

# **CentraCare**

# **Bone Health**

# **Program**

## PATIENT EDUCATION

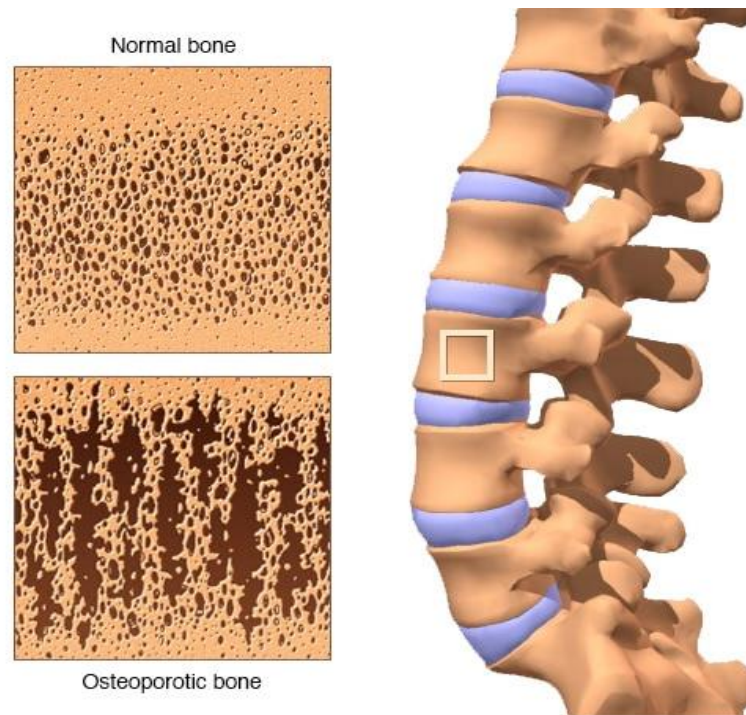
Welcome to the CentraCare Rehabilitation Bone Health Program. This program is designed to help patients with a known diagnosis of osteoporosis or osteopenia maximize their bone density while decreasing fall and fracture risk. Within this packet you will find important information about osteoporosis including risk factors, both modifiable and fixed and best treatment options. You will also find general information about aerobic activity, resistance training, and spinal strengthening exercises. With the guidance of your physical therapist, you will be prescribed an individualized home exercise program that specifies proper intensity, repetitions, sets, and frequency of exercise. It is important that you stick to exercise long term to decrease the risk of the potential side effects of osteoporosis. Sample workout logs can be found in the back of this packet along with descriptions of exercises. In addition, video instruction of exercises can be found online at [CentraCare.com](http://CentraCare.com) by typing physical therapy in the search box, then choosing *Physical Therapy* under the General Content Title and clicking on *Bone Health Exercise Videos* which is listed on the right side of the webpage under Rehabilitative Services. We are excited for you to start the Bone Health Program.

Sincerely,

Your CentraCare Team

## Osteoporosis

Osteoporosis literally means ‘porous bone’. It is a condition where bones become thin and lose their strength, as they become less dense, and their quality is reduced. Loss of bone quality can lead to broken bones, which cause pain, disability, and make everyday activities extremely difficult. Around the world, 1 in 3 women and one in five men over the age of fifty will suffer a broken bone due to osteoporosis. Osteoporosis is often called the ‘silent disease’ because most people do not know they have osteoporosis until they suffer a broken bone from a minor fall or bump – something that would not normally have caused such a drastic injury.<sup>1</sup>



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### Treatment

- Pharmaceutical agents targeting bone mineral density (BMD) are the first line of treatment for osteoporosis because they reduce the risk of fractures by approximately 20–60% depending on the agent used, patient population and adherence to the medication.<sup>3</sup> However, pharmaceuticals have no effect on other key fracture risk factors, such as muscle strength, muscle power, dynamic balance, coordination and overall functional performance, all of which have been associated with an increased risk for falls and fracture<sup>4</sup>
- Exercise training is the only strategy that can improve all modifiable fracture risk factors (bone strength, fall risk, fall impact), but it must be appropriately prescribed, and adherence needs to be maintained.<sup>4</sup>

## RISK FACTORS FOR OSTEOPOROSIS

### FIXED RISKS

Although fixed risk factors cannot be changed, you should be aware of them so that you can take steps to reduce bone mineral loss as early as possible. Fixed risk factors also include disorders and medications that weaken bone and affect balance, which increase the risk of fracture due to falling.

Low bone mineral density, one of the most important indicators that a person is at risk of a fracture, is considered both fixed and modifiable since it is determined by a wide range of factors, including family history, age, and lifestyle factors.<sup>5</sup>

Fixed risk factors include:

- Age
- Height Loss
- Female Gender
- Family History of Osteoporosis
- Previous Fracture
- Ethnicity
- Estrogen Deficiency and Amenorrhea
- Menopause and Hysterectomy

### MODIFIABLE RISKS

Most modifiable risk factors directly impact bone biology and result in a decrease in bone mineral density (BMD), but some of them also increase the risk of fracture independent of their effect on bone itself.<sup>5</sup>

Modifiable risk factors include:

- Alcohol
- Smoking
- Low Body Mass Index
- Poor Nutrition-Low Dietary Calcium Intake
- Vitamin D Deficiency
- Eating Disorders
- Insufficient Exercise
- Frequent Falls

