

“THE UPPER MRD PROGRAM”

Just like the LOWER MRD, the UPPER MRD is an “open kinetic” chain device. But unlike the LOWER MRD, the exercises are done in a “closed kinetic” chain stance with the feet on the ground. Alignment of the skeletal structure from the feet to head are important when performing the shoulder motions described below. Good static posture and alignment while doing the motions on either MRD is an important key to a successful outcome.

A common issue in rehabilitation of the shoulder is the imbalance of tension between the mobility function of the deltoid muscle especially during functional activities that are above shoulder level and the rotator cuff muscles whose main function is stability of the glenohumeral joint. The goal of the following program for the UPPER MRD is restoring that balance. Let’s get started.

KEY POINTS TO REMEMBER FOR ALL SHOULDER MOTIONS:

- STATIC POSTURE AND ALIGNMENT ARE IMPORTANT WITH ALL SHOULDER MOTIONS. TO START EACH MOTION, HEAD AND FACE IS STRAIGHT AHEAD AND CHIN IS PARALLEL WITH THE FLOOR SO NECK IS IN A “NEUTRAL POSITION.” PELVIC AND SHOULDER GIRDLES ARE STRAIGHT AHEAD. FEET ARE STRAIGHT AHEAD WITH EQUAL WEIGHT BETWEEN BALL OF LITTLE AND BIG TOES AND INSIDE AND OUTSIDE OF HEELS. LOOK FOR SYMMETRY OF STRUCTURE.**
- ALIGN AXIS OF MOTION FOR THE GLENOHUMERAL JOINT OF THE SHOULDER WITH THE AXIS OF MOTION FOR THE UPPER MRD FOR ALL MOTIONS.**

- WORK WITHIN THE “DYSFUNCTIONAL PAIN” RANGE OF MOTION (ROM) ARC. THAT IS, THE MOTION OF THE SHOULDER THAT OCCURS UNTIL FIRST EXPERIENCING PAIN AND/OR STRETCH AND HOLD. THIS IS NOT A SITUATION OF “NO PAIN, NO GAIN” TRYING TO MOVE THROUGH THE PAIN.**
- HOLD THE END POSITION OF THE “DYSFUNCTIONAL PAIN” ARC INITIALLY FOR 5 SECONDS AND GRADUALLY INCREASE THE HOLDING TIME TO 30 SECONDS.**
- BEGIN DOING REPETITIONS OF 3-6 AND GRADUALLY INCREASE TO 6-12 TIMES FOR EACH SESSION. BREAK SESSIONS UP DURING THE DAY USING THE UPPER MRD RATHER THAN DOING ONE LONG, SESSION.**
- KEEP RESISTANCE OF UPPER MRD AT “ZERO” UNTIL TREATING SURGEON GIVES THE OKAY TO PUT AN EXTERNAL LOAD ON THE TISSUES SURGICALLY INVOLVED. ONCE IT IS OKAY, GRADUALLY INCREASE THE RESISTANCE. IF CLIENT CAN DO 12 REPETITIONS WITH RELATIVE EASE AT A RESISTANCE SETTING, INCREASE THE RESISTANCE. HAVE THE CLIENT WORK UP TO 12 REPETITIONS AGAIN BEFORE CHANGING RESISTANCE.**

Before getting into the shoulder motions, have the client familiarize themselves with the UPPER MRD by first flexing and extending the elbow in the sagittal plane. Remember, the UPPER MRD is active movement with no active-assist arm as with the LOWER MRD. However, the client is still in control of their motion working within the “dysfunctional pain” arc. Begin with elbow flexion and extension in order to build confidence before getting to the more complex shoulder motions.

Position the handle with the arm at side of body and the elbow is extended. This is the starting position for elbow flexion and extension.

Keep upper arm close to side with palm facing side of body. Flex elbow up to 90° or more until first experiencing dysfunctional pain and back into elbow extension 0°, the starting position.

