Stand Tall with Osteoporosis thru Pilates

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Content of Program

- Fast facts about Osteoporosis
- Explanation of why posture and exercise are important
- Benefits of posture and exercise specific to Osteoporosis
- Learn how to safely incorporate Pilates into your exercise regime
Fast Facts on Osteoporosis

- Major health threat for 44 million Americans
- In NYS more than 3 million Men and Women have Osteoporosis or low bone mass
- Osteoporotic bone is more likely to fracture than healthy bone
- 1 in 2 women and 1 in 4 men over age 50 will break a bone due to Osteoporosis

It is never too late to protect your bones
Fast Facts

How you can help protect and keep your bones strong:
- Healthy diet
- Get the calcium and vitamin D you need
- Avoid smoking, excessive alcohol
- Maintain good balance

**Exercise** – which is the focus of this talk and specifically Pilates exercises
Why Exercise?

• Muscle mass and flexibility decline as we age

• Having strong muscles improves balance and decreases the risk for falls
  • Falls commonly result in fracture
Good strength and proper flexibility is needed to maintain proper posture and carry out daily activities

- Older individuals with and without Osteoporosis tend to lean toward a kyphotic posture
Why Exercise?

- Weight bearing strengthening increases bone density and can prevent, slow and/or reverse bone loss.
Goals of Exercise

- Safely strengthen the muscles in your arms, legs and core
- Stretch muscles as needed to improve/maintain good posture
- Weight bearing exercise can strengthen the bone
  - Loading through the bone can increase bone strength
Why Pilates?

- Benefits of Pilates:
  - Breathing
  - Improve posture
  - Improve muscle balance
  - Strength
  - Flexibility
  - Core control

- And you can...
go from this posture...

Forward head, rounded shoulders, loose abdominals
Good Posture

To this posture!!

Ears over shoulders, shoulders over hips, hips over knees, knees over ankles

Good Posture
What is Pilates?

- Pilates is a Method of precise exercise and physical movement coupled with breathing patterns designed to stretch, strengthen and balance the body (www.pilatesmethodalliance.org)

  Developed by
  Joseph Pilates
  1926-1971
Benefits of Pilates

- Postural awareness and Alignment may help to prevent spinal fractures.

- Pilates exercises in standing are weight bearing, using body weight for resistance. These may strengthen bones of the hip.

- Pilates exercises in prone position strengthen the back extensor muscles targeting the spinal vertebrae.

Benefits of Pilates

- **Balance** exercises may prevent hip fractures due to falls
- Reduction in **stress** may inhibit bone loss
- Exercise in **bare feet** stimulates proprioceptors to give better sensory feedback to our brain for balance reactions

Pilates

- The exercises focus on the core postural muscles
- Keeps the body balanced
- Can be done at any age, any fitness level
- It improves strength, flexibility, agility and economy of movement
- It can be done safely by individuals with Osteoporosis
  - Some exercises must be modified or avoided completely to avoid spinal flexion
Pilates – improves core strength

- **Transverse abdominis**
  - Runs across the abdomen and acts a brace
  - Flattens our stomachs
  - Feel for it just inside hip bones by drawing in stomach like you were putting on a tight pair or pants

- **External and internal obliques**
  - Run length wise from under ribs to pelvis

- **Pelvic floor**
Pilates – Weight bearing exercises

- Many weight bearing exercises – which may improve bone health
### Pilates – balances muscles

<table>
<thead>
<tr>
<th>What needs to be stretched?</th>
<th>What needs to be strengthened?</th>
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<tbody>
<tr>
<td>• Pectorals</td>
<td>• Deep abdominals</td>
</tr>
<tr>
<td>• Cervical and thoracic spine</td>
<td>• Scapular stabilizers</td>
</tr>
<tr>
<td>• Hip flexors</td>
<td>• Gluteals</td>
</tr>
<tr>
<td>• Knees</td>
<td>• Lower extremities</td>
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</tbody>
</table>
Poor posture = weak abdominals
Poor posture – muscle imbalances
front musculature is tight and back muscles are weak
Exercise modifications are needed when doing Pilates if you have Osteoporosis.

