

Wolf Motor Function Test™ © (WMFT™ ©)

Instructions

Template

- In order to assure a standard placement of test objects, the template should be taped to the desk so that the front edge is flush with the front edge of the desk.
- The center of the template should be at the center of the desk.
- The outline of each test object is traced on the template in the position in which it should be placed and further identified by corresponding task item numbers.

Participant Seating

One of the following chair positions will be used for each of the task activities:

- **Chair Position (Side):** Chair placed sideways to the table. Position a box lengthwise at the 14 cm line, in the Box #2 position (see template). Place the participant's less affected forearm flat on the box, with the wrist hanging over the edge. Height of box should be such that the patient's hips and back are against the back of the chair. (Note: make sure that the trunk is straight and participant is not leaning to the side.)
 - Measure position from the table edge to the side edge of the chair seat and the position of the back of the chair seat to the end of the table.
- **Chair Position (Front):** Chair is facing the table. Position a box at the 20 cm line, in the Box #6 & 7 position of the template. Place the participant's hand on the top of the box, with the heel of the shoulder is at 90° flexion. With the arm in this functional position, place the chair so that the participant's hips and back are fully against the back of the chair.
 - Measure this position, from the back of the seat of the chair to the edge the table
- **Chair Position (Front-Close):** For use with item #8 &14. Chair is facing the table. Participant is centered to the midline of the template. Place the participant's neutral forearm on the table, with the wrist crease at the 40-cm line and the elbow straight. With the arm in this functional position, place the chair so that the participant's hips and back are fully against the back of the chair. (Note: With larger participants, if the mass of the body does not allow for the wrist to reach the 40-cm line, the chair position should be such that the front of the body nearly touches the table, with the hips and back fully against the back of the chair.)
 - Measure this position from the back of the chair seat to the table edge.
- **Note position measurements on the set-up recording form. Chair positions should be established using the unaffected upper extremity**

Videotaping

- Videotaping is used for standardization and/or Functional Ability Scale rating by a panel of clinicians.
- Camera height and position should allow a field of view that includes maximal clarity of the task end position on the template. Additionally, one of the following filming positions should be used when videotaping each task. The specific task instructions indicate which filming position to use.

Filming position (Side-Facing): - view of the whole body while participant's side being tested is placed next to the desk. The camera should be placed approximately 3 feet in front of and to the opposite side of the participant being tested (camera on participant's left side if right arm being tested) and in line with the back edge of the desk. The camera view should include the participant's entire body so that the full movement of the hand from the lap to the table can be seen.

Filming position (Side-Side): - view of the whole body while participant is facing the desk: the camera should be placed approximately 3 feet to the side of the participant and on the same side being tested (camera on participant's left side if left arm being tested) and in line with the back edge of the desk. The camera view should include the participant's entire body.

Filming position (Side-Close): - profile of expanded view of limb being tested. Camera in same position as Side-Side, but the camera view should be zoomed in to focus on fine motor skills. The view should include the participant's entire upper extremity.

Filming position (Front): - the camera should be placed approximately 3 feet in front of the desk and the camera view should include the participant's upper body (trunk and head).

GENERAL COMMENTS:

- For all timed tasks, participants should be told to perform the tasks as quickly as possible.
- Starting Point: the tested cues the start of the timed tasks by saying, “Ready!, Set!, Go!” This should be said quickly and vigorously
- Start time must be coincident with “Go!” the stop time must be coincident with the event defined in the instructions.
- If the participant performs the task incorrectly, the task should be described and demonstrated again, and the participant is allowed one additional attempt.
- If the blinded evaluator makes a mistake with set-up or timing, the task may be repeated an additional time.
- Blinded Evaluator clearly stated the reason when a task is repeated.
- Blinded Evaluator clearly states if task was completed correctly.
- For the grasp items, verbalize the grasp utilities (digital positions), whether it is correct or incorrect.
- Timing is carried out using a stopwatch that records in millisecond.
- Each task should be described and modeled two times by the tested at the time the instructions are given. The first demonstration should be conducted slowly, and the second should be performed quickly.
- Both upper extremities are to be tested. First, the less-affected upper extremity should be tested on each task. The entire set of task should be then be repeated with the more-affected upper extremity.
- Participants should not practice the task before being tested.
- If the participant seems at all confused or has not paid attention during the demonstration, the task should be demonstrated a third time.
- The testing room should be a minimum of 17' x 10' to allow adequate room for videotaping
- The chair position should be varied for participants who are substantially taller or shorter than 5'8" so that their starting position is optimal for task performance (e.g., desk doesn't block / restrict movement, participant can reach objects)

