8
4.1	Training.....	8
4.2	Certification requirements .....	8
5.0	Data collection form .....	9
	Appendix I.....	10

## 1. Hand photograph

The MOST study is interested in assessing arthritis in the hands which is common and often painful and disabling in older adults. The hand photo will be used to assess presence of osteoarthritis (OA) in the hand joints (thumb bases, knuckles of fingers that are closest to the nails and the ones that are in the middle of the fingers). We will use a protocol developed by Dr. Helgi Jónsson at the University of Iceland.

## 2. Equipment and supplies

You will need a camera to obtain photos of the hands and this can be attached to the wall so that it is roughly 42 cm above the flat surface.

A metal plate and rod or bracket to attach to the wall to hold the camera. The camera will take photos looking down at the flat surface.

A flat surface that should be at a height that is comfortable for subjects to sit and place their hands out so that the hands are flat. Hands should be placed on grid pad with green background and 1 inch squares. The grid will enable later measurements.

MOST Study ID and Acrostic labels with font large enough that they can be easily read in a photograph. If the label cannot be generated and printed from a computer, a thick pen or sharpie should be used to clearly write the MOST Study ID number and Acrostic on the label.

### Hardware

- Sony black Cyber-shot H10 digital still camera, model DSC-H10/B
- Sony portable AC power adapter for Cyber-shot camera, model AC-LS5K
- Vaddio expandable camera wall-mount
- Color printer: dedicated for printing color reports as participant souvenirs
- Power cord extension cable

### Clinic supplies

- Grid pad, green background, 1 inch squares
- Two white (or light color) adhesive dots: dots should be placed where the tip of each thumb should be (see Figure 1).
- Small folding table—for notebook computer
- One chair with no armrests
- Photocopier: souvenir reports will be printed onto preformatted paper rather than blank paper. The preformatted paper must be periodically copied from a master template.

### Installation of equipment

- Masking tape
- Phillip's head power screwdriver: for installation of Vaddio camera wall-mount

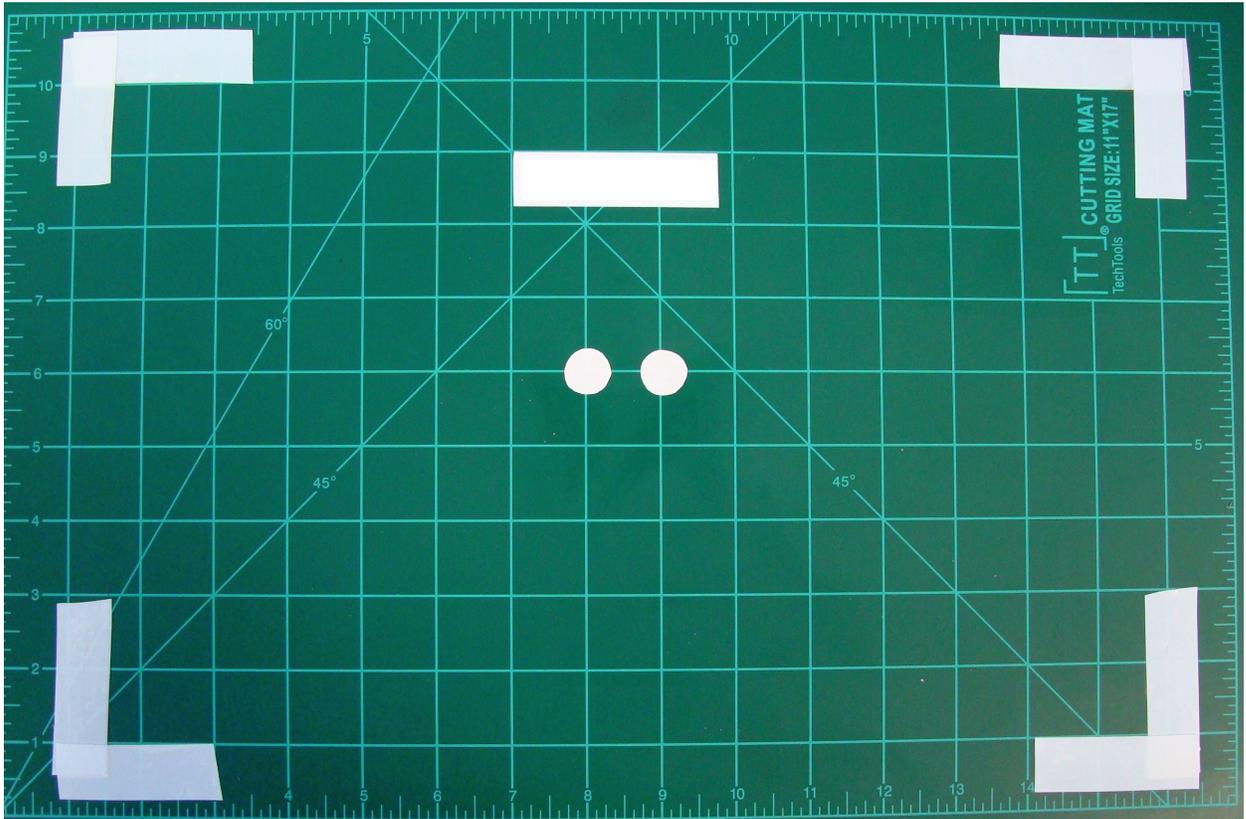
### 3. Hand photograph detailed procedures