Get client familiarized with changing the sensory input as done with each shoulder motion. With elbow flexion and extension, eyes stay closed as with all shoulder motions to eliminate the influence of vestibular-ocular reflexes. Move eyes out to the L and down as flex the R elbow until first experiencing a stretch or pull. Move eyes out to the L and up and slowly extend elbow back with control to starting position. Relax eyes and repeat. Can do this sequence as many times as necessary until client feels confident and safe using the UPPER MRD.

1) SAGITTAL PLANE SHOULDER MOTION FOR ANTERIOR/ POSTERIOR DELTOID:

Begin working the shoulder in the sagittal plane (flexion and extension) with eye movements being out and down on opposite side as shoulder flexion and out and up on opposite side as shoulder extension.

Starting position will be with R arm at side of body, elbow extended (0°), and palm of hand facing side of body. Adjust the handle of the UPPER MRD arm accordingly to the starting position.

Have client close eyes and move eyes out to the L and down as moving arm up into shoulder flexion until first experiencing pain and/or stretch and hold. Initially, hold the shoulder flexion position for 5 seconds and gradually increase to a maximum of 30 seconds.

Keeping eyes closed, have client move eyes out to the L and up while slowly moving arm back in shoulder extension with control to the starting position and past the hip if possible where first experiencing pain and/or stretch and hold. Hold initially for a count of 5 seconds and gradually increase to a maximum of 30 seconds. Relax R shoulder and arm, eyes L and up, and return to starting position. Repeat this cycle of shoulder flexion and extension 3-12 times.

You can have the client do this with both shoulders as with all the shoulder motions. If there is a significant fear of moving the involved extremity, start with the uninvolved limb and then do the involved limb. It has been my own personal experience and also in working with post-surgical shoulders, that there is a real fear to overcome when beginning shoulder motion after surgery or an injury.

With shoulder extension, initially this motion has very little resistance because of working with gravity's assistance. As a result, there is not much resistance being experienced by the client. Once it is okay with the treating surgeon, resistance can be applied by using the UPPER MRD resistance mode with shoulder flexion and extension. Keep this in mind when doing other shoulder motions with the assistance of gravity.

**KEY POINTS TO REMEMBER FOR SHOULDER FLEXION/
EXTENSION MOTION AFFECTING POSTERIOR/
ANTERIOR DELTOID:**

- **ALIGNMENT AND POSTURE ARE IMPORTANT TO A SUCCESSFUL OUTCOME.**
- **STARTING POSITION OF ARM IS AT SIDE WITH PALM OF HAND FACING SIDE OF BODY.**
- **EYES ARE CLOSED AND OUT AND UP ON OPPOSITE SIDE OF SHOULDER FLEXION MOTION AND EYES ARE CLOSED AND LOOK OUT AND DOWN ON OPPOSITE SIDE OF SHOULDER EXTENSION MOTION.**

2) FRONTAL PLANE SHOULDER MOTION FOR MIDDLE DELTOID AND ROTATOR CUFF:

As the client gains confidence and has less fear of moving the surgically repaired or traumatized shoulder, begin frontal plane motion (abduction/adduction) that involves tilting or side bending of the head and neck as well as eye movements on the same side as shoulder abduction/adduction motion.

Starting position is with arm at side, elbow slightly flexed and palm facing front of body so adjust the UPPER MRD handle accordingly.

Have the client close their eyes and keeping their head and face straight ahead, position the head and neck so it is tilted or side bent 15-30° toward R shoulder and hold.

Keeping the eyes closed, have client move eyes out to the R and up as raising R arm out from side into shoulder abduction until first experiencing pain and/or stretch and hold. Initially, hold for 5 seconds and gradually increase to a maximum of 30 seconds.

Keeping eyes closed with head and neck tilted toward R shoulder and eyes out to the R and up, have client slowly bring R arm in shoulder adduction with control to side of body and the starting position. Relax head and neck tilt R, eyes R and up, and R shoulder and arm. Repeat cycle of shoulder abduction/adduction motion 3-12 times.