- A step may be placed beneath the participant's feet to achieve proper lumbar, pelvic, and hip alignment.
- Final chair position should be established using the less affected upper extremity.
- For tasks using a box, shorter boxes may be substituted for shorted individuals. Ideally, these tasks should not require participants to flex or abduct their shoulder past 90 degrees. Modifications should be recorded on the pre-treatment set-up recording form and repeated during all subsequent testing of the participant.
- Boxes with modified heights should not be used to accommodate range of motion limitations. If a participant is unable to perform a task because of range of motion limitation, the task should be considered unachievable for that participant and a 120+ assigned as the time score.
- Verbal encouragement may be given to participants during the task attempts to maintain motivation or attention. The phrase "good effort, keep going, don't give up" should be repeated in a calm, confident voice. The phrases should be repeated approximately 12 times over the 2-minute period. (i.e. once every 10 seconds)
- If objects are dropped on the floor during a task attempt, the tester should quickly return the object to the starting position without interrupting the timing process. It may be helpful to have back-up items (i.e. extra paper clip, pencil, checker, etc.) so that the item can be replaced quickly if dropped. If it takes longer than 5 seconds to replace an item, the task should be repeated.
- If a participant appears confused or misunderstand the task, the task should be repeated. Entire verbal instructions and demonstration are repeated 1 time per task if the participant appears confused. If the participant performs the task incorrectly the second time, a 120+ is assigned for the time score.
- Participants wearing long sleeves should roll the sleeve up on the arm to be tested before beginning the test. If participants are wearing a confining top and their sleeves cannot be rolled up, they should be asked to remove it and should be given a scrub suit top.
- For each of the 17 tasks, a detailed instruction, with accompanying task demonstration is to be provided to the participant followed by a brief instruction and accompanying task demonstration.
- For each task, the specific instructions are detailed on the following pages, along with set-up, filming, timing and scoring instructions.
- Following the brief instruction, the participant is to be asked if he/she has any questions. If the answer, is no, proceed with "Ready!, Set!, Go!" for all timed tasks. If the participant has a question(s), answer it and then repeated the brief instruction prior to proceeding with "Ready!, Set!, Go!" for all timed tasks.

TEST ADMINISTRATION

- Begin each test by reading the following to the participant:

“Today we are going to take a look at how you are able to use your arm.

Let me tell you how we are going to go about this.

First, I will give you instructions on how to the task, and then I will show you how to do it.

I will describe and demonstrate each task 2 times.

Do not practice the task while I’m describing and demonstrating it; however, I will be happy to clarify any confusing points.

Then I will say, “Ready!, Set!, Go!” and you will do the task as quickly as you can.

It is important that you do not start until I say “Go!”, otherwise, we will need to repeat the entire task.

Each of the activities you will be asked to do should be carried out as rapidly as possible.

You can work on each task for up to two minutes.

Please attempt each part of the test even if you do not think that you can do it.

If you are unable to carry out a task, then we will go on to the next one.

Again, try to do each task as rapidly as possible.

Do you have any questions?”

INDIVIDUAL TASK INSTRUCTIONS

I. Tasks (1&2) Functional ability of the shoulder of the involved upper extremity; tasks performed to the side of the participant (i.e., away from the midsagittal plane of the participant). Shoulder movement of abduction.

