ATLANTIC ORTHOPAEDIC SPECIALISTS
Leaders in Orthopaedic Health

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Road Map for Rehabilitation Following: Total & Reverse Total Shoulder Arthroplasty

* BPCI-A Model *

Total Shoulder (TSA)	Reverse Total Shoulder (RTSA)

Phase I: Pre-Op
• The patient is scheduled for surgery.
• Patient offered to attend the AOS pre-op education class.
  ○ The class will cover background information, review of the replacement surgery, post-op expectations in regards to pain, how to manage pain, wound care, sling wear, do's and don'ts, and general ADLs.
• The class will also cover the patients home exercise program (HEP) that the physician and rehab team have endorsed for the first 6wks post-op.
  ○ A break-out session during the pre-op class is conducted.
  ○ Patients get the opportunity to review their post-op therapy HEP that they are expected to perform, regardless of BPCI.
	Phase I: Pre-Op
	• The patient is scheduled for surgery.
	• Patient offered to attend the AOS pre-op education class.
	  ○ The class will cover background information, review of the replacement surgery, post-op expectations in regards to pain, how to manage pain, wound care, sling wear, do's and don'ts, and general ADLs.
	• The class will also cover the patients home exercise program (HEP) that the physician and rehab team have endorsed for the first 6wks post-op.
	  ○ A break-out session during the pre-op class is conducted.
	  ○ Patients get the opportunity to review their post-op therapy HEP that they are expected to perform, regardless of BPCI.

Phase II: Surgery
• The patient has moved forward with surgical replacement
  ○ The patient will be in-patient at a local hospital.
  ○ Patients are encouraged to discharge to home the following day. Some discharge same-day.
  ▪ Although, some patients may require an extended stay, the will hopefully be d/c to home after the 2nd or 3rd night.
  ▪ Again, some require further care such as Short-Term Rehab Facility (STRF), however this is discouraged if appropriate.
	Phase II: Surgery
	• The patient has moved forward with surgical replacement
	  ○ The patient will be in-patient at a local hospital
	  ○ Patients are encouraged to discharge to home the following day. Some discharge same-day.
	  ▪ Although, some patients may require an extended stay, the will hopefully be d/c to home after the 2nd or 3rd night.
	  ▪ Again, some require further care such as Short-Term Rehab Facility (STRF), however this is discouraged if appropriate.

Phase III: Rehabilitation I
• Patients will be encouraged to complete out-patient rehabilitation vs Home Health.
• For TSAs, out-patient therapy will be encouraged to start immediately, both at home and with a rehab specialist.
  ○ Following surgery, the patient will already have their location for rehab set.
  ○ Our office will send a script prior to surgery, detailing the expectations of post-op rehab.
	Phase III: Rehabilitation I
	• Patients will be encouraged to complete out-patient rehabilitation vs Home Health.
	• For RTSAs, out-patient therapy will be encouraged to start immediately, both at home and with a rehab specialist.
	  ○ Following surgery, the patient will already have their location for rehab set.
	  ○ Our office will send a script prior to surgery, detailing the expectations of post-op rehab.