Some movements may increase your risk for compression fracture.

Exercising is safe if done properly.
Performing Pilates Exercises Safely

- Avoid spine flexion
  - Flexion is the action of bending or being bent (https://www.google.com/#q=flexion&spf=1496234869050)
  - Flexion may cause compression fracture because of the forces through the vertebrae
Avoid Flexion (bending forward through the spine)
No sit ups, crunches, never pull on your neck, don’t tuck chin to chest
Precaution Continued

- Avoid excessive rotation of the spine
  - Do not perform a full twist in the upright position
  - Do not force rotation into pain
  - May be okay in lying if NO pain occurs

This is ok if not painful, do not force the movement

This is not safe if you have low bone density
(www.pilatesanytime.com)
Precautions Continued

- Avoid excessive compression through the spine
- Avoid heavy lifting overhead
- Avoid jarring through the spine or buttock
- Modify exercises that challenge balance
Does This Look Safe?
Hopefully you all said NO!

- Toe touches with straight legs can cause undue stress on the spine
- With decreased bone density this can result in a fracture of the spine
- Most fractures associated with osteoporosis occur in the spine and hip, but any bone can be affected
Most fragile position for the spine
Pilates Breathing

- Pilates uses breath to coordinate the deep abdominals and obtain good recruitment of the muscles.
- Instructions for each exercise include how to breath.
- Let's practice this now because it is so important!
Breathing

- In through nose, out thru mouth with pursed lips
- Emphasize 3D breath into lower, posterior lobes of the lungs
- Deep breathing promotes engagement of the transverse abdominis
- Ribs open up and out during inhalation, close in and down during exhalation
Breathing

START IN YOUR NORMAL SEATED POSITION.
ELONGATE SPINE AND LIFT THE STERNUM AND HOLD.
THIS WILL CORRECT POSTURE.
Breathing – correct posture

Used to correct posture, decrease strain on neck and decrease pressure on discs.

• Gently lengthen the back of the neck.

• Imagine a string pulling you up from the top of your head.
The Exercises
Head and Cervical Placement

- Always maintain natural curve of neck
- During exercise allow neck to follow the rest of the spine
- When flexing neck only a head nod should be performed
  - Move the head on the first two vertebrae
  - This will dynamically stabilize neck and protect it
  - May require pillow under your head to keep head in line with spine
Pelvic Placement

- In neutral, natural lumbar lordotic curve is present
  - Absorbs shock well
  - Promotes efficient movement patterns
  - Used when feet are planted
- Imprint is a slight posterior pelvic tilt with lumbar flexion
  - Used to gain stability
  - Used when legs are up
Modified Hundred

- Head will remain on the mat - no flexion
- Legs can be in table top or feet can be on the floor
- If feet flat on floor position low back in neutral, if feet are up imprint - engage abdominals with both
- Inhale and pulse arms for a 5 count then exhale for a 5 count
- Repeat until you reach 100 beats
To make the hundred more difficult try...
Modified Single Leg Stretch

- Start with head down, legs in table top, hands resting on outside of knees
- Exhale, extend one leg out to diagonal moving outside hand to ankle, inside hand to knee of bent leg
- Inhale, begin to switch legs
- Exhale, extend the other leg
- Repeat for 8-10 repetitions
One Leg Circle

- Neutral spine, one leg long and the other reaching toward the ceiling
- Move leg in circular motion, moving across body then away
- Move leg only as much as you can keep pelvis still
- Inhale first part of circle, exhale to finish
- Circle 5 times each direction, perform with both legs
Modified Scissors

- Start with head down, both legs extended toward ceiling
- Exhale, reach one leg down toward floor and draw the other closer to the body for 2 counts
- Inhale, start to switch legs
- Exhale and repeat with other leg reaching toward the floor
- 8-10 repetitions
Shoulder Bridge Prep

- Start lying on your back with knees bent, feet hips width apart
- Inhale to prepare
- Exhale, stabilize pelvis and maintain neutral spine while lifting hips off mat
- Inhale, stay
- Exhale, place pelvis back onto mat
- Repeat 4-6 times
To make the Shoulder Bridge more difficult...
Breast Stroke Prep 1