1. Forearm to table (side)

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (side) • Hips against back of chair • Hands in lap • Both feet on floor • Filming Position (Side-Facing) 	<p><u>Task Description:</u></p> <p>Participant attempts to place forearm on the table (adjacent and parallel to front edge) by abduction at the shoulder. (Some shoulder flexion will probably also be necessary to get arm past the edge of table.)</p> <p>“Forearm” is defined as the wrist and elbow. The palmar surface of the hand need not be flat. Timing ends when both the forearm and hand touch the table.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when participant’s forearm and hand both touch the table in the required position.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the forearm and hand touch the table in the required fashion.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Place your forearm on the table as quickly as you can. Do it just like this. At the end of the movement, your forearm and hand should be touching the surface of the table. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Place your forearm on the table as fast as you can like this.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <p>FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed.</p>

2. Forearm to box (side)

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (side) • Hips against back of chair • Hand not being tested in lap • Shoulder of tested arm abducted with the forearm pronated and placed flat on table with radial edge adjacent and parallel to front edge of table; wrist crease at 39-cm line (front edge of box). Palmar surface of hand need not to be flat. • Place a box of appropriate height in the template outlined marked Box#2. Box should be wide enough that participant's entire forearm and elbow can fit on the box. Box should be stabilized by evaluator during the trail. • Filming Position (Side-Facing) 	<p><u>Task Description:</u></p> <p>Participant attempts to place forearm (elbow to wrist) on the box by further abduction at the shoulder. (Again some shoulder flexion will probably also be necessary to get arm past the edge of box.) At the end, the forearm should be flat on the box with the hand and wrist drooping over the front edge.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when participant's forearm and elbow are flat on the box, wrist and hand are beyond the end of the box in a relaxed position.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the forearm touches the top of the box in the required fashion with the hand drooping over the edge of the box.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Place your forearm on the box as quickly as you can. Do it just like this. At the end of the movement, your whole forearm should be flat and touching the surface of the box, with your hand and wrist drooping over the edge of the box. Your elbow must completely on the surface of the box. Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Place your whole forearm on the box as fast as you can like this." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <p>FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed.</p>

II. **Tasks (3&4). Functional ability of the elbow of the involved upper extremity; movements performed to the side of the participant (i.e. away from the midsagittal plane). Elbow movements of extension. (A small amount of external rotation at shoulder is a necessary component of these two tasks, but elbow extension is the primary component.)**

3. Extend elbow (to the side)

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (side) • Hips against back of chair • Table surface should be lightly dusted with baby/talcum powder • Hand not being test in lap • Shoulder of test arm abducted with forearm resting flat on table in a pronated position. Palmar surface of hand need not be flat on table. • Forearm being tested is resting on, adjacent and parallel to front edge of table; elbow at 14-cm line. • Filming Position (Side-Facing) 	<p><u>Task Description:</u></p> <p>Participant attempts to reach across the 40-cm line on template by extending the elbow (to the side). Elbow can be lifted off the table during the task. This may be the only way shorter subjects can reach 40-cm line. Shoulders should be kept level to prevent leaning with the trunk. Some external rotation at the shoulder is necessary to carry out this movement, but the examiner should prevent too much of this movement.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when any part of the thumb crosses the line.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the time any part of the thumb initially crosses the line.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Slide your hand across the table by moving your hand away from your body and straighten your elbow to its fullest extent; like this. Your thumb should cross this line (point to the 40-cm line). You can raise your elbow from the table if you like. Also, please keep your shoulders level and just move your arm; just like this (demonstrate). Do not lean over; keep your body as straight as possible. Do this as quickly as you can.” • (Note: the participant should <u>slide</u> his/her hand across the table. Repeat the task if the hand is lifted off the table <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Straighten your elbow as fast as you can. Slide your hand across the table so your thumb crosses this line (point to 40-cm line).” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) whether the elbow is extended, 3) whether the hand remains in contact with the table, and 4) the speed, fluidity, and precision with which movements are performed. • The elbow can be lifted off the table. Also, some shoulder external rotation and abduction is necessary, but inadequate or excessive motions of this type of should be noted.