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○ Patients will have two (2) immediate post-op therapy visits to evaluate, treat, review exercises/instruct HEP. ▪ 1 visit in the 1st week post-op. ▪ 1 visit in the 2nd week post-op. ○ The patient will then have their 2week post-op visit. ○ We well review their progress, exercises, critique form, and encourage them to continue their HEP.	○ Patients will have two (2) immediate post-op therapy visits to evaluate, treat, review exercises/instruct HEP. ▪ 1 visit in the 1st week post-op. ▪ 1 visit in the 2nd week post-op. ○ The patient will then have their 2week post-op visit. We well review their progress, exercises, critique form, and encourage them to continue their HEP.
Phase IV: Rehabilitation II • The patient will return to the office at 6wks post-op. ○ We well review their progress, HEP, D/C sling, etc. • We will provide a new script for 2 more visits of therapy. ○ 1 visit at 6-7wk post-op period. ○ 1 visit at 8-9wk post-op period. ▪ Therapy needs to evaluate/treat/review exercises/instruct a new HEP that progresses them along following the rehab protocol for TSA. ○ TSA protocol transitions from strict PROM to now focusing on AAROM/AROM/Strengthening.	**Phase IV: Rehabilitation II** • The patient will return to the office at 6wks post-op. ○ We well review their progress, HEP, etc. • We will provide a new script for 2 more visits of therapy. ○ 1 visit at 6-7wk post-op period. ○ 1 visit at 8-9wk post-op period. • Therapy needs to evaluate, treat, review exercises/instruct a new HEP that progresses them along following the rehab protocol for RTSA. • RTSA protocol transitions from strict PROM to now focusing on AAROM/AROM/Strengthening.
Phase V: Rehabilitation III • The patient will return to the office at ~12wks post-op. ○ We well review their progress, HEP, etc. • We will provide a new script for two (2) visits of therapy. ○ 1 visit at 12-13wk post-op period. ○ 1 visit at 14-15wk post-op period. ▪ Therapy needs to evaluate/treat/review exercises/instruct a new HEP that progresses patient along following the rehab protocol for TSA. ○ Protocols typically continue transitioning from strict PROM and gradual AAROM/AROM/Strengthening to more aggressive AROM and strengthening. • If the patient is improving, progressive function, and has been given a HEP (3mos. and beyond), patient can D/C to a HEP w/o need for therapy follow-up.	**Phase V: Rehabilitation III** • The patient will return to the office at ~12wks post-op. ○ We well review their progress, HEP, etc. • We will provide a new script for two (2) visits of therapy. ○ 1 visit at 12-13wk post-op period. ○ 1 visit at 13-14wk post-op period. ▪ Therapy needs to evaluate, treat, review exercises/instruct a new HEP that progresses them along following the rehab protocol for RTSA. ○ Protocols typically continue transitioning from strict PROM and gradual AAROM/AROM/Strengthening to more aggressive AROM and strengthening. • If the patient is improving, progressive function, and has been given a HEP (3mos. and beyond), patient can D/C to a HEP w/o need for therapy follow-up.
NOTE: • **If at any time during the patient's post-op progression more formal rehab is truly required, please request the surgeon approve more visits. This can also be considered at the last phase where the patient may require more focused functional rehab before transitioning to HEP.**	**NOTE:** • **If at any time during the patient's post-op progression more formal rehab is truly required, please request the surgeon approve more visits. This can also be considered at the last phase where the patient may require more focused functional rehab before transitioning to HEP.**
Please contact myself, or Brice Snyder, MSAT, LAT, ATC, OTC; Joann Westfall, Care Manager, ACM-RN, BSN; or my staff, if you have questions, requests, or concerns.	*Please contact myself, or Brice Snyder, MSAT, LAT, ATC, OTC; Joann Westfall, Care Manager, ACM-RN, BSN; or my staff, if you have questions, requests, or concerns.*

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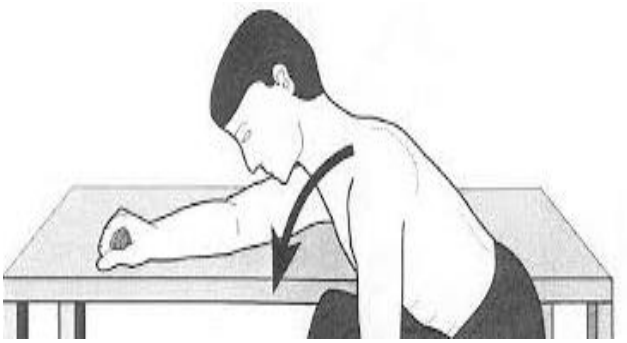
Reverse Total Shoulder Arthroplasty (RTSA) Home Exercise Program (HEP)

1. **Pendulums:** Standing, bending over at waist and using a backrest of chair for support, dangle your arm towards the floor. **Perform exercise 3-5x/day.**
   - **a.** Use momentum to start swaying your arm forward and backward for 30secs-1minute.
   - **b.** Next, use your body momentum to sway your arm side-to-side for 30sec-1minute.
   - **c.** Next, use momentum to swing your arm in small clockwise movements for 30sec-1 minute.
   - **d.** Lastly, complete counterclockwise movements for 30sec-1 minute.

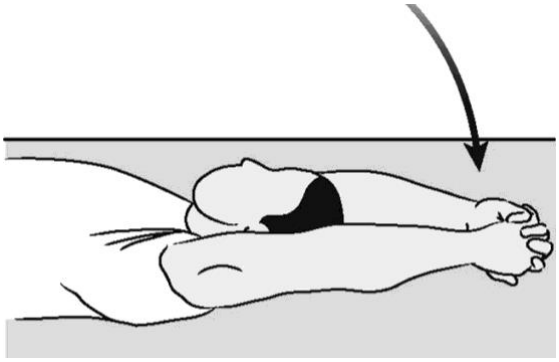
2. **Shoulder Blade Pinches:** Sitting at the edge of a chair, place hands on thighs palm down. Contract your shoulder blades down and back (results in sticking your chest out). Picture your shoulder blades trying to crisscross on your back. **DO NOT** shrug your shoulders up in the air as if to say, "I don't know". Keep your shoulders down. **Perform exercise 3-5x/day.**

Perform __5___ sets of ___20__ reps.



