

# Progressive loading exercises for tendinopathy

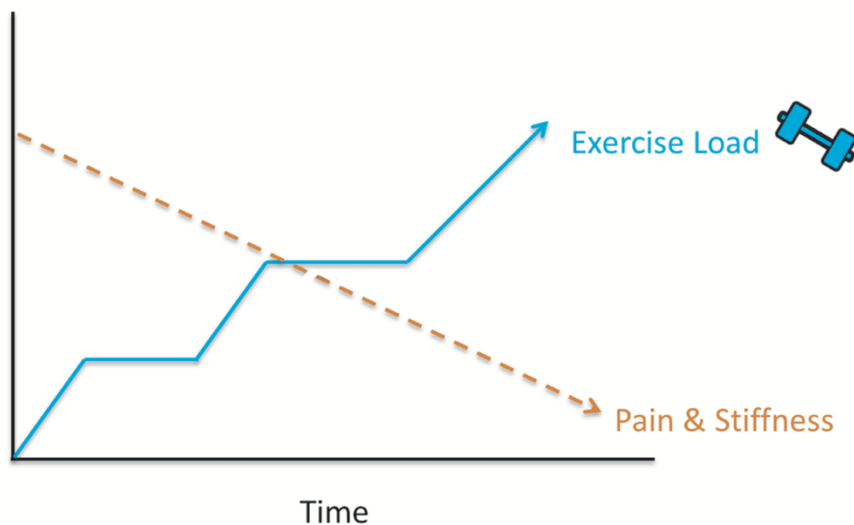
## Handout for Evaluation #1

### Home Education Program

1. Watch video: Progressive Loading Exercises for Achilles tendinopathy  
[https://youtu.be/3\\_Y1spQOL3U](https://youtu.be/3_Y1spQOL3U)
2. Review this handout and jot down any questions
3. Complete review questions (check email for link OR write below)
4. Complete home exercise log

### Goals of exercise program

1. Reduce pain and stiffness
2. Strengthen tendon and muscles
3. Learn how to manage different types of tendon load



## Types of Tendon load

### 1. Tensile



Running  
Changing direction



Slowing pace of activity

### 2. Compressive



Stretching  
Squatting



Heel lifts

### 3. Friction



Swimming  
Biking



Reduce these loads. Eg.  
Take a break from cycling

### 4. Combination of Tensile and Compressive



Walking  
Pushing off quickly



## Exercise Progression

### A. Isometric Phase: *Static tensile load*

- **Goal number**
  - o 5 repetitions of 45 second hold
  - o 1-minute rest between repetitions
  - o Daily
- **Tips**
  - o Keep heels off of floor
  - o Toes pointed towards
- **Increase load?**
  - o Your physical therapist will help you determine how to advance your exercise program to best fit you based on your strength and level of Achilles pain. There are multiple options for each phase of your rehabilitation. Your PT will help you on how to complete these exercises properly. Take some time to review the links to the videos demonstrating the exercises if you have any questions once you get home.

- **Progression to next phase**
  - o Once you can complete isometric exercises with your symptoms remaining low and stable for up to 24-hours afterwards then progress to heel raises (See video links and figures i through iv below)

i. **Sitting Bilateral:** <https://youtu.be/i5wCoRTNLsM>



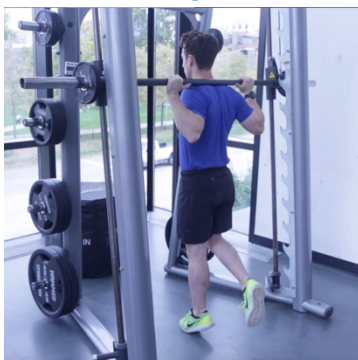
ii. **Body-Weight Bilateral:** <https://youtu.be/AKOztiBga7Y>



iii. **Body-Weight Unilateral:** <https://youtu.be/LHjo1ifCiWo>



iv. **Machine-Weighted Unilateral:** <https://youtu.be/T50Gts8eG8I>



## B. Heel Raise Phase: *Slow tensile loads*

- **Goal number**
  - 3 sets of 15 repetitions
  - 1-minute rest between repetitions
  
- **Tips**
  - Wear shoes or put book/lift under heel, as needed
  - Shoe laces pointing forward
  - 2 seconds to raise, 3 seconds to lower
  
- **Increasing load**
  - Your exercise program will be advanced based on what is best for you with help from your physical therapist. Review the different options of exercises and utilize the links to the videos if you have any questions at home on how to complete the exercises correctly.
  