4. Extend elbow (to the side) – with weight

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (side) • Hips against back of chair • Table surface should be lightly dusted with baby/talcum powder • Hand not being test in lap • Shoulder of test arm abducted with forearm resting flat on table in a pronated position. Palmar surface of hand need not be flat on table. • Forearm being tested is resting on, adjacent and parallel to front edge of table; elbow at 14-cm line. • 1 lb. weight placed at ulnar edge of wrist; distal end of the weight is aligned with ulnar styloid process. (i.e. the weight is only touching the forearm) • Filming Position (Side-Facing) 	<p><u>Task Description:</u></p> <p>Participant attempts to push the weight across the 40-cm line on template by extending the elbow (to a lesser extent) externally rotating shoulder. Elbow should be kept on the table throughout the task (different from the previous task), shoulders should be kept level to prevent leaning with the trunk. Again, the examiner needs to be aware of participant’s trunk leaning and/or excessive external rotation at the shoulder to perform task (especially true for taller men). Note: the weight is to remain in contact with the forearm throughout the task. Repeat the task if the subjects swats the weight.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when any part of the thumb crosses the line.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the time any part of the thumb initially crosses the line.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Push the weight across the table by moving your hand away from your body and straighten your elbow to its fullest extent; like this. Your thumb should cross this line (point to the 40-cm line). Your forearm should remain in contact with the weight until your thumb crosses the line. Also, please keep your shoulders level and just move your arm; just like this (demonstrate). Do not lean over; keep your body as straight as possible. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “While your elbow is resting on the table, straighten your arm – pushing the weight your thumb crosses this line (point to 40-cm line) as fast as you can; like this.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 3) whether the forearm remains in contact with the weight, and 3) the speed, fluidity, and precision with which movements are performed. • Some shoulder abduction is necessary, but inadequate or excessive motions of this type shoulder be noted. • If the forearm doesn’t remain in contact with the weight, a maximum score of 3 should be assigned. • If accomplished with excessive compensatory trunk movement and/or very limited elbow extension, a maximum score of 2 should be assigned

III. **Three task (5, 6, &7): Functional ability of the shoulder of the involved upper extremity performed to the front of the participant.**

5, Hand to table

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Both hands in lap • Participant positioned so that leaning is not necessary to uncomfortable to reach the table • Filming Position (Side-Side) 	<p><u>Task Description:</u></p> <p>Participant attempts to place hand being tested on the table. The heel of the hand must rest beyond the 2 cm line. The palmar surface of the hand need not be flat. (The subject should place most of the hand in the circle.)</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when the heel of the hand and fingers touch table beyond the 2 cm line.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the heel of the hand and fingers touch table beyond 2 cm line.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Place your hand on the table so that the heel of your hand is beyond this line (point to 2 cm line). Most of your hand should be placed in the circle (demonstrate); like this. Your hand does not need to be flat. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Place your hand on the table in this circle (point to circle) as fast as you can like this.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed. • Note: The final posture of the hand and fingers does not influence scoring as long as the heel of the hand is in contact with the table.

6. Hand to box (front)

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hand not being tested in lap • Hand to be tested placed on table, heel of hand just beyond 2 cm line, (i.e., just past line, in circle – in final position on last task). • Box centered on table; front edge aligned with 20 cm line. Box should be stabilized by someone during the trial. • Filming Position (Side-Side) 	<p><u>Task Description:</u></p> <p>Participant attempts to place hand on the box. The heel of the hand must be placed past the front edge of box. The palmar surface of the hand need not be flat.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when the heel of the hand and fingers touch the box past the front edge of box</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the heel of the hand and fingers touch box past the edge of the box.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Lift your hand from the table and place it on the box so that the heel of your hand goes past the edge of the box; like this. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Place your hand on the box as fast as you can.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed. • Note: The final posture of the hand and fingers does not influence scoring as long as the heel of the hand and fingers are in contact with the box.

