Teaching Home Exercises for the Rehabilitation of Upper Extremity Problems

Rotator Cuff Impingement, Adhesive Capsulitis, Elbow Epicondylitis

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Disclosure

We have nothing to disclose.
What is an Athletic Trainer?

- Unique and multi-skilled health care professionals who collaborate with physicians to optimize activity of physically active patients.

- Provide preventative services, emergency care, clinical assessment, therapeutic intervention and rehabilitation of injuries and medical conditions.

- ATs improve functional outcomes and specialize in patient education to prevent injury and re-injury.

- Employed in a variety of settings.

Objectives

- Understand the importance of a Home Exercise Program (HEP) for upper extremity chronic issues

- Provide simple instructions on how to teach home exercise programs for common shoulder and elbow injuries

- Recognize red flags for orthopedic referral
What is a Home Exercise Program?

- A program detailing a range of physical exercises and the amount of time each exercise should be performed
- Not personalized so that it is usable with the largest patient population
- Little to no special equipment needed other than household items

Home Exercise Program

- Why HEP?
  - PT not always necessary or accessible
  - Pain control
  - Simple instructions for rotator cuff and scapular strengthening
  - Correct postural imbalances
  - sportsrehab.ucsf.edu
Improve HEP Effectiveness

- Patient Compliance
  - Only 35% of patients adhered fully to HEP
    - Only 19% adherence if chronic illness present (Kravitz, 1993)
    - 76% followed regimen partly (Sluijs, 1993)
- Best if used in addition to formal PT

Causes of Upper Extremity Pain

- May be due to:
  - Traumatic injury
  - Lack of flexibility
  - Weakness of shoulder and back musculature
  - Overuse
  - Biomechanical issues
  - Impingement
- Posture related factors of shoulder pain
  - Rolled forward shoulders
  - Poor posture (sitting at computer, reading, writing)
  - Tight pectoralis/weak scapula stabilizers
  - Repetitive overhead motions (Ludewig and Bonstad, 2003)
Effects of Poor Posture

- **Muscle Weakness:**
  - Rotator cuff weakness will lead to unbalanced motion that can cause migration of the humeral head (Ludewig and Borstad, 2003)
  - Weak scapular stabilizers can result in altered biomechanics (Voight and Thompson 2000, Kibler 2008)
    - Abnormal stresses to the anterior capsular structures
    - Possibility of Rotator Cuff compression
    - Decreased performance
What Happens Without Exercises

- Scapular Control Issues
- Postural Changes
- Long Term Motor Control Issues
- Connective Tissue Changes—Fibrosis
- Chronic Substitution Patterns
  - Over-recruit upper trap and levator scap
  - Underused lower trap and middle trap
- PT Needed to Retrain Motor Control Patterns

Shoulder Pain

- 3rd most common musculoskeletal condition presenting in primary care (Urwin 1998)
- 5th most common among injury among high school athletes (Powell 1999)
- Approximately 13.7 million people in the US seek treatment from a physician for a shoulder problem each year (Hing 2005)
  - Impingement Syndrome is the most common shoulder disorder accounting for 44-65% of all physician visits for shoulder pain (van Der West 1995)
Rotator Cuff Impingement

Intrinsic Causation
- Muscle Weakness
- Muscle Fatigue
- Overuse
- Degenerative Issues
- Poor Posture

Extrinsic Causation
- Shape of acromion
- Coracoacromial ligament attachment
- AC Joint
Differential Diagnosis

- Labral tear
- OA
- AC arthritis vs sprain
- Distal Clavicle Injury
- Biceps tendon rupture/tendinopathy
- Calcific Tendonitis
- Adhesive Capsulitis
- Nerve injury
- Spine pathology

HEP - Stretching

**Doorway Stretch**

**Frequency:** 3 sets x 1 min 2-3 times per day  
**Goal:** Increased pectorals flexibility/improve posture
HEP - Stretching

**Sleeper Stretch**

**Frequency**: 3 sets x 10 reps 2-3 times per day  
**Goal**: Improve posterior capsule mobility

HEP - Strengthening

**External Rotation**

**Frequency**: 3 sets x 10 reps 2-3 times per day  
**Goal**: Increase strength of scapular stabilizing muscles
HEP- Strengthening

Horizontal Rows

**Frequency:** 3 sets x 10 reps 2-3 times per day

**Goal:** Increase strength of the scapular stabilizers

HEP- Lifestyle

- **Ergonomic Fixes for Postural Issues**
  - Contact HR about ergonomic evaluation
  - Use standing desk
  - KT Tape
  - Comfort Clavicle Sling
Adhesive Capsulitis aka “Frozen Shoulder"

