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# HOME EXERCISE PROGRAMS FOR MUSCULOSKELETAL AND SPORTS INJURIES

## THE EVIDENCE-BASED GUIDE FOR PRACTITIONERS

Ian W. Wendel | James F. Wyss

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## The Evidence-Based Guide for Practitioners

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*To my father and his love of books.*
*-IWW*

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# FOREWORD

As we move into an age of evidence-based medicine and value-based care, many health systems, physicians, and other healthcare practitioners are trying to achieve the triple aim. The triple aim is a framework that helps organizations achieve improvement in patient care, improvement in population health, and a reduction in overall costs for the health system. The home exercise program is one of the tools that physicians and healthcare providers can use to realize the goals of the triple aim, but, unfortunately, it is often underutilized, and there is little consistency in execution.

The use of exercise as a tool for treating both orthopedic and neurological diseases has been a practice that has stood the test of time. The current mechanism for using exercise as a treatment method is triggered by physician prescription and completed through physical or occupational therapists. Studies have shown that the use of physical therapy has decreased costs of treating appropriate diagnoses by 72% while effectively treating the condition. However, exercise and physical therapy still remain underused as options to treat common musculoskeletal conditions. The number of physical therapy sessions that a patient can attend is limited; patients' hectic lives, increasing costs of copays, and caps in the number of allowable therapy sessions placed by insurance companies are all contributing factors.

As a result, the need for evidence-based home exercise programs is higher than ever. This book, by Dr. Wendel and Dr. Wyss, addresses this need in a very structured and purposeful way that is user friendly for the patient and medical provider alike. This tool will educate practitioners in proper exercise prescription and teach patients how to effectively treat their musculoskeletal conditions through superb, detailed handouts with minimal time burden to the prescribing practitioner.

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# INTRODUCTION

Rehabilitation exercises are one of the cruxes of treating musculoskeletal and sports injuries, and they are generally initiated soon after rest, medications, and modalities have been utilized. There is overwhelming literature supporting their role in the treatment of these injuries. However, one of the greatest barriers to patients benefiting from such rehabilitation exercises is getting the patient to perform regular, quality, effective, and evidence-based exercises. Too often a patient's busy schedule precludes him or her from seeking guidance on exercise from a professional, such as a physical or occupational therapist. In other instances, the patient has sought this treatment and it is now time to be exercising independently. This is when a home exercise program must be employed and a healthcare professional must convey this information to the patient.

This book was developed to assist healthcare professionals in providing evidence-based home exercise treatment programs and high-quality handouts to patients. The authors of this book felt that current home exercise program resources were not ideal and decided to develop their own. We also realize that many health professionals are not taught how to properly prescribe exercise, or they are early in training and yet not comfortable prescribing exercise. We wanted to develop a resource that guides healthcare professionals in prescribing effective, evidence-based home exercises in an efficient, self-explanatory manner so that valuable minutes of a patient encounter do not have to be wasted on explanation. Essentially, this book is of value to any healthcare professional who prescribes exercise to patients.

Within a rehabilitation exercise program, a stepwise approach must be followed to lay the framework for more advanced exercise. The typical phases of rehabilitation are provided in Table 1 (1, 2):

**Table 1. Phases of Rehabilitation**

| |
|---|
| ■ Phase I: Decrease pain and swelling (PRICE protocol) |
| ■ Phase II: Restore range of motion and normal arthrokinematics |
| ■ Phase III: Strength training |
| ■ Phase IV: Neuromuscular control and proprioceptive training |
| ■ Phase V: Functional or sport-specific training |

*PRICE, Protection, Rest, Ice, Compression, and Elevation.*

We feel that for a home exercise program, this approach can be cumbersome for patients. Instead, we decided to combine these into three phases, Foundational, Intermediate, and Advanced, where we list recommended exercises within each phase that are built upon and advanced as a patient progresses through his or her rehabilitation. We also list goals for advancement that healthcare professionals should try to identify in patients, if possible, before progressing the exercise program to the next level.

Additionally, we provide concise, evidence-based background and treatment information on the different regions of the body and injuries within these regions. Furthermore, the exercise programs within each chapter explain how to effectively perform each exercise through guided steps with visual aids.

**How to Use This Book**

- Read the chapters to gain background knowledge on common musculoskeletal and sports injuries and pearls for prescribing exercise for treatment of these injuries.
- Disseminate the chapters as handouts for patients:
  - Provide the entire chapter to patients to provide more information on the clinical condition,
  - Highlight the desired exercises from the List of Exercises section of the book to provide to patients along with the exercises from each chapter's Handouts section,
  - Mix and match exercises and develop custom handouts tailored to the patient's needs. There is even a box to check or write numbers included within every exercise in the Handouts section from each chapter.