7. Weight to box

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hand not being tested in lap • Heel of hand just beyond 2 cm line. • Cuff weight(s) in place around forearm to be tested; stacking of weights begun just distal to the elbow. The weights should be stacked while arm to be tested is resting on the table to avoid fatiguing the arm. • Participant's hand should be placed on the table in the circle on the template with the elbow off the table. Cuff weight should be unsupported. If the participant is unable to maintain the hand flat in the circle with the weight unsupported, a lighter weight should be tried until they are able to achieve the correct starting position, i.e. with weight unsupported • Cuff weights with 1 lb. inserts are preferable • Box centered on table; front edge aligned with 20 cm line. Box should be stabilized by someone during the trial. • Not filmed 	<p><u>Task Description:</u></p> <p>Participant attempts to place the (weighted) hand being tested on the box so that the heel of hand rests beyond the front edge of the box. Participant should not be permitted to lean in and use the body to help lift the weight; the entire back should remain in contact with the chair (scapular protraction of the moving UE is allowed). Tester must, place their fingers behind the subject's back at the top of the chair to determine if the subject's back moves away from the chair. In stacking the weights near wrist, be sure to leave enough room for weights to clear the table.</p> <p><u>Timing Procedure:</u></p> <p>Not applicable.</p> <p><u>Measure:</u></p> <ul style="list-style-type: none"> • Amount of weight participant is able to lift to the box while keeping his/her back against the chair (not timed as previous tasks). • Weight amounts in the order attempted should be recorded. The maximum amount of weight lifted should be document on the set-up form for use at subsequent evaluations. 	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Place your hand on the box so that the heel of your hand is beyond the front edge of the box (demonstrate); like this. Keep your back against the chair. That is very important. Take your time you do not need to hurry." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Lifting this weight on your arm place your hand on the box." • "Do you have any questions?" • "When you are ready, place your hand on the box." <p><u>Special Considerations:</u></p> <ul style="list-style-type: none"> • For the initial trial, the examiner should subjectively determine the appropriate starting weight by resisting the participant's attempt to hold the elbow extended, shoulder flexed to 90°. The stronger the participant appears, the higher the initial weight should be. If participant is weak, task should begin with lower initial weight. Increases in the amount of 2 lbs. Should continue until the participant's maximum or 20 lbs. is reached. When the participant has reached his/her apparent maximum, the next trial should be 1 lb. less. If that weight can be lifted, it is recorded as the maximum. A 2 minute rest period should be allowed after every three trials. • For follow up evaluations, starting weight should be the 80% of the maximum weight recorded from previous evaluation. • State amount of weight lifted for each trial

IV. **One, Task (8); Functional ability of the elbow of the involved upper extremity; performed to the front of the participant.**

8. Reach and retrieve

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front-close) • Hips against back of chair • Re-powder table. • 1 lb. weight centered on table and positioned just beyond 40-cm line. • Hand not tested in lab. • Elbow of arm to be tested extended, forearm in mid-position of pronation and supination and palm of hand in contact with weight. • The subject must be able to maintain the starting position while the tester states "Ready!,Set!, Go!" • Filming Position (Side-Side) 	<p><u>Task Description:</u></p> <p>Participant attempts to pull 1 lb. weight across the 8 cm line. Task object is a cuff weight folded so that is approximately 7.6 cm, (3") on each side, and kept in place by a velcro fastener. Assign a 120+ if the participant cannot attain the starting position.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when any part of the weight crosses the 8 cm line.</p> <p><u>Measure:</u></p> <p>The amount of time elapsed from the starting point to the moment the leading edge of the weight crosses the 8 cm line.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Slide the weight across the table toward you until it is past the 8 cm line (point to red line). Do the task entirely by bending your elbow and keeping your thumb facing the ceiling (demonstrate); like this. The weight should remain in contact with your hand until it crosses this line (point to red line). Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Bend your elbow with your thumb facing up, sliding the weight across the table as fast as you can." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) Whether the activity is performed by bending the elbow as opposed to using excessive upper arm or hand movements (i.e. swatting the weight with the hand), and 3)the speed, fluidity, and precision with which movements are performed. • If the participant's forearm loses contact with the weight or pronates, a maximum FA score of 3 should be assigned. • If the participant is unable to maintain the starting position without physical assistance, a zero is assigned and activity is not attempted.

V. **Nine Tasks (9-17)**, Functional ability of the arm and hand of the involved upper extremity; performed to the front of the participant.