3. **Table Slides:** Sitting parallel with the edge of a table (as shown), place surgery arm on table. Lean over at your waist. When you lean over, your arm should slide out on the table. Sitting back up to an upright positon will make your arm slide back to the starting position. Repeat! Progressively get further and further out on to the table until you can no longer lean over any further. You may find your arm doesn't slide well, so place a pillow case under your hand/arm.
   - a. HINT: Sitting lower than table creates a higher starting angle, meaning greater flexion. As you move along with this exercise, progressively try and sit lower than your table so you gradually increase your flexion angle, which is good! **Perform exercise 3-5x/day.**

Hold for __20-30___ seconds and lower slowly.
Perform __3___ sets of __10___ reps



4. **Supine Passive Forward Elevation Stretches**: Laying on your back, start with hands at your side. Cup your hands together at your midsection. Using your good arm for all of the movement and power, lift the arms up into the air. Hold the stretch. Lower your arms back down using the power of your good arm. Your surgery arm is just along for the ride! **Perform exercise 3-5x/day.**

Hold for __20-30___ seconds and lower slowly.
Perform __3___ sets of __10___ reps.
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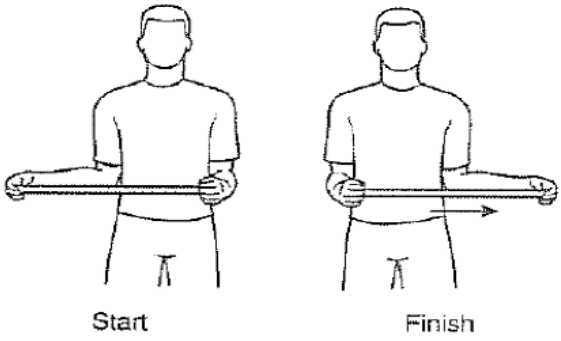
5. **Doorway Pulley:** Seated on a chair, facing away from the door (back to the door), grasp the pulley rope ends in each hand. **You may need to lower the rope to your involved hand as you may not have the ability to reach up into the air.** Grasp the other rope end with your uninvolved hand. Slowly begin pulling the rope down towards the ground under the power of your uninvolved arm. Your involved side will then begin to raise up into the air. Keep your elbow slightly bent as it goes up into the air, and towards the end of the stretch, let the elbow straighten back out. Slowly go in a reverse fashion now, bringing your involved arm back towards the floor by slowly raising your uninvolved arm up into the air. Your involved arm is essentially just along for the ride! **Perform exercise 3-5x/day.**

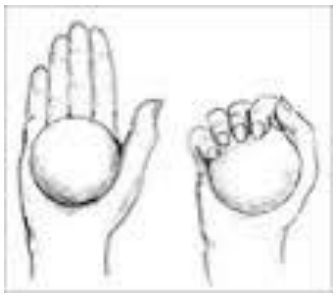
Hold for __20-30___ seconds and repeat __10-20___ times.

6. **L-Bar External Rotation (ER), Seated/Standing:** With involved arm at your side and elbow bent at 90°, grip L-Bar (OR cane, golf club, umbrella) in the hand of the involved arm, and keep elbow in this flexed position. Using uninvolved arm, gently push involved arm into external rotation.
   - **DO NOT go past 30-35° of passive ER from weeks 1-12 post-op.**
   - **Perform exercise 3-5x/day.**

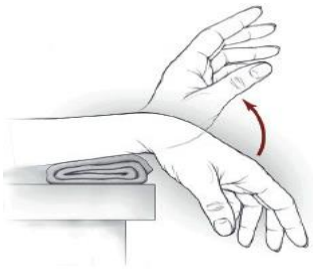
Hold for __10-15___ seconds and repeat __10___ times.



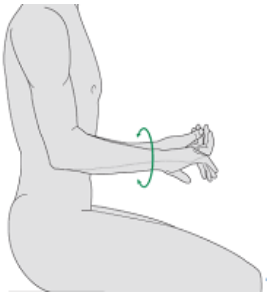
7. **Distal Extremity Exercises:** Complete these other basic Elbow, Wrist, Hand exercises from below as often as you like. You can perform them often throughout the day. They will help to increase circulation and aid in the uptake of swelling from elbow, forearm, and wrist that you may experience post-surgery.