#### 3.1 Checks before performing the exam

Prior to taking any hand photo, check the following:

1. Ensure that the camera is set to the correct settings below (see Appendix I for detailed instructions and for links to camera manuals).
  - a. Camera should be set to take photos at 8 MP (3264x2448 pixel) resolution. This setting should display an “8M” icon on the camera.
  - b. Camera Mode dial should be set to Auto (which is the green camera icon on the dial).
  - c. Camera Flash should be set to “Off”. The display should show a Circle-No symbol over the lightning bolt icon.
  - d. All other camera settings should be left to their default values unless the photo quality very poor.
2. That there are two dots on the green grid pad that are each ½” to the left and right side of the center of the grid pad (i.e.: the two dots are 1” apart) (see Figure 1).
3. That masking tape has been applied to the green grid pad to define the corners of a rectangle that is 14” wide by 9” tall (see Figure 1).

Figure 1. Showing the correct placement of dots 1” apart either side of the center of the grid pad, along with masking tape applied to define a 14” x 9” rectangle.



### 3.2 Administration of hand photo

A digital still camera will be used to capture a single photograph of the dorsum of both hands. The hand photo can be done at any time during the visit.

Script: “I’m going to take a picture your hands. This will be used to assess the presence of osteoarthritis in your hands. Please place your hands flat with palms down on this grid. Position your hands so that the tips of your thumbs are just on top of the dots. Your hands should be relaxed with your fingers apart but flat on the grid.”

Have the participant place their hands palm down on the grid pad with the thumb tips just covering the dots in the middle of the grid pad. Fingers, palm and wrist all need to be flat against the surface and clothing and jewelry pulled away so that hands, wrists and thumb base are exposed to the camera. Wrist watches should be removed. If a ring cannot be removed ensure it does not cover a finger joint. The hands should be relaxed, fingers apart but not splayed and the thumb at a natural angle of approximately 30°. Wrists should be relaxed and in the same plane as the fingers. If the participant is unable to hold their hands in the required position (e.g., due to arthritis) note this in the “Comment“ section of the Hand Photo Exam form so that the reading center understands why the required position was not obtained.

The MOST ID and Acrostic label should be placed between the hands towards the top of the grid pad placed in the direction as show on Figure 2.