9. Lift Can

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • Unopened 12 oz. soft drink can (392 gm) placed on table at participant’s midline with front edge of can just beyond 20 cm line. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Participant attempts to lift the can and bring it close to lips with a cylindrical grasp. An overhand grasp is not allowed for this task. Note: If the participant performs the task by lifting the can using an overhand grasp, repeat the task one more time. Assign a 120+ if the task is completed with an overhand grasp.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when can is within approximately on inch of participant’s mouth.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the can is within approximately on inch of participant’s mouth.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Lift the can to your mouth without touching your lips; like this (demonstrate). It is very important that you use the appropriate grasp is not allowed (demonstrate both grasp). Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Lift the can to your mouth as fast as you can.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) the directness of the trajectory to the mouth, 3) the speed, fluidity, and precision with which movements are performed.

10. Lift Pencil

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • 7" pencil (with 6 flat sides) placed parallel to front edge table, centered on participant's midline with front edge of can just beyond 20 cm line. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Participant attempts to pick up the pencil using 3-jaw chuck grasp (thumb and first two fingers). The pencil should be picked up on the table and not over the edge of the table. Note: If the participant performs the task by lifting the pencil over the edge of the table once repeat the task one more time. Assign a 120+ if the task is completed by bringing the pencil over the edge of the table. **Encourage the participant to use a 3-jaw chuck grasp.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when entire pencil (all surfaces) is raised from table at least ½ inch. Evaluator should be positioned at eye level with the tabletop. Evaluator should verbalize the grasp used, whether it is correct 3-jaw chuck grasp, or another grasp.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the entire pencil is raised from the table.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Pick up the pencil using your thumb and first two fingers and hold it in the air like this (demonstrate). The pencil should be picked up on the table and not over the edge of the table. Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Pick up the pencil as fast as you can." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) whether the appropriate grasp is used (3-jaw chuck), 3) the speed, fluidity, and precision with which movements are performed. • A 3-jaw chuck grasp should be used. If another grasp is used, a maximum FA score of 2 should be assigned • Raters should take into accounts the participant's control of the grasp. If the participant immediately drops the pencil, a maximum FA score of 3 should be assigned.

11. Lift paper clip

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • 2" paper clip (coated and colored) placed parallel to front edge table, centered on participant's midline with front edge of can just beyond 20 cm line; the wider edge of the paper clip should be facing towards the side to be tested • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Participant attempts to pick up the paper clip using a pincer grasp (pads of thumb and index finger). The paper clip should be picked up on the table and not over the edge of the table. Note: If the participant performs the task by lifting the pencil over the edge of the table once repeat the task one more time. Assign a 120+ if the task is completed by bringing the clip over the edge of the table. **Encourage the participant to use a pincer grasp.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when entire paper clip is raised from table at least ½ inch. Evaluator should be positioned at eye level with the tabletop. Evaluator should verbalize the grasp used, whether it is correct pincer grasp, or another grasp.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the entire paper clip is raised from the table.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Pick up the paper clip using your thumb and index finger and hold it in the air like this (demonstrate). The paper clip should be picked up on the table and not over the edge of the table. Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Pick up the paper clip as fast as you can." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) whether the appropriate grasp is used (pincer grasp), 3) the speed, fluidity, and precision with which movements are performed. • A pincer grasp should be used. If another grasp is used, a maximum FA score of 2 should be assigned • Raters should take into accounts the participant's control of the grasp. If the participant immediately drops the paper clip, a maximum FA score of 3 should be assigned.

12. Stack Checkers

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • Three checkers are placed in a line parallel to front edge of table with front edge of each checker just beyond 20 cm line. (See circle outlines on template). Checkers are spaced 4.5 cm apart with middle checker at participant's midline. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Participant attempts to stack the two end checkers onto the center checker. The task can be executed by picking up either checker first.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when participant has placed the third checker in required position.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the third checker is in place.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Stack the two end checkers onto the center checker. The checkers do not have to be perfectly stacked, but the top two checkers must not touch the table surface (demonstrate incorrect method of at least one checker still touching the table surface in the stacked position. See special consideration). Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Stack the two end checkers onto the center checker as fast as you can." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Special Consideration</u></p> <p>Checkers may be out of alignment, but in order for the task to be considered completed, the top two checkers may not be touching the table surface. The tested should demonstrate what is not acceptable.</p> <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed. • The checkers so not need to be perfectly aligned; therefore do not deduct rating points based on alignment of checkers.