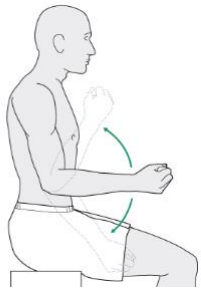
Ball Squeezes; You can do while wearing your sling.



Wrist flexion/extension; You can do while wearing your sling.



Forearm pronation/supination; You can do while wearing your sling.



Elbow flexion/extension; Complete as often as you like. Remove arm from sling, but keep arm at your side.

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Rehabilitation following:
Reverse Total Shoulder Arthroplasty (RTSA)

Background:

The RTSA is a specific type of shoulder replacement. It involves reversing the normal anatomy of the shoulder by placing the ball on the socket, and the socket is placed in the position of the humeral head. This is biomechanically allowing shoulder motion even when the rotator cuff is not working.

The indications for a RTSA include: shoulder arthritis associated with a massive rotator cuff tear, irreparable rotator cuff tears, complex proximal humerus fractures, revisions of previous shoulder replacements.

The reverse shoulder replacement was originally introduced by Dr. Gramont in France in 1985. These operations have been performed in the United States since FDA approval in 2004. The results of this operation are very promising but its use is still approached with caution.

Restrictions:

The RTSA does not have significant long term follow up greater than 10-15yrs at present, but just like most all joint replacement surgeries, complications when they occur can be severe. Therefore, we try to avoid them. The following are life-time restrictions:

1. Patients should observe a lifelong weightlifting restriction of no more than **25-30 lbs.**
2. Patients should not use the operated arm for upper extremity weight bearing.
    a. i.e. pushing hard through the arm to help stand up from a chair.
    b. Leaning hard on the operative arm when using a platform walker/walker.
3. Patients should not forcefully stretch the arm into adduction/internal rotation
    a. i.e. reaching up the back. Expect to no reach higher than the waist line.
4. Patients should not forcefully stretch the arm in extension/external rotation.
    a. i.e. reaching to the back seat of a car.
5. Dr. Carofino at the time of surgery will notify if ok to begin shoulder rehab immediately post-op or at 6week post-op. Bone quality is a limiting factor, as well fracture RTSA's.

Phase I (Weeks 1-6):

Goals:

- Progress PROM **>140°**
- Promote soft tissue healing.
- Teach a HEP and check for understanding.

Precautions:

- Stretching exercises should not be overly forceful, but progressive.
    - Each patient will achieve a different range of motion.
- Avoid AROM
- PROM/AAROM ER stretches at the side should be limited to < 30-35°.

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- Reaching behind back should be limited to the back pocket at most.

Sling Wear:

- Sling wear is currently being recommend as "for comfort only". Ok to D/C as tolerated, unless otherwise instructed to wear sling for full 6wks (Bone Graft; Fractures).
- Patients are ok to begin using their surgical shoulder in the "waist to face" zone.
  - Light activities are ok as tolerable. Reaching face, dressing, typing/writing, using utensils to eat, brushing teeth, etc.

Modalities:

- Ice 3-5x/day for 20-25mins.
- "GameReady"
- Sensory E-stim

Exercises:

- PROM/AROM of elbow, wrist, and hand
  - Elbow curls with 0-5lbs. dumbbells
  - Ball squeezes
  - Finger web exercises
  - Forearm curls
- Scapular stabilizers
  - Shoulder blade pinches/rows (minimal weight 0-2lbs.)
    - Ok to complete multiple sets/reps
    - Focus on shoulder blade retraction and inferior rotation.
    - Avoid shoulder shrugs/hiking.
- Stretching exercises should be performed **4-5X/day!**
  - Pendulums (A/P, M/L, Clockwise, Counter-Clockwise)
    - 30sec. minimum each direction. 2min. minimum total for all directions.
- Table slides sitting parallel to table edge. 10-15reps; 20-30sec hold.
    - >130-140°, progress as tolerated.
- **Supine Passive Forward Elevation.** 10-15reps; 20-30sec hold minimum.
  - This should be done with the patient using their good arm/hand to move the operated extremity.
    - Or the therapist will perform the stretching while in session.
    - Teach HEP technique.
  - Grabbing the back of the wrist/hand, the good arm will do all of the lifting.
  - Goal of **> 140°** of passive forward elevation.
    - This range needs to be maintained to avoid regression.
    - Instruct patient on changing hand position from the wrist by sliding down to the elbow to apply pressure through the elbow past 90° of flexion to give overpressure if tight.
    - Keep elbow in full extension. Avoid bending of the elbow.
- Doorway pulley
  - Key in on proper posture.
    - Sit up straight; Don't slouch; Avoid shoulder hiking

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- Center pulley wheel directly under shoulder joint, if not even posterior to the joint, to maximize elevation.