- **Progression to next phase**
  - Progression to the next phase occurs when you are able to complete multiple single-leg heel-raises with no increase in symptoms the next day. The number of required repetitions is based on your age. (<40-years-old: 25 heel-raises. 40-60-years-old: 15 heel-raises. >60-years-old: 10 heel-raises)

### **i. Sitting Bilateral:** <https://youtu.be/VdLtcvgL2e0>



### **ii. Body-Weight Bilateral:** [https://youtu.be/HFa\\_1FrARa0](https://youtu.be/HFa_1FrARa0)



### **iii. Body-Weight Unilateral:** <https://youtu.be/475sm-OvWP8>

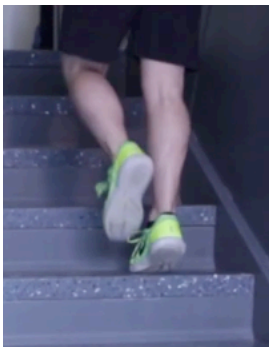


iv. Machine-Weighted Unilateral: <https://youtu.be/IHSM5DmDr3c>



C. Spring Phase: Dynamic tensile loads

i. Slow Stairs: <https://youtu.be/Ejibcx40xl8>



**Goal**

- Up to 10 flights of stairs

**Tips**

- Wear shoes
- Keep heels from touching steps on way up and down
  - Always hold on for balance

ii. Slow Double Leg Hops: <https://youtu.be/J7MYA7HXe-8>



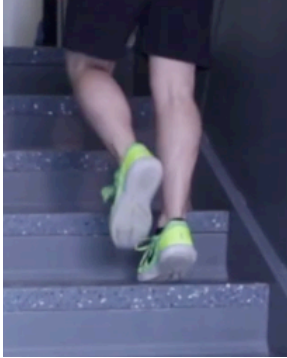
**Goal**

- 3 sets of 20 seconds
- Increase by 5 seconds until reach goal

**Tips**

- Wear shoes

### iii. Fast Stairs: <https://youtu.be/DlINrQGj-fc>



#### Goal

- Up to 6 flights

#### Tips

- Wear shoes
- Always hold on for balance

### iv. Fast Double Leg Hops: <https://youtu.be/SiNTEEG02l4>



#### Goal

- 3 sets of 20 seconds
- Progress by 5 seconds until reach goal

#### Tips

- Wear shoes
- Don't let heels touch the floor

### v. Alternating Leg Hops: <https://youtu.be/0VP-fjX5CaM>



#### Goal

- 3 sets of 20 seconds
- Progress by 5 seconds until reach goal

#### Tips

- Wear shoes

The spring phase is designed to gradually increase tendon load back up to your activity goals. Once you are back to doing the **activities that you enjoy**, then they can replace the exercises outlined above in the spring phase so that you are exercising every other day (**3-4 days per week**). This activity intensity and duration is designed to maximize **general health benefits**.

**Heel raises** are designed to maintain **health of the Achilles tendon** and should be maintained **3 days per week**. These exercises are also useful warm-up activities for the tendon after a prolonged period of rest (e.g. first thing in the morning) or before high level activities (e.g. sport and recreational activities).

\* Please note that all links are unpublished ([youtu.be](#) rather than youtube) to avoid any potential cross-over between educational groups. If you would like to share these videos with someone you know, please refer them to participate in this study or wait until the study has been completed (anticipated end date Jan 2021).

## Review Questions

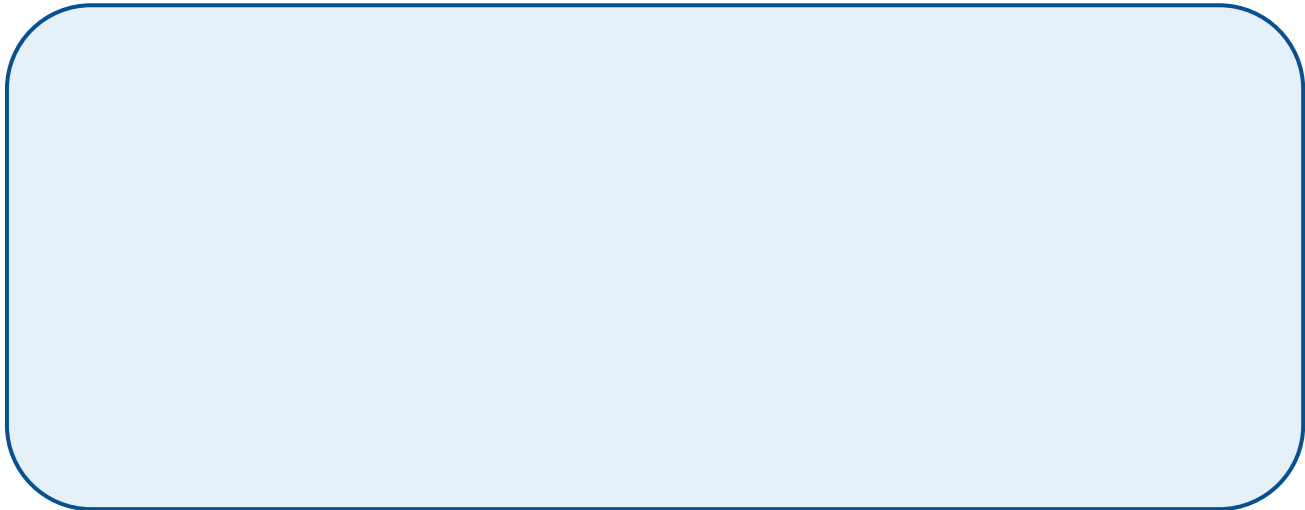
### Multiple choice questions:

1. What does the word “load” mean with respect to achilles tendon rehabilitation?
  - a. Break down of collagen tissue in the tendon
  - b. Increased stiffness of the tendon
  - c. Mechanical force on tendon during activities such as walking and running
  - d. Increasing the amount of weight during completing of exercises.
2. What is the goal of exercise for treating your achilles tendon pain?
  - a. Improve the strength of your calf muscles
  - b. Reduce pain and maximize the capacity of your achilles tendon for loading
  - c. Make the tendon more flexible to decrease pain
  - d. Stretch the tendon to improve length and decrease pain
3. Which of the following is NOT a type of load commonly placed on the achilles tendon?
  - a. Tensile
  - b. Compressive
  - c. Transverse
  - d. Friction
4. What is the recommended rate of progression for exercises to improve the capacity and strength of your achilles tendon?
  - a. As quickly as possible
  - b. Quickly until maximum pain tolerance, then rest until pain completely goes away
  - c. Gradual progression while using symptoms to guide pace
  - d. No progression is required, completing the same exercise is sufficient

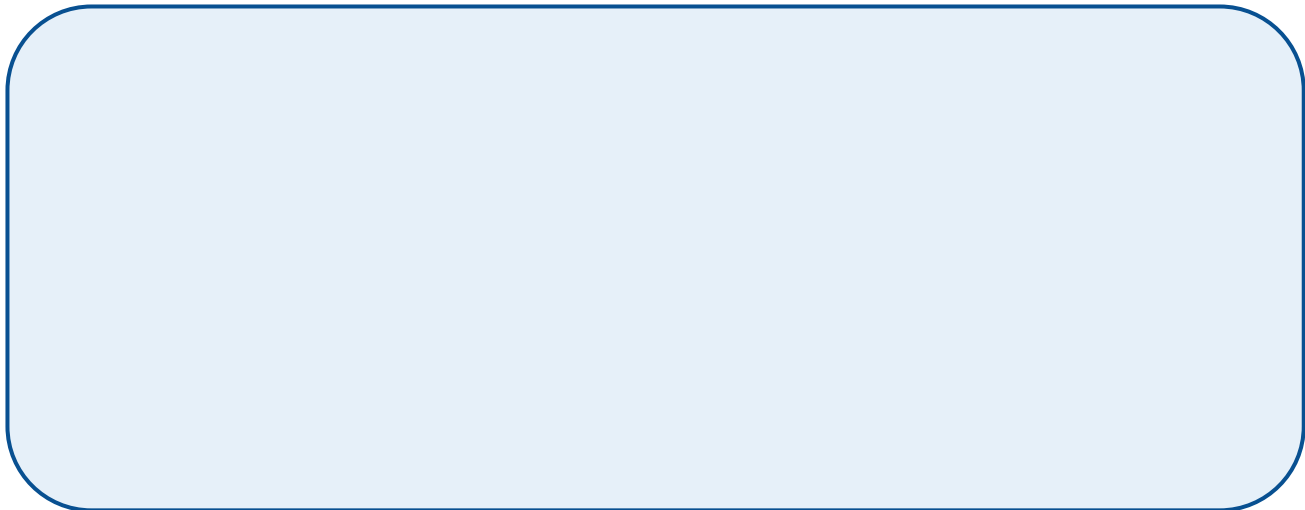
5. The exercise progression for your achilles tendon includes all of the phases EXCEPT which of the following?
- a. Rest Phase
  - b. Isometric Phase
  - c. Heel-raise Phase
  - d. Spring Phase

Short response questions:

What contributed to you developing Achilles tendon pain and/or stiffness? Please rank and number the order of your responses, where #1 is most important



Why do you think that your Achilles tendon pain and/or stiffness hasn't gone away? Please rank and number the order of your responses, where #1 is most important





## Home Exercise Program

Your goals for home exercise until your next visit include:

- Isometrics: \_\_\_\_\_
- Heel-lifts: \_\_\_\_\_
- Spring-phase: \_\_\_\_\_
- Other: \_\_\_\_\_

### Day 1

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5) \_\_\_\_\_

Duration of isometric hold (0 to 45 s) \_\_\_\_\_

### Day 2

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5) \_\_\_\_\_

Duration of isometric hold (0 to 45 s) \_\_\_\_\_

### Day 3

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5) \_\_\_\_\_

Duration of isometric hold (0 to 45 s) \_\_\_\_\_

### Day 4

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5)\_\_\_\_\_

Duration of isometric hold (0 to 45 s)\_\_\_\_\_

**Day 5**

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5)\_\_\_\_\_

Duration of isometric hold (0 to 45 s)\_\_\_\_\_

**Day 6**

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5)\_\_\_\_\_

Duration of isometric hold (0 to 45 s)\_\_\_\_\_

**Day 7**

Type of isometric exercise performed (circle)

- a. Sitting Bilateral
- b. Body-weight Bilateral
- c. Body-weight Unilateral
- d. Machine-weighted Unilateral

Number of sets performed (0 to 5)\_\_\_\_\_

Duration of isometric hold (0 to 45 s)\_\_\_\_\_