1 International Osteoporosis Foundation: About Osteoporosis: [www.osteoporosis.foundation/patients/about-osteoporosis](http://www.osteoporosis.foundation/patients/about-osteoporosis): Accessed January 19, 2021. 2 Mayo Clinic: Osteoporosis. Symptoms and Causes. [www.mayoclinic.org/diseases-conditions/osteoporosis/symptoms-causes/sync-20351968](http://www.mayoclinic.org/diseases-conditions/osteoporosis/symptoms-causes/sync-20351968). Accessed January 19, 2021. 3. Crandall C.J., Newberry S.J., Diamant A. Comparative effectiveness of pharmacologic treatments to prevent fractures: an updated systematic review. *Ann Intern Med.* 2014;161(10):711–723. 4. Cawthon P.M., Fullman R.L., Marshall L. Osteoporotic Fractures in Men Research G Physical performance and risk of hip fractures in older men. *J Bone Miner Res.* 2008;23(7):1037–1044. 5. International Osteoporosis Foundation: Fixed Risks and Modifiable Risks: [www.osteoporosis.foundation/health-professionals/about-osteoporosis.risk-factors/fixe](http://www.osteoporosis.foundation/health-professionals/about-osteoporosis.risk-factors/fixe)

## Osteoporosis Exercise Guidelines

# Weight-Bearing Activity



Weight-bearing activity helps load your bones to keep them strong and improves balance. *Swimming and cycling are great for general fitness, but they are NOT weight-bearing.* If you enjoy those activities, include other options where you're moving on your feet (such as walking, marching, dancing, aerobics, tennis or, if approved, jumping/hopping).

### What?

Repetitive-impact weight-bearing activity



### How often?

4-7 days/week



### How hard?

Moderate- to high-intensity depending on ability and bone/joint health



### How much?

Start w/5 impacts. Gradually build up to 30-60 total impacts over the day OR Start w/5-10 minutes of weight-bearing activity – build up to 20-45 minutes/day.



**Remember:** There are many different ways to apply impact to bones. Start gently. Some people with painful conditions such as arthritis may never reach high-impact loading. But just being weight-bearing is important.

### Is it moderate or vigorous? Use the “talk test” to find out.

When you're being active, just try talking:

- If you're breathing hard but can still have a conversation easily, it's **moderate-intensity activity**
- If you can only say a few words before you have to take a breath, it's **vigorous-intensity activity**

Encourage the children and teenagers in your life to play sports, dance, and do recreational activities they enjoy. Bone is most sensitive to loading during this time of their life. They will build stronger bones to help protect them from developing osteoporosis later.

Reference: Adapted From: ACSM: Exercise is Medicine: [http://www.exerciseismedicine.org/support\\_page.php/rx-for-health-series/](http://www.exerciseismedicine.org/support_page.php/rx-for-health-series/)

**Weight Bearing Activity:** *Goal 20-40 minutes of moderate to high intensity weight bearing activity that includes intervals of high impact activities*

Regular walking for leisure and other forms of low or non-impact aerobics activities such as cycling, and swimming have been shown to have little to no effect on preventing age related bone loss in postmenopausal women. These activities alone do not cause enough impact or stress on the bone to improve bone strength for the prevention of osteoporosis, falls or fractures. Try to incorporate intervals of higher impact multi-directional activities into your daily weight bearing routine. Below are examples of higher impact activities.

**Higher Impact Activities**

**3-5 sets of 10-20 reps for a total of 50-100 jumps**

<b>Beginner Fitness Level</b> 3 sets 15-20 steps or 5-10 minutes	<b>Intermediate Fitness Level</b> 4 sets 20 reps or 15-30 minutes	<b>Advanced Fitness Level</b> 5 sets 20 reps or 20-40 minutes
<ul style="list-style-type: none"> <li>• Speed Walking</li> <li>• Marching in Place</li> <li>• Side Stepping</li> <li>• Walking with Weighted Vest</li> <li>• Tai Chi (5-10 minutes)</li> <li>• Backwards Walking</li> </ul>	<ul style="list-style-type: none"> <li>• Step Up/Step Downs</li> <li>• Skipping</li> <li>• Dancing (15-30 minutes)</li> <li>• Jogging (15-30 minutes)</li> </ul>	<ul style="list-style-type: none"> <li>• Jumping Jacks</li> <li>• Jumping Rope</li> <li>• Vertical or Lateral Jumps</li> <li>• Tennis, Basketball, Soccer, Pickle Ball (20-40 minutes)</li> </ul>

Consider meeting your 20-45 minutes of daily recommended weight bearing activity by blending intervals of higher impact activities with walking. For example:

<b>Fitness Level</b>	<b>Examples</b>	<b>Total Length of Time</b>
Initial/ Beginner	<ol style="list-style-type: none"> <li>1) 20 minutes of walking with 3 intervals of 15 side steps</li> <li>2) 20 minutes of walking with 3 intervals of 20 speed steps</li> <li>3) 10 minutes of Tai Chi followed by 10 minutes of walking</li> </ol>	20 minutes
Middle/ Intermediate	<ol style="list-style-type: none"> <li>1) 30 minutes of walking with 4 intervals of 20 skips</li> <li>2) 15 minutes of dancing followed by 15 minutes of walking</li> <li>3) 30 minutes of walking with 4 intervals of 20 step up/step downs</li> </ol>	30 minutes
Late/ Advanced	<ol style="list-style-type: none"> <li>1) 20 minutes of playing basketball followed by 20 minutes of walking</li> <li>2) 40 minutes of walking with 5 intervals of 20 jumping jacks</li> <li>3) 30 minutes of playing pickle ball followed by 10 minutes of walking</li> </ol>	40 minutes

Work to move from beginner to advanced fitness levels over time.

Reference: Adapted From: ACSM: Exercise is Medicine: [http://www.exerciseismedicine.org/support\\_page.php/rx-for-health-series/](http://www.exerciseismedicine.org/support_page.php/rx-for-health-series/)

# Strength Training



Challenging your muscles can help to strengthen your bones. Strength training, particularly in your legs and trunk, plays an important role in preventing falls. You will also improve your ability to do daily and fun activities without injuring yourself.