Alter the position of client's R hand so palm is now toward side of body and elbow extended. Adjust UPPER MRD handle accordingly. This is the starting position.

Head and face is vertical with no side bend or tilt and straight ahead with chin parallel with the floor. Have client close their eyes and move eyes out to the R and down. Keeping elbow extended, raise R arm out from side in abduction until first experiencing pain and/or stretch or shoulder level and hold. Hold initially for 5 seconds and gradually increase to a maximum of 30 seconds. Keeping eyes out to R and down, slowly adduct R arm with control to starting position at side of body. Relax eyes R and down, R shoulder, and R arm. Repeat 3-12 times.

L shoulder abduction/adduction with starting position of arm at side having palm facing forward and elbow slightly flexed is done in the same manner.

Eyes are closed and head and neck side bent or tilted 15-30° toward L shoulder. Move eyes out to the L and up as raise L arm up in shoulder abduction and down in shoulder adduction.

With L shoulder abduction/adduction and the starting position of arm at side and palm facing side of body, close eyes. Head and neck is vertical with no side bend or tilt and straight ahead having chin parallel with the floor. Move eyes out to the L and down as raise L arm up in shoulder abduction to shoulder level or below and back down in shoulder adduction.

KEY POINTS TO REMEMBER FOR SHOULDER ABDUCTION/ADDITION MOTION:

- ALIGNMENT AND POSTURE IS IMPORTANT TO A SUCCESSFUL OUTCOME.**
- EYES ARE CLOSED.**
- HEAD AND NECK IS TILTED OR SIDE BENT 15-30° WITH EYES OUT AND UP TO SAME SIDE AS SHOULDER ABDUCTION/ADDITION MOTION WHILE HAVING STARTING POSITION OF ARM WITH PALM FACING FORWARD.**
- HEAD AND NECK IS VERTICAL AND STRAIGHT AHEAD WITH EYES OUT AND DOWN TO SAME SIDE AS SHOULDER ABDUCTION/ADDITION MOTION WHILE HAVING STARTING POSITION OF ARM WITH PALM OF HAND TOWARD BODY.**

3) FRONTAL/TRANSVERSE PLANE SHOULDER MOTION AFFECTING ROTATOR CUFF:

As client gains more confidence, the more complex shoulder movements involving rotation can start. With these rotational shoulder movements, eyes are closed and eye motion is utilized while head and neck is straight ahead and chin parallel with floor.

SHOULDER EXTERNAL/INTERNAL ROTATION AT SIDE:

Start first with the internal/external rotation of the shoulder with the starting position at side of body. Have R arm at side of body with elbow flexed to 90° and palm of hand facing toward midline of body. Adjust handle of UPPER MRD accordingly. The starting position of this exercise in review is with the R arm at side of body, elbow flexed to 90°, and palm of hand is facing midline of body.

Have client close eyes and move eyes out to the R and up as bringing R arm out into external rotation to the R until first experiencing pain and/or stretch and hold. Hold initially for 5 seconds and gradually increase to 30 seconds. Move eyes out to the R and down and slowly bring R arm back across in internal rotation with control until first experiencing pain and/or stretch and hold. Relax eyes R and down and R arm and shoulder. Repeat cycle of R shoulder external/internal rotation 3-12 times.

L shoulder external/internal rotation with arm at side is done in the same manner. With L arm in starting position, have client close eyes and move eyes out to the L and up as bring L arm out in external rotation to the L and keeping eyes closed, move eyes out to to the L and down as bring L arm back in internal rotation across to the L.

SHOULDER EXTERNAL/INTERNAL ROTATION WITH 90° SHOULDER ABDUCTION AND 90° ELBOW FLEXION AFFECTING ROTATOR CUFF:

Next is shoulder internal and external rotation with the arm at 90° of abduction and 90° elbow flexion, a more complex motion. Adjust UPPER MRD arm so R upper arm is positioned directly out to the side with shoulder abduction to 90° and upper arm is parallel with the floor with elbow flexed 90°. Adjust handle on UPPER MRD arm accordingly with palm facing toward floor in the starting position.