Healthcare professionals will then confidently and efficiently provide high-quality information and resources to patients to aid in the recovery of musculoskeletal and sports injuries.

## REFERENCES


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*-IWW*

# LIST OF EXERCISES

## SHOULDER

### Rotator Cuff Tendinopathy *2*

#### Recommended Exercises

##### Foundational

**ROM/Stretching/Mobility:** Corner stretch, sleeper stretch, stick shoulder extension, stick overhead shoulder stretch, stick shoulder abduction

##### Intermediate

Continue Foundational exercises

**ROM/Stretching/Mobility:** Scaption

**Strengthening:** Low row, scapular retraction, straight arm lateral pull down, push-up with a plus, abducted shoulder external rotation

##### Advanced

Continue Foundational and Intermediate exercises

**Proprioception/Functional:** Prone "T," "Y," "I," "W"; stability ball bird dog, stability ball plank, wall fall push-up

### Acromioclavicular Joint Pathology *2*

#### Recommended Exercises

##### Foundational

**ROM/Stretching/Mobility:** Corner stretch, sleeper stretch, stick shoulder rotation, stick shoulder extension

##### Intermediate

Continue Foundational exercises

**Strengthening:** Low row, straight arm lateral pull down, external rotation with a Theraband

### Advanced

Continue Foundational and Intermediate exercises

**Proprioception/Functional:** Prone "T," "Y," "I," "W"; stability ball bird dog, wall fall push-up

## Glenohumeral Joint Osteoarthritis *3*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Corner stretch, sleeper stretch, reverse sleeper stretch, broom pull, stick shoulder rotation, stick overhead stretch, scaption

#### Intermediate

Continue Foundational exercises

**Strengthening:** Low row, straight arm lateral pull down

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Push-up with a plus

**Proprioception/Functional:** Prone "T," "Y," "I," "W"' stability ball bird dog

## Glenohumeral Joint Instability *4*

### Recommended Exercises

#### Foundational

**Strengthening:** Isometric strengthening in all directions (external rotation, internal rotation, flexion, extension), scapular retraction

#### Intermediate

Continue Foundational exercises

**ROM/Stretching/Mobility:** Stick shoulder flexion, stick shoulder abduction, stick shoulder rotation

**Strengthening:** Low row, straight arm lateral pull down, external rotation with a Theraband

#### Advanced

Continue Foundational and Intermediate exercises

**Proprioception/Functional:** Prone "T," "Y," "I," "W"; stability ball bird dog, wall ball push-up, stability ball planks, wall fall push-up

## Adhesive Capsulitis/Frozen Shoulder *4*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Stick shoulder abduction, stick shoulder rotation, stick overhead shoulder stretch, stick shoulder flexion

#### Intermediate

Continue Foundational exercises

**ROM/Stretching/Mobility:** Broom pull, stick shoulder extension

**Strengthening:** Low row, straight arm lateral pull down

#### Advanced

Continue Foundational and Intermediate exercises

**ROM/Stretching/Mobility:** Scaption (with a weight or Theraband)

**Strengthening:** External rotation with a Theraband

**Proprioception/Functional:** Prone "T," "Y," "I," "W"

# ELBOW

## Lateral Epicondylosis *26*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Wrist flexor stretch, wrist extensor stretch, triceps stretch

#### Intermediate

Continue Foundational exercises

**Strengthening:** Grip strengthening, wrist extensors concentric strengthening, wrist flexors concentric strengthening, forearm pronators and supinators strengthening

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Tyler twist, wrist extensors eccentric strengthening, wrist flexors eccentric strengthening

**Proprioception/Functional:** Serratus punch, prone scapular retractions

## Medial Epicondylosis *27*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Wrist flexor stretch, wrist extensor stretch, triceps stretch

#### Intermediate

Continue Foundational exercises

**Strengthening:** Grip strengthening, wrist extensors concentric strengthening, wrist flexors concentric strengthening, forearm pronators and supinators strengthening

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Tyler twist, wrist extensors eccentric strengthening, wrist flexors eccentric strengthening

**Proprioception/Functional:** Serratus punch, prone scapular retractions

## Ligament Sprains *27*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Biceps stretch, triceps stretch, forearm supinators stretch, forearm pronators stretch