## What?

Hand weights, resistance bands, weight machines or your own body weight (for example, chair sit-to-stands or kitchen counter push-ups)



## How often?

2-3 days/week  
\*Rest day in between



## How hard?

Start w/12 repetitions at light-medium effort. Gradually build to hard effort for just 8 repetitions.



## How much?

8-10 repetitions for each major muscle group. After 2 weeks, increase to 2 sets.



**Remember:** Focus first on learning good technique - then increase resistance. Get help from a certified exercise professional or physical therapist. They can teach you the right way to do exercises and how to breathe properly.

## Resistance Training Tips and Cautions

- For the most benefit to your bones, work up to challenging loads. When possible, do exercises standing instead of sitting.
- Change your routine every couple of months. Bones respond well to variety.
- Be cautious about exercises involving bending and twisting at the hips and trunk.

Your strength training program should focus on a variety of functional movements that you encounter in day-to-day activities.

Reference: Adapted From: ACSM: Exercise is Medicine: [http://www.exerciseismedicine.org/support\\_page.php/rx-for-health-series/](http://www.exerciseismedicine.org/support_page.php/rx-for-health-series/)



**Strength Training:** *Goal 2-3 full body workouts per week  
2-3 sets of 8-12 reps*

For strength training your goal should be to perform your exercises for 2 to 3 sets of 8 to 12 repetitions of each movement up to 2-3 days per week. Ideally you want to work out at an intensity that you feel like challenged, but not overwhelmed with each exercise. You should work to a point of fatigue not failure or loss of technique. Your movements for each exercise should be slow and controlled, focusing on moving the weight with your body, not letting the weight move you.

You should be able to complete 1-2 extra reps before failure but not more than 1-2. If you can do more than 2 extra repetitions increase your weight slightly and try again. Conversely, if you are struggling to complete your desired 8-12 repetitions drop down your weight slightly and try again. Initially, you can expect to see fast improvements in the amount of weight you can tolerate, but you will likely see a plateau after 8-12 weeks. After this change may be more gradual.

**Strength Training Parameters**

*2-3 Complete Full Body Workouts Each Week  
2-3 Sets of 8-12 Reps*

*Include one exercise from each of the below 6 Movement Patterns*

Below are the six recommended movement patterns for strength training. You will see a list of sample exercises in the back of this packet, and you can find a list of exercises and progressions to follow on the CentraCare Bone Health Webpage at:

<https://www.centracare.com/services/rehabilitation-services/physical-therapy/bone-health-exercise-videos/>

Exercises can be completed however you see fit but we typically recommend a circuit training approach.

**Full Body Workout: Six Movement Patterns**

- 1) Squat: movement used for getting out of chair, off the couch, in and out of the car or in and out of bed
- 2) Hinge: movement used to pick something up off the ground
- 3) Lunge/Single Leg Step Up: movement used to climb stairs, or to step up onto a curb
- 4) Upper Extremity Push: movement used for closing doors or reaching overhead to put something in the cupboard
- 5) Upper Extremity Pull: movement used for opening doors, maintaining upright postures, or dragging an object
- 6) Carry: movement used to carry groceries or a grand child



## Spinal Conditioning



**WHAT IS SPINAL CONDITIONING?** Spinal conditioning is strengthening the muscles that support the spine.

**WHY DO SPINAL CONDITIONING?** Stronger spinal muscles help support the osteoporotic vertebrae which helps reduce the risk of fracture. Stronger spinal muscles can produce better posture or help correct poor posture. Exercises performed laying on your stomach facilitate stronger spinal muscles.

**WHICH MUSCLES ARE EXERCISED?** Strengthening the muscles that hold the spine straight and upright is important. These muscles run up and down the back and sides of your spine. They are called your erector spinae muscles.

**What?** Exercises targeting the spine muscles

**How Often?** Exercises performed daily

**How Much?** Perform 1 set to fatigue per side of all 3 spinal conditioning exercises

### Exercises:

- 1) Prone Single Shoulder flexion
- 2) Prone Hip Extension
- 3) Prone Alternating Arm and Leg Lifts

Adapted from: [www.nopf.org/preventing-fracture](http://www.nopf.org/preventing-fracture)

## Osteoporosis Treatment Principles

Bone is a dynamic tissue that responds to changes in mechanical loads by altering its mass, structure, and or strength controlled via a negative feedback system, to withstand future loads to prevent future fracture.

### Key Loading Characteristics and Training Principles to Optimize Bone Health

- Dynamic intermittent rather than static loads
- Loads that are high in magnitude and applied rapidly
- Loads that are applied in unusual or diverse loading directions or patterns
- Relatively few loading cycles (repetitions)

### Clinical exercise prescription guidelines for the prevention and management of osteoporosis

- **Specificity:** exercise must include target activities that specifically load the skeletal sites of interest; particularly the hip, spine, and wrist
- **Progressive Overload:** The load to bone must exceed that of typical loading patterns encountered from everyday activities; load must be increased progressively.
- **Reversibility:** any positive skeletal adaptations resulting from exercise training will be progressively lost once the program or stimulus is discontinued. At least two sessions per week is the minimum effective dose to positively influence bone over the long term (postmenopausal women with osteopenia)
- **Initial values:** The greatest change in bone will occur with the lowest initial bone mineral density.
- **Diminished Returns:** bone cells initially respond strongly to a given load of sufficient magnitude, but this response will eventually phase out as the cells learn or accommodate to the new loads.