- Synovial inflammation & capsular fibrosis
  - Leads to contracture of the capsule
  - Etiology not clearly understood

Adhesive Capsulitis “Frozen Shoulder"

- Causation
  - Gradual loss of active and passive ROM
  - Most common in women 40-60 years old
  - Affects about 2% - 5% of the population
  - Strong association with Diabetes Mellitus
Adhesive Capsulitis

- Full duration of disease is 1-3.5 years
- Presents unilaterally but will often affect the contralateral shoulder
- Initial treatment of HEP combined with OTC analgesia/anti-inflammatory meds is the most effective to treat this condition (Hsu 2011)
- NSAIDS not effective when compared to placebos

Differential Diagnosis

- Impingement, Calcific Tendinitis, and Osteoarthritis – PROM is not painful/restricted in these conditions
**HEP- Stretching**

**Passive Shoulder Flexion**

*Frequency:* 3 sets x 1 min 2-3 times per day  
*Goal:* Increase Range of Motion

**Passive Abduction**

*Frequency:* 3 sets x 1 min 2-3 times per day  
*Goal:* Increase Range of Motion
HEP- Stretching

External Rotation

**Frequency:** 3 sets x 1 min  2-3 times per day  
**Goal:** Increase Range of Motion

HEP- Strengthening

**Active Wall Spiders**

**Frequency:** 5x 2-3 times per day  
**Goal:** Increase Range of Motion
HEP- Strengthening

Isometrics: Flexion/Abduction

Frequency: 3 sets x 1 min 2-3 times per day
Goal: Increase Range of Motion

Chronic Elbow Pain

Tennis Elbow
also called lateral epicondylitis; causes pain on the outside of the elbow

Golfer’s Elbow
also called medial epicondylitis; causes pain on the inside of the elbow
Epicondylitis

- **Lateral Epicondylitis**
  - Common in primary care (Annual Incidence 1-3%) (Johnson 2007)
  - Repetitive activity at work or in recreation
- **Medial Epicondylitis**
  - Less common diagnosis (only 10-20% of all epicondylitis diagnoses) (Ciccolti 2004)
  - Similar treatment as lateral epicondylitis

Differential Diagnosis

- Ulnar nerve disorders, cervical radiculopathy, ulnar collateral ligament injury
- 'Little League elbow' and fractures of the medial epicondyle
**HEP- Stretching**

- **Wrist Flexor Stretch**
  - Frequency: 3 sets x 1 min
  - 2-3 times per day
  - **Goal**: Increase Range of Motion

- **Wrist Extensor Stretch**
  - Frequency: 3 sets x 1 min
  - 2-3 times per day
  - **Goal**: Increase Range of Motion

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**HEP- Strengthening**

- **Grip Strengthening**
  - Frequency: 2-3 sets until fatigue
  - 3 times per week
  - **Goal**: Increase Grip Strength
HEP- Strengthening

**Wrist Extension Curls**
- **Frequency:** 2-3 sets until fatigue 3x per week
- **Goal:** Increase Forearm Strength

**Wrist Flexion Curls**
- **Frequency:** 2-3 set until fatigue 3x per week
- **Goal:** Increase Forearm Strength

**Hammer twist**
- **Frequency:** 2-3 sets until fatigue 3x per week
- **Goal:** Increase Forearm Strength
What if HEP is not working

- Check Patient Compliance
- Re-examine Differential
- Consider Advanced Imaging
- Refer

References

**Adhesive Capsulitis PROTOCOL**

For instructional videos of this protocol, visit [sportsrehab.ucsf.edu](http://sportsrehab.ucsf.edu)

### Background:

- **Description**
  - Typically between ages of 40-65.
  - Thickening of the capsule around the shoulder.

- **Causes**
  - Previous shoulder injury.
  - Immobilization.
  - Diabetes.
  - Thyroid disorders.

- **Progression**
  - **1st Stage “Freezing” stage**
    - Increased pain, decreased motion.
    - Can last 1-9 months.
  - **2nd Stage “Frozen” stage**
    - Decreased pain, but stiffness remains.
    - Can last 4-9 months.
  - **3rd Stage “Thawing” stage**
    - Slow return of motion.
    - Can last 5 months to 2 years.

### Stretching Exercises:

#### Passive Forward Flexion

Using a broom or rod, grasp the end with hand 1 and the other end with hand 2.

Use hand 2 to passively raise hand 1 up until a stretch is felt.

Hold the position for 10 seconds and return to starting position.