13. Flip Cards

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • Three 3" x 5" index cards with a black line at top of each card; placed to front line parallel to front edge of table, with short (3") far edge of card facing participant just beyond 20 cm line. Cards spaced 3 cm apart with middle card at participant's midline. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Using a pincer grasp on the near edge of cards, participant attempts to flip each of the cards over. This task should be done by sliding the front edge of the card just past the front edge of the table with some or all of the fingers and then grasping the card edge protruding past the edge of the table between the palmar surface of thumb and index finger. Cards should be flipped over from side to side (rather than from front to end). Evaluator should emphasized supination/pronation in demo. The cards do not have to be straightened or adjust after they have been turned over. The participant should first flip over the card on side being tested, then the center card and then the card on the opposite side.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when entire participant has flipped all cards into a new position.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the entire the third card has been flipped over and released onto the table.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • "Flip each of the cards over. You should slide the card toward you so that it goes a little over the edge of the table. Start with the card on your (state side (R/L), to match side being tested) side, then the center card, and then the card on your (state side (R/L) from above) side. The cards should be flipped over from side to side like this (demonstrate) rather than from end to end (demonstrate); not like this. You should turn your forearm over like this (Demo supination) instead of just using your fingers to flip the card over. The cards may land anywhere on the table so you do not need to straighten the cards after turning them over. Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • "Flip each of the cards over, from side to side, as fast as you can." • "Do you have any questions?" • "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) the extent the forearm supinates when turning the cards, 3) the dexterity of the fingers and 4) the speed, fluidity, and precision with which movements are performed. • If the participant makes more than 2 attempts on any card, a maximum FA score of 2 should be assigned. • If the participant fails to flip all cards side to side, a maximum FA score of 3 should be assigned.

14. Grip Strength

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front-close) • Hips against back of chair • Hand not being tested on thigh • Upper extremity to be tested placed on table, olecranon process at front edge of table, forearm in neutral position, elbow flexed, shoulder slightly flexed and in 0° abduction. • The hand-held dynamometer is set on the second setting position. • Grip strength dynamometer placed in hand that is resting on the table. The tester or an assistant should stabilize the dynamometer for the participant from the front of the participant • Not filmed 	<p><u>Task Description:</u></p> <p>Participant attempts to grip the dynamometer with greatest grip strength possible. The test should be conducted 3 times with a 1-minute rest between trails.</p> <p><u>Timing Procedure:</u></p> <p>Not applicable</p> <p><u>Measure:</u></p> <p>The mean of grip strength exerted (kg) on 3 trials</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Squeeze the handle as far as you can for at least 3 seconds and then let go when I say “Release.” I will ask you to do this 3 times with a 1-minute rest between attempts.” (repeat instructions) • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously).

15. Turn Key in Lock

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • Lock and key board is stabilized at a 45 degree angle, preventing board from moving when used by participant; board held parallel to front edge of table, just beyond 8 cm line and centered on participant’s midline. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Using a lateral pincer grasp, participant attempts to move the key in the lock from the vertical position first to the side being test, then to the opposite side and finally back to the vertical starting position. Tumblers of the lock are set so that the key moves through a 180 degrees arc (only), with 90 degrees of that arc on either side of the midline. **encourage participant to use lateral pincer grasp.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when the key is in the starting position.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the key is in the starting position.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Grasp the key between your thumb and your forefinger (demonstrate lateral pincer grasp) like this and turn the key, first to the (state (R/L) side being tested) as far as the key will turn, then to the (state (R/L) opposite side) as far as the key will turn and finally return the key to the original vertical position. Be sure you move the key until you reach this point. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Turn the key in the lock, first to the (state R/L side being tested) and then to the (state R/L opposite side), then back to the middle, as fast as you can.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) whether the appropriate grasp is used (lateral pincer grasp), 3) whether the forearm moves into pronation and supination as the key is turned, and 4) the speed, fluidity, and precision with which movements are performed. • If the participant doesn’t turn the key in the correct sequence (i.e. turn key to side being test first), a maximum of 3 should be assigned for FA score • If a grasp other than a lateral pincer grasp is used, a maximum FA score of 3 should be assigned.