### IS WALKING ENOUGH?

Regular walking for leisure in isolation and other forms of low or non-impact aerobic activities such as cycling and swimming have been shown to have little to no effect on preventing age related bone loss in postmenopausal women. This can be explained by the fact that these activities typically impart low level loads on bones that are not sufficient to exceed the required threshold for skeletal adaptation. Current evidence does not support walking as a single intervention for the prevention of osteoporosis, falls or fractures.

# Exercise Logs

# PATIENT EDUCATION

Exercise BEGINNER FITNESS LEVEL	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							Day Off
<b>Aerobic (4-7 days per week)</b>	20 minutes of walking with 3 intervals of 15 side steps		10 minutes walking and 10 minutes of Tai Chi	20 minutes of walking with 3 intervals of 15 side steps		10 minutes walking and 10 minutes of Tai Chi	
<b>Strengthening (2-3 days per week)</b>							
<i>Squat</i> : Gym Ball on the Wall Squat	2-3 sets 8-12 reps				2-3 sets 8-12 reps		
<i>Hinge</i> : Bridge	2-3 sets 8-12 reps				2-3 sets 8-12 reps		
<i>Lunge/Step Up</i> : Step Up	2-3 sets 8-12 reps				2-3 sets 8-12 reps		
<i>Upper Body Push</i> : Seated Shoulder Press		2-3 sets 8-12 reps				2-3 sets 8-12 reps	
<i>Upper Body Pull</i> : Seated Theraband Row		2-3 sets 8-12 reps				2-3 sets 8-12 reps	
<i>Carry</i> : Suitcase Carry		2-3 sets 8-12 strides				2-3 sets 8-12 strides	
<b>Spinal Strengthening (Daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lift							

## PATIENT EDUCATION

Exercise INTERMEDIATE FITNESS LEVEL	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>	30 minutes of walking with 4 intervals of 20 skips	15 minutes of walking followed by 15 minutes of dancing		30 minutes of walking with 4 intervals of 20 skips	15 minutes of walking followed by 15 minutes of dancing		30 minutes of walking with 4 intervals of 20 step up/step downs/leg
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> Squat with Theraband			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<i>Hinge:</i> Bridge with Gym Ball			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<i>Lunge/Step Up:</i> Forward Lunge			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<i>Upper Body Push:</i> Push Up			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<i>Upper Body Pull:</i> Bent Over Row			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<i>Carry:</i> Elevated Carry			2-3 sets 8-12 reps			2-3 sets 8-12 reps	
<b>Spinal Strengthening (Daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lift							

# PATIENT EDUCATION

Exercise ADVANCED FITNESS LEVEL	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>	20 minutes playing basketball followed by 20 minutes walking		40 minutes of walking with 5 intervals of 20 Jumping Jacks	40 minutes of walking with 5 intervals of 20 lateral jumps	20 minutes playing pickleball followed by 20 minutes walking		40 minutes of walking with 5 sets of 20 reps jump rope
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> Squat with Dumbbells		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<i>Hinge:</i> Dumbbell Deadlift		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<i>Lunge/Step Up:</i> Walking Lunge		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<i>Upper Body Push:</i> Push Up with Feet on Gym Ball		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<i>Upper Body Pull:</i> Gym Ball Reverse Fly		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<i>Carry:</i> Mixed Carry		2-3 sets 8-12 reps		2-3 sets 8-12 reps		2-3 sets 8-12 reps	
<b>Spinal Strengthening (Daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lift							

# PATIENT EDUCATION

Exercise	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>							
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> 2-3 sets, 8-12 reps							
<i>Hinge:</i> 2-3 sets, 8-12 reps							
<i>Lunge/Step Up:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Push:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Pull:</i> 2-3 sets, 8-12 reps							
<i>Carry:</i> 2-3 sets, 8-12 reps							
<b>Spinal Strengthening (daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lifts							



# PATIENT EDUCATION

Exercise	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>							
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> 2-3 sets, 8-12 reps							
<i>Hinge:</i> 2-3 sets, 8-12 reps							
<i>Lunge/Step Up:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Push:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Pull:</i> 2-3 sets, 8-12 reps							
<i>Carry:</i> 2-3 sets, 8-12 reps							
<b>Spinal Strengthening (daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
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# PATIENT EDUCATION

Exercise	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>							
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> 2-3 sets, 8-12 reps							
<i>Hinge:</i> 2-3 sets, 8-12 reps							
<i>Lunge/Step Up:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Push:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Pull:</i> 2-3 sets, 8-12 reps							
<i>Carry:</i> 2-3 sets, 8-12 reps							
<b>Spinal Strengthening (daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lifts							

# PATIENT EDUCATION

Exercise	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>Weight Bearing Activity</b>							
<b>Aerobic (4-7 days per week)</b>							
<b>Strengthening (2-3 days per week)</b>							
<i>Squat:</i> 2-3 sets, 8-12 reps							
<i>Hinge:</i> 2-3 sets, 8-12 reps							
<i>Lunge/Step Up:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Push:</i> 2-3 sets, 8-12 reps							
<i>Upper Body Pull:</i> 2-3 sets, 8-12 reps							
<i>Carry:</i> 2-3 sets, 8-12 reps							
<b>Spinal Strengthening (daily)</b>	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps	1 set to fatigue 10-100 reps
Prone Single Shoulder Flexion							
Prone Hip Extension							
Prone Alternating Arm Leg Lifts							

# Exercise Descriptions

# Squat Patterns

## Squat Gym Ball on Wall Squat



### Setup:

Stand close to the wall and place a gym ball in the small of your back. Lean into the ball so you are pressing the ball into the wall.

### Movement:

Slowly bend at your knees lowering your body to the floor, allowing the gym ball roll up your back. Stop when you get to a comfortable depth and then push through your legs to stand back up.