Phase III (Weeks 6-12):

Goals:

- Transition to AAROM/AROM, and light strengthening.
- Continue to increase/maintain PROM fairly aggressively!
- Teach a HEP and check for understanding.

Precautions:

- PROM/AROM IR no further than the back pocket/buttock area.
- Avoid combined extension and ER.

Sling Wear:

- Patients may discontinue (D/C) sling wear if still using.

Exercises:

- Continue Supine Passive Forward Elevation from above; **>140-150°.**
- Continue doorway pulley from above.
- Initiate AAROM
  - Flexion
    - Wall walks
    - Finger ladder
    - L-Bar/Cane
  - Ok to begin progressively gentle A/AAROM ER & IR at side.
    - L-Bar
      - ER no >30-35°
      - IR to buttock.
- Begin posterior RC isometrics (submaximal, non-painful)
    - Flexion/Scaption
    - ER
    - IR
- Prone rows/scapular retraction; 10-15reps, 3-5sec hold.
  - progress weight/resistance.
- Initiate bench press plus maneuvers; 10-15reps, 3-5sec hold.
  - Supine flexion to 90° followed with plus maneuver for serratus anterior activation.
    - Under control, focus on technique and quality.
- **Initiate progressive incline bench presses (0, 20, 40, 60, 80°)**
  - Begin on flat bench (0°) with no weight (L-bar or broom handle).
  - When able to complete 20reps for 3sets increase weight gradually.
    - Focus on technique and quality.
    - Increase weight to a moderate amount (~10-15lbs) at 0° incline before next step.
  - Increase incline to ~ 20°.
    - Decrease weight and focus on technique and quality.
  - Patient able to complete 20reps for 3sets, then increase weight gradually.
    - Increase weight to a moderate amount (~10-15lbs) at 20° incline.

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- Progress incline and decrease weight, and then build up again.
- Repeat these steps over and over working from 20° incline to ~ 80° incline with decreasing and increasing weight at each new incline angle.
- Once patient has reached 80°, ok to work at shallower angles with higher weights.
  - Maintain good form/technique and quality throughout

Phase IV (Weeks 12-24 & Beyond):

Goals:

- Maintain PROM **> 140-150°.**
- Increase PROM for ER, IR, Abduction as tolerated.
  - IR no higher than the middle of the lumbar spine region (~L4-2)
- Increase AROM of shoulder all directions (Flexion, Extension, ER, IR^, Abduction).
- Continue to increase strength gradually.
- Gradual return to Functional Activity/Sport:
  - Please discuss return to these types of actives with Dr. Carofino prior to return.
- Teach a HEP and check for understanding.

Precautions:

- You may find that you need to continue stretching daily for upwards of 6months-1yr.
- Discourage shoulder girdle hiking!
- Patient needs to understand how to be gradually **progressive** in their return to weight lifting/activity/work/sport.

Exercises:

- Continue Supine Passive Forward Elevation stretches **>140-150°.**
- Continue AAROM, AROM exercises all planes.
- May stretch passively into ER as tolerated; no restrictions.
  - May actively ER as tolerated; no restrictions.
  - May strengthen ER as tolerated.
    - Cables/bands at side as well as 90/90 position.
- May strengthen IR as tolerated
  - Cables/bands at side as well as 90/90 position.
- Abduction PROM/AROM stretching:
  - Abduction table slides
  - Abduction wall walks
  - Abduction wall slides
- Abduction Strengthening:
  - Lateral raises **Thumb Up/Full Can** position.
    - Prefer “Scaption” strengthening over lateral raises in the thumb up position.
    - Minimal weight, 5-10lbs.; prefer resistance bands.
    - Focus on form and higher reps.
- Continue with progressive incline bench presses and bench press plus maneuvers.
- Continue seated/standing low-rows/scapular retraction exercises.
- Seated/standing high rows.

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- Begin shoulder blade rhythmic stabilization exercises.
  - Ball on wall
  - Body Blade through the UE PNF patterns
- Ok for Lat pull-downs and other cable machines.

Phase V (Lifetime)

Things to be aware of as you move further out from surgery (> 4-6months) :

- You will continue to gradually progress status-post Reverse Total Shoulder Arthroplasty for upwards of **1½ years.**
- This has been well documented in the literature as well as my experience with past patients.
- You need to dedicate time throughout each week to make your shoulder as best as it can be!
- You will have some great weeks, while other weeks may not seem as outstanding.
- As long as you are making progress month to month, you know you're on the right track.