Position head and neck straight ahead and chin parallel to the floor. Have R arm and shoulder in starting position so palm is down toward floor. Close eyes and move eyes out to the R and up as bringing R shoulder and arm back in external rotation where first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to a maximum of 30 seconds.

Keeping eyes closed, move eyes out to the R and down as bring R shoulder forward in internal rotation to where first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to a maximum of 30 seconds.

Relax eyes R and down, R shoulder and arm, and return to starting position. Repeat cycle of R shoulder external/internal rotation 3-12 times.

L shoulder external/internal rotation with arm at 90° shoulder abduction and 90° elbow flexion is done in the same manner. With L arm in starting position and L palm toward floor, have client close eyes and move eyes out to the L and up as bring L arm up in external rotation. Keeping eyes closed, move eyes out to the L and down as bring L arm down in internal rotation.

KEY POINTS TO REMEMBER FOR SHOULDER INTERNAL/EXTERNAL ROTATION MOTION WITH ARM AT SIDE AND AT 90° SHOULDER FLEXION AND 90° ELBOW FLEXION AFFECTING ROTATOR CUFF:

- **HERE ARE TWO STARTING POSITIONS ONE WITH ARM AT SIDE AND ELBOW FLEXED TO 90° AND PALM OF HAND TOWARD MIDLINE OF BODY WHILE THE OTHER POSITION IS WITH THE ARM DIRECTLY OUT FROM THE SIDE WITH 90° SHOULDER ABDUCTION AND 90° ELBOW FLEXION.**
- **WITH BOTH STARTING POSITIONS, EYES ARE CLOSED AND EYES MOVE OUT AND UP ON SAME SIDE OF ARM MOVING IN EXTERNAL ROTATION AND EYES MOVE OUT AND DOWN ON SAME SIDE OF ARM MOVING IN INTERNAL ROTATION.**

4) SAGITTAL/TRANSVERSE PLANE SHOULDER MOTION FOR ANTERIOR/POSTERIOR DELTOID.

With these three shoulder rotational movement sequences, the eyes are closed and eyes move out and up/down opposite of shoulder and arm movement.

SHOULDER EXTERNAL/INTERNAL ROTATION AT SIDE AFFECTING POSTERIOR/ANTERIOR DELTOID:

Position head and neck straight ahead and chin parallel with the floor. Have R arm resting with palm facing midline of body. Flex R elbow to 90° and adjust handle of UPPER MRD accordingly. Starting position of this exercise is with the R arm at side of body, elbow flexed to 90°, and palm of hand facing midline of body.

Have client close eyes and move eyes out to the L and up as bring R arm out in external rotation to the R until first experiencing pain and/or stretch and hold. Hold initially for 5 seconds and gradually increase to a maximum of 30 seconds. Keeping eyes closed, move eyes out to the L and down and slowly bring R arm back across in internal rotation with control to the L until first experiencing pain and/or stretch and hold. Relax eyes L and down and R arm and shoulder. Repeat cycle of R shoulder external/internal rotation 3-12 times.

L shoulder external/internal rotation with arm at side is done in the same manner. With the L arm in starting position, have client close eyes and move eyes out to the R and up as bring L arm out to the L in external rotation. Keeping eyes closed, move eyes out to the R and down as bring L arm back in internal rotation across to the R.

SHOULDER EXTERNAL/INTERNAL ROTATION WITH 90° SHOULDER ABDUCTION AND 90° ELBOW FLEXION AFFECTING POSTERIOR/ANTERIOR DELTOID:

Next is shoulder internal and external rotation with the arm at 90° of shoulder abduction and 90° elbow flexion, a more complex motion.

Adjust UPPER MRD arm so R upper arm is positioned directly out to the side from shoulder to 90° abduction and upper arm is parallel with the floor having 90° elbow flexion and palm is toward the floor in starting position.

Position head and neck straight ahead and chin parallel to the floor. Have R arm and shoulder in starting position with palm toward floor. Close eyes and look out to the L and up as bringing R shoulder back into external rotation where first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to a maximum of 30 seconds.