### Tip:

Your feet should stay flat on the floor with this movement. As you get stronger or more confident, try to get to a greater depth.

## Squat TRX Squat



### Setup:

While holding onto a suspension trainer, stand upright with feet just outside of shoulder width. You should be standing far enough away from the anchor of the trainer to keep the bands tight.

### Movement:

Slowly bend at your knees and hips to lower your body into a seated position. Pause briefly when you get to a comfortable or challenging depth, then push through your legs to return to the starting position.

### Tip:

Your feet should stay flat on the floor with this movement. As you get stronger or more confident, try to get to a greater depth. To increase the challenge of the exercise, try moving your feet forward and leaning backwards into the band more.



## Squat Squat with Chair Touch



### Setup:

Place a chair next to a wall or another firm surface, and then stand in front of it with feet just outside of shoulder width.

### Movement:

Slowly push your hips back and bend at your knees while lowering bottom to a chair. Once your bottom touches the chair, pause briefly before standing back upright to return to the start position.

### Tip:

Your feet should stay flat on the floor with this movement. Your torso should remain relatively upright during the movement. Add resistance with a weight to increase the challenge of the exercise.



## Squat Sumo Squat



### Setup:

Standing upright with a wide base of support – feet should be turned outwards quite a bit – grab onto a small to medium weight and hold it at your waist.

### Movement:

Slowly bend at your hips and knees lowering your body to a seated position. Pause when you get to a comfortable or challenging depth, before pushing through your legs to return to the starting position.

### Tip:

Your feet should stay flat on the floor with this movement. Your torso should remain relatively upright during the movement. As you get stronger or more confident, try to get to a greater depth, or hold onto a heavier weight.

## Squat Squat with TheraBand



### Setup:

Place a resistance band or tube that is tied in a circle around your knees and then stand with feet flat on the floor, just outside of shoulder width apart.

### Movement:

Slowly bend at your hips and knees to lower your body as if you are sitting in a chair. Once you get to a comfortable or challenging depth, push through your legs to return to the starting position.

### Tip:

You should feel your knees push outwards into the band during the movement. As you get stronger or more confident, try to get to a greater depth. You can also add resistance by holding onto weight at your chest or in both hands to make the exercise more challenging.



## Squat Kettlebell Squat



### Setup:

While standing upright with feet just outside of shoulder width, grab a kettlebell – or some other weight – and hold it underneath your chin.

### Movement:

Slowly bend at your knees lowering your body to the floor while keeping your torso upright. Stop when you get to a comfortable depth, and then push through your legs to return to the starting position.

### Tip:

Your feet should stay flat on the floor with this movement. As you get stronger or more confident, try to get to a greater depth.



## Squat Dumbbell Squat



### Setup:

While standing upright with feet just outside of shoulder width, grab a small to medium sized weight in both hands.

### Movement:

Slowly bend at your knees lowering your body to the floor while keeping your torso upright. Stop when you get to a comfortable depth, and then push through your legs to return to the starting position.

### Tip:

Your feet should stay flat on the floor with this movement. As you get stronger or more confident, try to get to a greater depth.

# Hinge Patterns



## Hip Hinge Supine Bridge



### Setup:

Lay flat on your back with your knees bent.

### Movement:

Slowly squeeze your buttocks and gradually lift your hips in the air. Once all the way up, pause for a moment and then return to the start position.

### Tip:

Try not to arch your back as you are lifting your bottom in the air.





## Hip Hinge TRX Hinge



### Setup:

While holding onto the suspension trainer straps, stand far enough away so that your arms are straight and there is tension on the bands.

### Movement:

Slowly push your hips backwards while keeping your arms and torso straight. Once you feel a stretch in your backside, squeeze your buttocks to return to standing.

### Tip:

It is acceptable for your knees to bend a little during this movement, but you want to use your hips as much as possible.



## Hip Hinge Bridge with Gym Ball



### Setup:

While lying flat on your back, place your heels onto a gym ball with your legs completely straight.

### Movement:

Slowly squeeze your buttocks while pushing your heels into the gym ball and lift your hips in the air. Then, lower your hips and return to the start position slowly.

### Tip:

Try not to let your lower back arch or round during the movement.

## Hip Hinge Gym Ball Hip Extension



### Setup:

Lay flat on a gym ball at about belly button height with your hips slightly bent.

### Movement:

Slowly squeeze your buttocks to lift your chest in the air, pause for a moment and then slowly return to the start position.

### Tip:

It works best if your feet are against a wall or a firm surface. Try not to let your lower back arch or round during the movement.

## Hip Hinge Kettlebell Deadlift



### Setup:

While standing upright with feet slightly outside of shoulder width, hold a kettlebell or some other weight in your hands between your legs.

### Movement:

Slowly bend at the hips and push your bottom backwards while keeping your torso straight. Stop the movement when you feel a stretch in your bottom. Then, squeeze your buttocks to bring your hips back underneath you and return to the starting position.

### Tip:

It is acceptable for your knees to bend a little during this movement, but you want to use your hips as much as possible. As you get better at this movement you will notice the weight gets closer to the floor.



## Hip Hinge Dumbbell Deadlift



### Setup:

While standing upright with feet slightly outside of shoulder width, hold a pair of dumbbells or alternative weights against your thighs or just outside of your waist.

### Movement:

Slowly bend at the hips and push your bottom backwards while keeping your torso straight. Stop the movement when you feel a stretch in your bottom. Then, squeeze your buttocks to bring your hips back underneath you and return to the starting position.

### Tip:

It is acceptable for your knees to bend a little during this movement, but you want to use your hips as much as possible. As you get better at this movement you will notice the weights get closer to the floor.