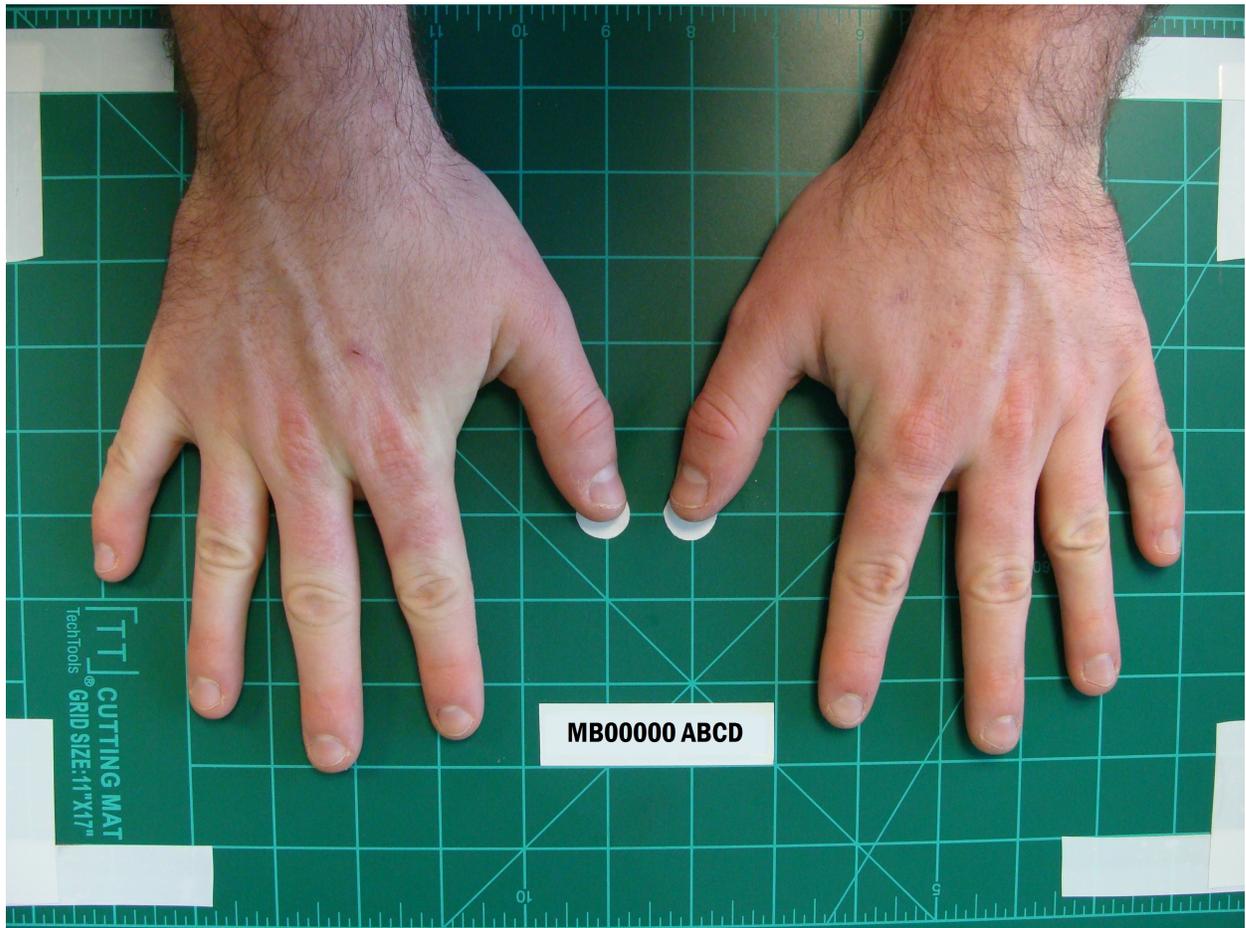
If all the fingers and both wrists are not captured on the image when the tips of thumbs are on the dots, you can move the hands forward or backward so that the photo can include all of them.

Turn the camera on by pressing down on the power button. Check that the photo resolution setting is set to 8 MP (or 3264x2448 pixel). The camera should be pointed just above the thumb tips. All fingers and wrists need to be on the grid pad and fully visible on the photo. With the camera on, the 4 corners of the 14”x9” rectangle outlined with masking tape (shown in Figure 1) should be fully visible in the corners of the camera image. If not, adjust the camera position and zoom so that the corners are visible.