**Frequency:** 3 sets of 10 reps. 2-3 times per day.

**Goal:** Increase/Maintain Shoulder Range of Motion

#### Passive Abduction

Grasp the end of the rod with hand 1 and the other end with hand 2.

Use hand 2 to passively raise hand 1 up to the side until a stretch is felt.

Hold the stretch for 10 seconds and return to starting position.

**Frequency:** 3 sets of 10 reps. 2-3 times per day.

**Goal:** Increase/Maintain Shoulder Range of Motion

#### Passive External Rotation

Grasp the end of the rod with hand 1 and the middle of the rod with hand 2.

Use hand 2 to passively rotate hand 1 to the side while keeping the elbow in.

Hold the stretch for 10 seconds and return to starting position.

**Frequency:** 3 sets of 10 reps. 2-3 times per day.

**Goal:** Increase/Maintain Shoulder Range of Motion
**Adhesive Capsulitis PROTOCOL**

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### Forward Wall Climbers
Patient stands facing the wall 2 feet from the wall. Slowly walk fingers up the wall as high as possible. Hold at the top for 10 seconds then slowly lower.

- **Frequency:** 5 times
- **Goal:** Increase/Maintain Shoulder Range of Motion

### Side Wall Climbers
Patient stands with their involved shoulder 2 feet from the wall. Slowly walk fingers up the wall as high as possible. Hold at the top for 10 seconds then slowly lower.

- **Frequency:** 5 times
- **Goal:** Increase/Maintain Shoulder Range of Motion

### Isometric: Flexion / Extension
Stand with good posture, squeeze shoulders back. Bend and hold elbow at 90°.
- **Flexion:** Push hand into wall.
- **Extension:** Push elbow into wall.
  - Hold 5 sec. Repeat TEN times.

- **Frequency:** 1 set
- **Goal:** Increase Strength of Deltoid Muscles

### Isometric: ABduction / ADduction
Stand with good posture, squeeze shoulders back. Bend and hold elbow at 90°.
- **ABduction:** Start hand on stomach. Push hand away from your stomach.
- **ADduction:** Start hand away from stomach. Pull hand into your stomach.
  - Hold 5 sec. Repeat TEN times.

- **Frequency:** 1 set
- **Goal:** Increase Strength of Rotator Cuff Muscles
Adhesive Capsulitis PROTOCOL

For instructional videos of this protocol, visit sportsrehab.ucsf.edu

Scapular Retraction (Shoulder Blade Squeezes)
Relax head and neck.
Stand with good posture, squeeze shoulders back.
Avoid shrugging shoulders. Keeps abs tight.
Hold 10 sec.
Relax shoulder. Repeat 10 times.

Frequency: 1 set. 3 times per day.
Goal: Increase Strength of Scapular Stabilizing Muscles

Scapular Elevation (Shoulder Shrugs)
Relax head and neck.
Stand with good posture.
Squeeze shoulder up towards your ears.
Keep abs tight and hold 10 sec.
Relax shoulders. Repeat 10 times.

Frequency: 1 set. 3 times per day.
Goal: Increase Strength of Scapular Stabilizing Muscles

External Rotation
Attach theraband to a stable object at waist level.
Roll shoulder back and down and maintain this position.
Place towel between elbow and side.
Slowly rotate hand AWAY from the abdomen.
Hold 5 sec. Repeat 10 times.

Frequency: 1 set. 3 times per day.
Goal: Increase Strength of Rotator Cuff Muscles

Internal Rotation
Attach theraband to a stable object at waist level.
Roll shoulder back and down and maintain this position.
Place towel between elbow and side.
Slowly rotate hand TOWARDS the abdomen.
Hold 5 sec. Repeat 10 times.

Frequency: 1 set. 3 times per day.
Goal: Increase Strength of Rotator Cuff Muscles

Side Note
Do not perform exercises that increase your pain during or after the exercise.
Elbow Injury PROTOCOL

For instructional videos of this protocol, visit sportsrehab.ucsf.edu

- **Causes**
  - Overuse activities.
  - Muscle weakness.
  - Improper technique or equipment use.

- **Related activities**
  - Computer use.
  - Construction.
  - Racquet sports.

- **Signs and Symptoms**
  - Pain and tenderness on medial or lateral side of elbow.
  - Pain and weakness with gripping activities.
  - Pain with rotation/twisting of the wrist.
  - Pain with lifting objects.

- **Conservative treatment**
  - Rest.
  - Ice 15 minutes.
  - Stretching exercises.
  - Strengthening exercises.

**Stretches**

**Wrist Flexor Stretch**

Begin with elbow extended and **palm facing up**. Passive pull the finger and hand towards the ground. Continue until a comfortable stretch is felt.