# Lunge/Single Leg Patterns



## PATIENT EDUCATION

### Lunge/Single Leg Step Up



#### Setup:

Standing upright with one foot elevated on a small, stable box – with or without holding onto weights in each hand.

#### Movement:

Push through your front leg to move your body upward until your knee is fully straight, pause briefly and lower yourself down slowly to the start position.

#### Tip:

Your front foot should stay flat during the movement. You can hang on to a countertop or railing if necessary to maintain your balance. You can adjust the box height to make the exercise easier or more difficult. Add weights to each hand if the exercise becomes easy.





## Lunge/Single Leg TRX Lunge



### Setup:

While holding onto a suspension trainer, stand upright with feet staggered in as wide of a stance as comfortable. You should be standing far enough away from the anchor of the trainer to keep the bands tight.

### Movement:

While maintaining upright to backwards leaning posture, bend both knees and lower your back knee down to the floor. Pause briefly before returning to the start position.

### Tip:

Your front foot should stay completely flat on the floor. Your torso should remain upright through the movement. Generally, your front knee should stay behind your toes on this movement.

## Lunge/Single Leg Split Squat



### Setup:

Stand upright with feet staggered in as wide of a stance as comfortable.

### Movement:

While maintaining upright posture, bend both knees and lower your back knee down to the floor. Pause briefly before returning to the start position.

### Tip:

Your front foot should stay completely flat on the floor. Your torso should remain upright through the movement. Generally, your front knee should stay behind your toes on this movement. You can increase the challenge of this exercise by holding onto weights in either hand.



## Lunge/Single Leg Forward Lunge



### Setup:

While standing upright with feet just outside of shoulder width.

### Movement:

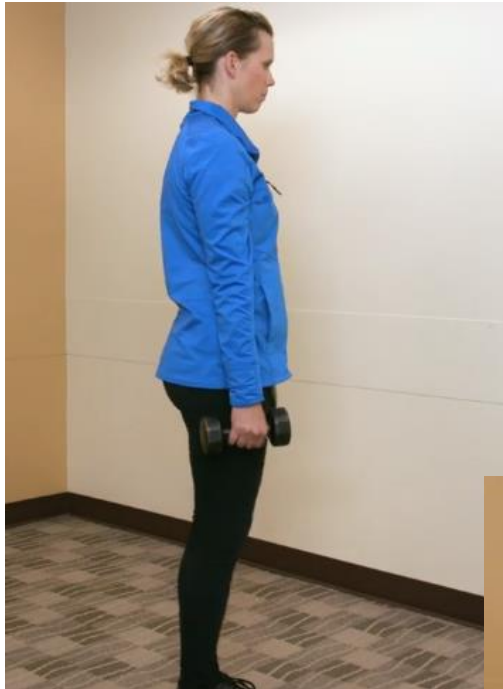
Step forward in a slow, controlled manner, and lower your back leg down to the ground slowly while bending at both knees. Then stand back upright while bringing your back foot towards your front foot. Repeat stepping forward with the opposite leg.

### Tip:

Be careful not to step too far forwards. Try to maintain upright posture during the entire movement.



## Lunge/Single Leg Reverse Lunge



### Setup:

Stand upright with feet just inside of shoulder width.

### Movement:

Step backwards with one leg, bend at your knees and slowly lower your back leg to the floor. Stop when you get to a comfortable depth – or – when your knee touches the floor – then push with both legs to stand back upright. Bring your back leg forward to return to the start position.

### Tip:

Your front foot should stay completely flat on the floor. Your torso should remain upright through the movement. You can use weights to increase the challenge of the exercise.

## Lunge/Single Leg Lunge with Theraband



### Setup:

Stand upright with feet staggered in as wide of a stance as comfortable. Place a resistance band or tubing under your front foot, holding onto an end in each hand.

### Movement:

While maintaining upright posture, bend both knees and lower your back knee down to the floor. Pause briefly before returning to the start position.

### Tip:

Your front foot should stay completely flat on the floor. Your torso should remain upright through the movement. Generally, your front knee should stay behind your toes on this movement.

## Lunge/Single Leg Walking Lunge



### Setup:

Stand upright with feet just inside of shoulder width.

### Movement:

With one leg step upwards and forwards to a spot about 12-18 inches away from your opposite leg. Once your foot is stable on the floor, bend at both knees and lower your back knee down to the ground. Then, push through both legs to stand up, bringing your back foot towards your front foot. Once standing upright, repeat this with the opposite leg.

### Tip:

Your front foot should stay completely flat on the. Your torso should remain upright through the movement. You can use weights to increase the challenge of the exercise.



## Lunge/Single Leg Forward T



### Setup:

Stand upright with feet just inside of shoulder width, holding onto a dumbbell, kettlebell, or no resistance.

### Movement:

Step backwards with one leg keeping both knees relatively straight and your opposite foot flat on the floor. Bend forward at your hip until you feel tightness on the back of your leg, then squeeze your buttocks and return to the starting position.

### Tip:

Your front foot should stay completely flat on the floor. Your torso should remain upright through the movement. You can use weights to increase the challenge of the exercise. Your knees can bend a little during the exercise, but you want to keep tension on your hips during the movements.

# Upper Extremity Push Patterns



## Upper Extremity Push Seated Shoulder Press



### Setup:

Sitting upright with flat on the floor. Hold a weight in either hand at about eye level.

### Movement:

While maintaining upright posture, press the weights upward and together over your head. Pause briefly and then return to the start position.

### Tip:

Your hands or the weights should touch together at the top of the movement. Your elbows should be straight when this happens. You can try doing this in a chair without back support to increase the challenge.

## Upper Extremity Push Standing Shoulder Press



### Setup:

Standing upright with feet just inside of shoulder width. Hold a weight in either hand at about eye level.