The film to focus distance for optimal view is 42 cm. Flash should not be used as it introduces shadows. Once the photo is acquired by pressing down on the shutter button, the examiner needs to check that it is acceptable. If not, please delete the photo from the camera and repeat the photo.

Figure 2 is an example of a photo of adequate quality for reading. Figure 3 shows pitfalls to avoid.

**Figure 2. Correct placement of thumbs on the 2 dots at the center of the grid pad.**



**IMPORTANT NOTE:** To ensure the MOST ID and Acrostic label are not up-side-down on the saved JPEG, the label should be placed on the grid pad so that when the participant is looking at the grid pad the writing is up-side-down.

**Figure 3. Showing pitfalls to avoid when taking a hand photo.**



Sleeves and jewelry (wrist watch) over thumb base/wrist; no acrostic on label



Bent wrists, wrong thumb positioning; no acrostic on label



Fingers pressed together; no acrostic on label



Dark shadows; no acrostic on label

### 3.3 Archiving and Data Transfer

1. Remove the camera end of the USB cable from where it is attached with Velcro to the wall, and plug it in to the camera's USB port (under plastic cover on the right side of the camera).
2. After plugging in the camera end of the USB cable, the window below will appear on the computer screen.
3. Click on the JPEG file and double check the MOSTID and Acrostic from the label that is on the grid pad matches the participant you have just acquired an image for.
4. Choose the folder C:\HANDPHOTO\YYYYMMDD (where YYYYMMDD is the date of the Monday of this week) for example C:\HANDPHOTO\20151102 would be for the first week of November 2015. If the folder does not exist, right-click on the C:\HANDPHOTO folder and chose "New->Folder" from the menu and enter YYYYMMDD as defined above for the folder name.
5. Copy the JPEG file from the camera and paste it into the weekly folder. Do NOT rename, alter, or change the image in any way.
6. Record in REDCap Hand Photo data collection form (i) the filename of the JPEG (DSCnnnnn.jpg) and (ii) the time the photo was taken.

7. After you are confident that the photo is saved, delete the JPEG (DSCnnnnn.jpg) from the camera.

At the end of the day when hand photos have been acquired the operator will need to check that the computer is left switched on and click on an icon in the bottom right of the screen so the photo files are synchronized to the UCSF ftp server. See section 4 of the MOST Secure Data Transfer Operations Manual.

## 4. Quality assurance

### 4.1 Training

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

- Read and study manual
- Attend MOST training session on techniques (or observe administration by experienced examiner)
- Practice on other staff or volunteers

### 4.2 Certification requirements

- Fulfill training requirements
- Conduct exam on two participants with more experienced examiner
  - According to protocol, as demonstrated by completed QC checklist

### 4.3 Quality assurance checklist

#### Hand photo exam

- Participant instructed to remove jewelry on hands and wrist, and pull sleeves away
- Participant instructed to place both hands with palms downward on grid pad
- Hands relaxed, fingers apart, thumb at natural angle (approx. 30 degrees)
- MOST ID and Acrostic label between hands towards top of grid pad, facing in the direction as seen in Figure 2 of the MOST Hand Photo Examination Operations Manual
- Camera pointed directly above thumb tips
- All fingers and wrists are on grid pad and fully visible on photo
- Taped corners of 14"x9" rectangle on grid pad fully visible on photo
- Film to focus distance at 42 cm, flash not used
- Photo reviewed for acceptable quality
- Photo repeated if first acquisition was not acceptable
- Correctly saves the Hand Photo jpeg file into the weekly folder
- Data archived and transferred properly

### 5.0 Data collection form

Please see the Overview of the 144-month Follow-up Visit Operations Manual for an overview of the data collection forms, information on whether each form is in REDCap or TELEForm, and where the forms can be accessed on the study website.



Figure 2