**Frequency:** 3 sets x 1 min. 2-3 times per day.

**Goal:** Increase Range of Motion

**Wrist Extensor Stretch**

Begin with elbow extended and **palm facing down**. Passive pull the finger and hand towards the ground. Continue until a comfortable stretch is felt.

**Frequency:** 3 sets x 1 min. 2-3 times per day.

**Goal:** Increase Range of Motion
For instructional videos of this protocol, visit sportsrehab.ucsf.edu

**Grip Strengthening**

Hold a tennis ball, rubber ball or silly putty in your hand. Squeeze slowly and hold for five seconds. If the ball is too difficult or painful, try a sock or sponge.

**Frequency:** 2-3 sets until fatigue. 3 times per week.

**Goal:** Increase Grip Strength

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**Wrist Flexion Curls**

Rest arm on table with elbow extended. Grasp a small weight with **palm facing up.** Slowly curl wrist up towards the ceiling. Hold for three seconds then slowly lower.

**Frequency:** 2-3 sets until fatigue. 3 times per week.

**Goal:** Increase Forearm Strength

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**Wrist Extension Curls**

Rest arm on a table with elbow extended. Grasp a small weight with **palm facing down.** Slowly curl wrist up towards the ceiling. Hold for three seconds then slowly lower.

**Frequency:** 2-3 sets until fatigue. 3 times per week.

**Goal:** Increase Forearm Strength

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**Hammer Twist**

Sit with your arm resting on your knee or table. Grasp a hammer in your hand. Slowly rotate the hammer side to side. Grasping the handle further from the head increases difficulty.

**Frequency:** 2-3 sets until fatigue. 3 times per week.

**Goal:** Increase Forearm Strength
Scapular Stabilization PROTOCOL

For instructional videos of this protocol, visit sportsrehab.ucsf.edu

• **Description**
  - The scapula is the base of support to the shoulder joint and all movements of the upper extremity.
  - Poor scapular stabilization can contribute to a variety of upper quadrant syndromes such as: shoulder impingement, shoulder instability, cervical strain, nerve entrapments, and muscle strains.

• **Hints**
  - While performing exercises, keep shoulder rolled back and down.

**BACKGROUND:**

**SHOULDER ANATOMY:**

**SCAPULAR STRENGTHENING EXERCISES:**

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**Scapular Retraction (Shoulder Blade Squeezes)**

- Relax head and neck.
- Stand with good posture, squeeze shoulders back.
- Avoid shrugging shoulders. Keeps abs tight.
- Hold 10 sec.
- Relax shoulder. Repeat 10 times.

**Frequency:** 1 set. 3 times per day.

**Goal:** Increase Strength of Scapular stabilizing Muscles.

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**External Rotation**

- Attach theraband to a stable object at waist level.
- Roll shoulders back and down and maintain this position.
- Place towel between elbow and side.
- Slowly rotate hand AWAY from the abdomen.
- Hold 3 sec. Repeat 12-15 times.

**Frequency:** 1 set. 3 times per day.

**Goal:** Increase Strength of Scapular stabilizing Muscles.
**Scapular Stabilization PROTOCOL**

For instructional videos of this protocol, visit sportsrehab.ucsf.edu

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**Scapular Strength Exercises:**

**Shoulder Diagonals**

Patient stands with theraband under their opposite foot. While grasping theraband, bring shoulders back and down. With your hand at your opposite hip, slowly raise it up across your body, as if you are drawing a sword. Hold 3 seconds and repeat 12-15 times.

**Frequency:** 1 set. 3 times per day.

**Goal:** Increase Strength of Scapular stabilizing Muscles

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**Horizontal Rows**

Secure theraband around a stable object, like a pole. Patient can either kneel or stand. Grasp both ends of the theraband. Bring shoulders back and down. Slowly pull elbows back, squeezing your shoulder blades together. Hold 3 seconds and repeat 12-15 times.

**Frequency:** 1 set. 3 times per day.

**Goal:** Increase Strength of Scapular stabilizing Muscles

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**Shoulder Extension**

Secure theraband around a stable object, like a pole. Patient can either kneel or stand. Grasp both ends of the theraband, bring shoulders back and down. With arms extended, slowly pull hands straight down until even with your hips. Hold 3 seconds and repeat 12-15 times.

**Frequency:** 1 set. 3 times per day.

**Goal:** Increase Strength of Scapular stabilizing Muscles

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**Angel Wings**


**Frequency** 3 sets. 3 times per day.

**Goal:** Increase Scapular Strength

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*If strengthening exercises become too easy, the repetitions should be increased until muscle fatigue*