### Movement:

While maintaining upright posture, press the weights upward and together over your head. Pause briefly and then return to the start position.

### Tip:

Your hands or the weights should touch together at the top of the movement. Your elbows should be straight when this happens. If this is too challenging, try a seated variation.



## Upper Extremity Push Single Arm Shoulder Press



### Setup:

Stand upright with feet just outside of shoulder width. Hold a kettlebell or alternative weight in one hand at shoulder height.

### Movement:

While keeping your torso upright, slowly push the weight straight upwards over your head. Once your arm is completely straight, slowly lower the weight back down to the starting position.

### Tip:

Try not to lean side to side or let your head drift forward during the movement. If this is too challenging, you could also try this movement while sitting in a chair.



## Upper Extremity Push Dumbbell Chest Press



### Setup:

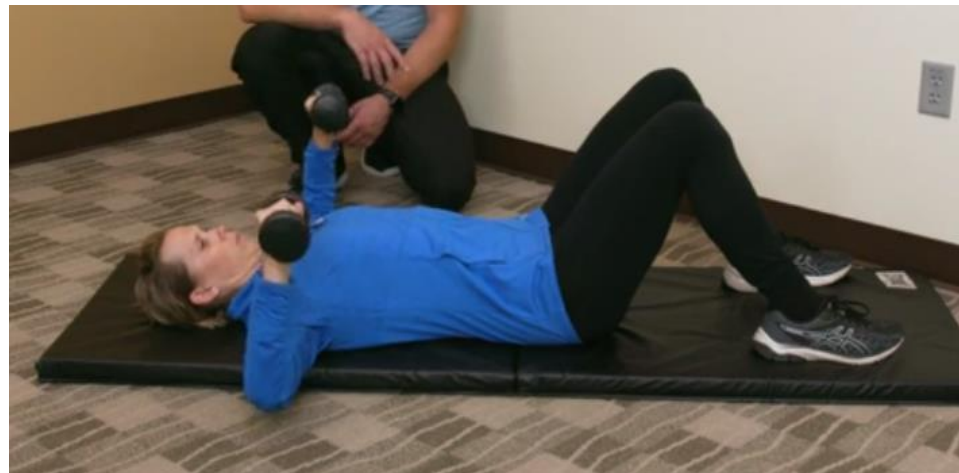
While lying on the floor or a bench, hold a weight in each hand with arms straight at about chest height.

### Movement:

Bend your elbows and slowly lower the weights down toward your chest. Once you get to a comfortable depth, pause briefly and then push back up to the start position.

### Tip:

You can adjust the angle of your arms – up or down – to make the movement more comfortable for you.



## Upper Extremity Push Plank with Plus



### Setup:

Start in a push up position on the floor with your hands just outside shoulder width and feet close together.

### Movement:

While keeping your elbows straight, sink your chest into the floor and allow your shoulder blades to move together. From there, do the opposite motion and push your shoulder blades apart as far as you can – you should feel a rounding in your upper back when done correctly.

### Tip:

If this variation is too difficult, you can do this exercise from your knees, or with your hands on an elevated surface like a kitchen counter.



## Upper Extremity Push Push Up



### Setup:

Start in a push up position on the floor with your hands just outside shoulder width and feet close together.

### Movement:

Bend your elbows and slowly lower your chest to the floor. When you get to a comfortable depth, pause briefly and push yourself back up to the start position.

### Tip:

You can modify the hand position to be more comfortable for you. As you get better at the exercise you will get lower to the floor.

## Upper Extremity Push Push Up with Legs on Gym Ball



### Setup:

Start in a push up position on the floor with your hands just outside shoulder and feet or legs elevated on a gym ball.

### Movement:

Bend your elbows and slowly lower your chest to the floor. When you get to a comfortable depth, pause briefly and push yourself back up to the start position.

### Tip:

You can modify the hand position to be more comfortable for you. You can move the gym ball up your legs to make the exercise easier, or closer to your feet to make the exercise more challenging.

## Upper Extremity Push TRX Push



### Setup:

From a standing position with a TRX Strap in each hand, lean forward until your body weight is supported by the straps.

### Movement:

Bend your elbows and slowly lower your chest towards your hands while allowing your arms to drift apart. When you get to a comfortable depth, pause briefly and push yourself back up to the start position by straightening your elbows and bringing your hands together.

### Tip:

You can modify the hand position to be more comfortable for you by moving your arms up or down. You can make the exercise more or less challenging by moving your feet closer or further away from the anchor point.



## Upper Extremity Push Triceps Push Up on Gym Ball



### Setup:

With your feet in contact with the floor, place your hands on a gym ball about shoulder width apart.

### Movement:

Bend your elbows and slowly lower your chest towards your hands. When you get to a comfortable depth, pause briefly and push yourself back up to the start position by straightening your elbows.

### Tip:

You can modify the hand position to be more comfortable for you by moving your arms up or down. Try to keep your elbows at your sides during the movement.

# Upper Extremity Pull Patterns

## Upper Extremity Pull Seated Theraband Row



### Setup:

Seated in a chair with feet flat on the floor facing an anchored Theraband that is at chest height.

### Movement:

With an end of the band in each hand, slowly pull your elbows backwards and down while squeezing your shoulder blades together. Pause for a moment and then return to the start position.

### Tip:

You should try to maintain good, upright posture during the movement focusing on only moving your arms and shoulder blades.

## Upper Extremity Pull Seated Lat Pulldown with Theraband



### Setup:

Seated in a chair with feet flat on the floor facing an anchored Theraband that is above your head.