Keeping eyes closed, move eyes out to the L and down as bring R shoulder forward in internal rotation to where first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to a maximum of 30 seconds. Relax eyes L and down, R shoulder and arm, and return to starting position. Repeat cycle of R shoulder external/internal rotation 3-12 times.

L shoulder external/internal rotation in 90° shoulder abduction and 90° elbow flexion is done in the same manner and same starting position having palm facing toward the floor.

Close eyes and move eyes out to the R and up as bring L shoulder and arm up in external rotation until first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to 30 seconds.

Keeping eyes closed, move eyes out to the R and down as bring L shoulder and arm down in internal rotation until first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to 30 seconds.

- KEY POINTS TO REMEMBER FOR SHOULDER INTERNAL/EXTERNAL ROTATION MOTION WITH ARM AT SIDE AND AT 90° SHOULDER FLEXION AND ELBOW FLEXION AFFECTING POSTERIOR/ANTERIOR DELTOID:**
- **THERE ARE TWO STARTING POSITIONS ONE WITH THE ELBOW FLEXED TO 90° AND ARM AT SIDE AND PALM OF HAND TOWARD MIDLINE OF BODY. THE OTHER POSITION IS WITH THE ARM DIRECTLY OUT FROM THE SIDE AT 90° SHOULDER ABDUCTION AND 90° ELBOW FLEXION SO PALM OF HAND FACES FLOOR.**
 - **EYES ARE CLOSED AND EYES MOVE OUT TO THE OPPOSITE SIDE AND UP AS DO SHOULDER EXTERNAL ROTATION MOVEMENT AND MOVE OUT TO THE OPPOSITE SIDE AND DOWN AS DO SHOULDER INTERNAL ROTATION MOVEMENT.**

**SHOULDER HORIZONTAL ABDUCTION/ADDUCTION
AFFECTING POSTERIOR/ANTERIOR DELTOID:**

Have R arm and shoulder positioned directly out in front of body to 90° shoulder flexion with the elbow extended and palm facing midline of body. Adjust the upper MRD handle accordingly. This is the starting position.

With eyes closed and out to the L and up, keep R elbow extended and swing R arm out to the R in horizontal abduction where first experiencing pain and/or stretch and hold. Initially hold for 5 seconds and gradually increase to a maximum of 30 seconds. Keeping eyes closed, move eyes out to the L and down and slowly swing R shoulder and arm with control back in horizontal adduction toward the starting position and eventually crossing the midline of the body until first experiencing pain and/or stretch. Initially hold for 5 seconds gradually increasing to a maximum of 30 seconds. Relax R shoulder and arm and eyes L and down. Repeat cycle of R shoulder horizontal abduction and horizontal adduction 3-12 times.

L shoulder horizontal abduction/adduction is done in the same manner with arm starting in 90° shoulder flexion, elbow extension, and palm of hand facing toward midline of body. Close eyes and move eyes out to the R and up as bring L shoulder and arm out in horizontal abduction to the L. Keeping eyes closed, move eyes out to the R and down as bring L arm across in horizontal adduction to the R toward starting position and eventually across midline of body.

**KEY POINTS TO REMEMBER FOR SHOULDER
HORIZONTAL ABDUCTION/HORIZONTAL ADDUCTION
MOTION:**

- GOOD POSTURE AND ALIGNMENT ARE THE KEY TO A SUCCESSFUL OUTCOME.**
- STARTING POSITION IS WITH ARM OUT IN FRONT OF BODY TO 90° SHOULDER FLEXION AND ELBOW EXTENDED SO PALM IS TOWARD MIDLINE OF BODY.**
- EYES ARE CLOSED AND MOVE OUT OPPOSITE AND UP AS DOING SHOULDER HORIZONTAL ABDUCTION AND MOVE OUT OPPOSITE AND DOWN AS DOING SHOULDER HORIZONTAL ADDUCTION.**