#### Intermediate

Continue Foundational exercises

**Strengthening:** Biceps isometric strengthening, triceps isometric strengthening, radial and ulnar deviation strengthening, wrist extensors concentric strengthening, wrist flexors concentric strengthening

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Wrist extensors eccentric strengthening, wrist flexors eccentric strengthening

**Proprioception/Functional:** Shoulder diagonal pattern A and B, serratus punch, prone scapular retractions

## Distal Bicipital Tendinopathy *28*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Wrist extensors stretch, wrist flexors stretch, biceps stretch, triceps stretch, forearm pronators stretch, forearm supinators stretch

### Intermediate

Continue Foundational exercises

**Strengthening:** Biceps isometric strengthening, triceps isometric strengthening, wrist extensors concentric strengthening, wrist flexor concentric strengthening, forearm pronators and supinators strengthening

### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Bicep curls, triceps extensions, biceps eccentric strengthening

**Proprioception/Functional:** Shoulder diagonal pattern A and B, serratus punch, prone scapular retractions

## Ulnar Neuropathy at the Elbow *29*

### Recommended Exercises

### Foundational

**ROM/Stretching/Mobility:** Wrist flexors stretch, wrist extensors stretch, biceps stretch, triceps stretch, forearm supinators stretch, forearm pronators stretch, ulnar nerve glides 1 to 5

### Intermediate

Continue Foundational exercises

**Strengthening:** Biceps isometric strengthening, triceps isometric strengthening, grip strengthening, Tyler twist

# WRIST AND HAND

## De Quervain's Tenosynovitis *49*

### Recommended Exercises

### Foundational

**ROM/Stretching/Mobility:** Wrist extension active range of motion (AROM), wrist flexion AROM, isolated thumb interphalangeal joint (IPJ) flexion/extension

### Intermediate

Continue Foundational exercises

**Strengthening:** APL isometric strengthening, EPB isometric strengthening

### Advanced

Continue Foundational and Intermediate exercises

**Proprioception/Functional:** Elbow flexion with Theraband, elbow extension with Theraband, scapular retraction with Theraband, shoulder extension with Theraband, external rotation with Theraband

# HIP

## Hip Osteoarthritis *72*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Hamstring stretch, prone quadriceps stretch, hip rotator stretch, hip flexor stretch or two-joint hip flexor stretch, quadruped rocking

**Strengthening:** Gluteal isometrics, prone hip extension, side-lying hip abduction with towel against wall

#### Intermediate

Continue Foundational exercises

**Strengthening:** Squat, bridge

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Forward step up, forward step down

**Proprioception/Functional:** Single leg balance

## Iliopsoas Tendinopathy/Bursitis *72*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Hamstring stretch, prone quadriceps stretch, hip rotator stretch, hip flexor stretch or two-joint hip flexor stretch, Iliotibial band (ITB) stretch, foam roller to hip area

**Strengthening:** Gluteal isometrics, prone hip extension, side-lying hip abduction with towel against wall

#### Intermediate

Continue Foundational exercises

**Strengthening:** Squat, bridge, clamshell, hip clocks

**Proprioception/Functional:** Single leg balance

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Monster walk, side plank, forward step up, forward step down

**Proprioception/Functional:** Windmill, single leg squat

## Greater Trochanteric Pain Syndrome *73*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Hamstring stretch, prone quadriceps stretch, hip rotator stretch, hip flexor stretch or two-joint hip flexor stretch, foam roller to hip area

**Strengthening:** Gluteal isometrics, prone hip extension, side-lying hip abduction with towel against wall

#### Intermediate

Continue Foundational exercises

**Strengthening:** Squat, bridge, clamshell, hip clocks, hip hiker

**Proprioception/Functional:** Single leg balance

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Monster walk, forward step down

**Proprioception/Functional:** Windmill

## Hamstring Strain and Tendinopathy *74*

### Recommended Exercises

#### Foundational

**ROM/Stretching/Mobility:** Hamstring stretch, prone quadriceps stretch, hip rotator stretch, hip flexor stretch or two-joint hip flexor stretch, quadruped rocking, foam roller to hip area

**Strengthening:** Hamstring isometrics

#### Intermediate

Continue Foundational exercises

**Strengthening:** Squat, bridge

#### Advanced

Continue Foundational and Intermediate exercises

**Strengthening:** Eccentric hamstring throw downs, hamstring curl on stability ball, hip hiker, forward step up, forward step down

**Proprioception/Functional:** Lunge, single leg deadlifts