### Movement:

With an end of the band in each hand, slowly pull your elbows down and backward while squeezing your shoulder blades together. Pause for a moment and then return to the start position.

### Tip:

You should try to maintain good, upright posture during the movement focusing on only moving your arms and shoulder blades.

## Upper Extremity Pull Theraband Reverse Fly



### Setup:

Standing with arms raised at 90 degrees and a Theraband held in each hand.

### Movement:

With an end of the band in each hand, slowly bring your arms apart while squeezing your shoulder blades together. Pause for a moment and then return to the start position.

### Tip:

You should try to maintain good, upright posture during the movement focusing on only moving your arms and shoulder blades and keeping your elbows straight.



## Upper Extremity Pull Bent Over Row



### Setup:

Standing with feet staggered holding onto a chair or countertop for upright support.

### Movement:

While holding a weight in one hand slowly pull your elbow backwards and down towards your waist. Pause briefly before lowering the weight back down to the starting position.

### Tip:

Your outside leg (away from the support) should be your back leg. Try to keep your upper back straight during the movement.





## Upper Extremity Pull Dumbbell Reverse Fly



### Setup:

Standing with feet together, slightly bent at the hip with knees straight. Hold a moderate weight in either hand with palms turned up.

### Movement:

While maintaining the bent at the hip posture, bring your hands apart and squeeze your shoulder blades together. Pause briefly at the top position and slowly return your arms to the start position.

### Tip:

Try to keep your elbows straight during the movement. For added stability you can do this exercise with your bottom touching a wall.



## Upper Extremity Pull Gym Ball Row



### Setup:

Laying on a gym ball at the chest or belly, holding a moderate weight in either hand with palms in a thumbs up position.

### Movement:

While maintaining chest or belly on ball position, pull your hands towards your belt line while squeezing your shoulder blades together and down. Pause briefly at the top position and slowly return your arms to the start position.

### Tip:

Try to keep your elbows and hands tight to your body during the movement. For added stability you can do this exercise with your feet touching a wall. Try to maintain a slight chin tuck during the movement.





## Upper Extremity Pull Gym Ball Reverse Fly



### Setup:

Laying on a gym ball at the chest or belly, holding a moderate weight in either hand with palms turned up.

### Movement:

While maintaining chest or bell on ball position, bring your hands apart and squeeze your shoulder blades together. Pause briefly at the top position and slowly return your arms to the start position.

### Tip:

Try to keep your elbows straight during the movement. For added stability you can do this exercise with your feet touching a wall. Try to maintain a slight chin tuck during the movement.



## Upper Extremity Pull TRX Row



### Setup:

From a standing position with a TRX Strap in each hand, lean backward until your body weight is supported by the straps.

### Movement:

While keeping your hips forward, pull yourself into the band by bending your elbows and squeezing your shoulder blades together and down. Pause briefly and then return to the start position.

### Tip:

Try to keep your elbows and hands tight to your body. You can make the exercise more or less challenging by moving your feet closer or further away from the anchor point.

# Carry Patterns

## PATIENT EDUCATION

### Carry Suitcase Carry



#### **Setup:**

Standing upright holding onto a weight in one hand with your arm slightly bent.

#### **Movement:**

Walk forwards taking short, controlled steps. Go until you are tired, then switch hands and go back to the start position.

#### **Tip:**

Try to keep an upright posture during the walk. When it becomes easier, increase the resistance.

## PATIENT EDUCATION

### Carry Elevated Carry



#### **Setup:**

Standing upright holding onto a weight in one hand with your arm elevated to about 90 degrees with your elbow bent.

#### **Movement:**

Walk forwards taking short, controlled steps. Go until you are tired, then switch hands and go back to the start position.

#### **Tip:**

Try to keep an upright posture during the walk. When it becomes easier, increase the resistance.

## Carry Overhead Carry



### Setup:

Standing upright holding onto a weight in one hand with your arm extended straight overhead.

### Movement:

Walk forwards taking short, controlled steps. Go until you are tired, then switch hands and go back to the start position.

### Tip:

Try to keep an upright posture during the walk, chin tucked back. When it becomes easier, increase the resistance.

## PATIENT EDUCATION

### Carry Mixed Carry



#### **Setup:**

Standing upright holding onto a medium weight in one hand with your arm slightly bent, and then a slightly smaller weight with your arm elevated.

#### **Movement:**

Walk forwards taking short, controlled steps. Go until you are tired, then switch hand and arm position before returning to the starting spot.

#### **Tip:**

Try to keep an upright posture during the walk. When it becomes easier, increase the resistance.

# Spinal Conditioning



## Spinal Conditioning Prone Arm Lifts



### Setup:

Lying flat on your stomach with your arms overhead.

### Movement:

While keeping your arm straight, make a fist and lift your arm in the air as high as comfortable. Slowly lower the arm back to the floor.

### Tip:

Do all movements on one side to fatigue first before switching and doing the other side. You should do the same number of repetitions on both sides.



## Spinal Conditioning Prone Leg Lifts



### Setup:

Lying flat on your stomach with your arms overhead.

### Movement:

While keeping your leg straight, squeeze your bottom and lift one leg in the air as high as comfortable. Slowly lower the leg back to the floor.

### Tip:

Do all movements on one side to fatigue first before switching and doing the other side. You should do the same number of repetitions on both sides.



## Spinal Conditioning Prone Opposite Arm and Leg Lifts



### Setup:

Lying flat on your stomach with your arms overhead.

### Movement:

While keeping your arms and legs straight lift one arm and one leg (on the opposite side) at the same time as far as you are comfortable with. Slowly lower the arm and leg back to the floor and then repeat.

### Tip:

Do all movements on one side to fatigue first before switching and doing the other side. You should do the same number of repetitions on both sides.