16. Fold towel

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> • Chair Position (front) • Hips against back of chair • Hands in lap • Towel is placed flat on table centered on participant with front long edge of towel at 8 cm line. • Filming Position (Side-Close) 	<p><u>Task Description:</u></p> <p>Participant picks up the towel with both hands, grasping the far corners of the towel. The participant first folds the towel lengthwise. The participant then folds the towel in half again across its center (widthwise). The second fold is done with the arm being tested only and is done from the side of the towel corresponding to the arm being tested. The folding does not need to be exact, but the ends of the towel need to be approximately aligned (within 1.5 inches).</p> <p><u>Timing Procedure:</u></p> <p>Starts on word “Go” and ends when the towel is completely folded on the table.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the towel is completely folded on the table.</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> • “Grasp the far corners of the towel and fold it lengthwise like this (demonstrate). Then fold it in half across its center by using your (state (R/L) the side being tested) arm. Try to get the ends of the towel close together (demonstrate). In order to complete the task, the ends of the towel must be close together. Do this as quickly as you can.” <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> • “Grasp the far corners of the towel and fold towards you, then fold in half using your (state (R/L) side being tested) hand as fast as you can.” • “Do you have any questions?” • “Ready!, Set!, Go!” (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> • FA scoring should take into account: 1) the extent to which the head and trunk are maintained in normal alignment, 2) the symmetry of the arms as they fold the towel for the first fold, 3) the speed, fluidity, and precision with which movements are performed. • The ends of the towel do not need to be exactly aligned after the second fold, but ends of the towel need to be approximately aligned (within 1.5 inches).

17. Lift Basket

SET UP	TASK	VERBAL INSTRUCTIONS
<p><u>Starting Position:</u></p> <ul style="list-style-type: none"> Participant standing and facing table Bedside table is placed over the desk on the participant's side being tested. The table's height is adjusted so that the participant will not exceed 90° abduction, when the basket is placed on the table with the desired grasp. The bedside table extends along the width of the desk Basket at 8 cm line, with leading edge at 14 cm line on side to be tested, handles taped together and lined up with the center of body. Three 1 lb. weight placed in basket Filming Position (Front) 	<p><u>Task Description:</u></p> <p>Participant attempts to pick up basket by grasping handle (from underneath the handle) and placing the basket on far edge of the rolling bedside table. The far edge of the basket should touch the far edge of the table.</p> <p><u>Timing Procedure:</u></p> <p>Starts on word "Go" and ends when any portion of the base of the basket extends beyond the far edge of the bedside table.</p> <p><u>Measure:</u></p> <p>The time elapsed from the starting point to the moment the basket has been placed on the bedside table with any portion of the base of the basket beyond the far edge of the bedside table. (Note: release of the basket is not included in the time measure).</p>	<p><u>Verbal Instructions while demonstrating slowly:</u></p> <ul style="list-style-type: none"> "Pick up the basket with your (R/L) hand and place the basket on the table. The far edge of the basket should go past the far edge of the bedside table (demonstrate); like this. Try not to move your feet while you do this task. Do this as quickly as you can." <p><u>Verbal Instructions while demonstrating quickly:</u></p> <ul style="list-style-type: none"> "Pick up the basket with your (R/L) hand and place the basket on the table as fast as you can." "Do you have any questions?" "Ready!, Set!, Go!" (said quickly and vigorously). <p><u>Scoring:</u></p> <ul style="list-style-type: none"> FA scoring should take into account the extent to which the head and trunk are maintained in normal alignment and the speed, fluidity, and precision with which movements are performed. If the participant moves out of the original foot position, a maximum FA score of 3 should be assigned. The task is demonstrated with the leading edge of the basket crossing the far edge of the bedside table first. If other portions of the basket cross the far edge first, a maximum FA score of 3 should be assigned. The task is demonstrated without rotating the trunk. If the participant significantly rotates their trunk during the task, a maximum FA score of 3 should be assigned.