- Start lying on stomach, hands on floor just above shoulders
- Inhale to prepare
- Exhale, stabilize scapulae and apply pressure through forearms
- Lengthen the neck and upper back
- Inhale stay
- Exhale, lengthen back down to mat
- Repeat 3-5 times
Overhead View of Starting Position
Breast Stroke Prep 2

- Start with hands by hips
- Inhale, open front of shoulders and stabilize shoulder blades
- Exhale, reach fingertips towards your toes and extend upper back
- Inhale stay
- Exhale lengthen back down to mat
- Repeat 3-5 times
Breast Stroke Prep 3

- Start with arms bent, hands under forehead
- Inhale to prepare
- Exhale, reach top of head away from toes and extend upper body up off mat
- Inhale, suspend
- Exhale, lengthen back down to mat
- Repeat 3-5 times
Heel Squeeze Prone

- Start on stomach, knees bent 90 degrees and abducted slightly wider than hips width apart, heels together
- Inhale to prepare
- Exhale, squeeze heels together while maintaining neutral pelvis
- Inhale and slowly release
- Repeat 8-10 times
One Leg Kick Prep

- Lying flat on stomach, hands under head, stabilizing the pelvis
- Inhale to prepare
- Exhale, bend knee and pulse foot twice towards buttocks, first pointing the foot, then flexing
- Inhale, straighten the knee
- Repeat 5-8 times each leg
One Leg Kick

- Start with front of body facing the mat, upper body propped on elbows, spine neutral
- Inhale to prepare
- Exhale bend one knee twice with controlled pulses, point on first pulse, flex ankle on second
- Inhale, extend knee to start position
- Repeat 5-8 times each leg
Breast Stroke

- Start in same position as breast stroke prep 1
- Exhale, stabilize scapula and reach arms forward
- Inhale, circle arms out to sides while extending thoracic and cervical spine
- Bottom rib should remain in contact with floor
- To transition to next repetition, bend elbows and reach hands to overhead position
- Repeat 5-8 times
Side Kick

- Start side-lying with spine in neutral, legs slightly forward, top leg lifted
- Inhale for 2 counts while flexing top hip and reaching foot forward
- Exhale, extend hip and reach leg back
- Repeat 8-10 times on each side
Side Leg Lift 1

- Start side-lying with body in straight line, neutral spine
- Inhale, lift top leg with the foot pointed
- Exhale, flex foot and bring top leg down to bottom leg
Side Leg Lift 2

- Inhale, reach top leg up as far as able while maintaining pelvis stability
- Exhale, circle top leg back
- Inhale to finish the circle
- Repeat 5-10 times then reverse circle and complete 5-10 times
- Breathing is more rapid than in leg lift 1
Side Leg Lift 3

- Inhale, lift top leg as far as stability can be maintained
- Exhale, lift bottom leg to meet the top leg, then lower both legs together
- Repeat 5-10 times
Double Leg Kick

- Start lying on stomach, head turned to one side, hands resting on back, legs long and together
- Exhale, stabilize pelvis and flex both knees three times
- Inhale, extend knees and move legs apart while extending the hips, simultaneously stabilize scapula and lift chest off mat
- Place self down with head turned to the other direction
- Repeat 4-6 times to each side
Single Leg Extension

- Start lying on stomach, body long, hands under forehead
- Inhale to prepare
- Exhale, reach one leg off mat
- Inhale, lower leg
- Exhale, reach other leg off mat
- Inhale, lower leg
- Repeat 6-8 times with each leg
Swan Dive Prep

- Start on stomach, elbows bent, hands by shoulders, legs shoulder width apart and turned out, head hovering mat
- Inhale stay
- Exhale extend spine as far as able without losing abdominal or scapular stabilization
- Inhale stay
- Exhale, place chest down
- Repeat 5-8 times
Swan Dive With Slow Rock

- Begin in same starting position
- Inhale and lengthen spine into extension
- Exhale maintain shape, reach legs back and up to initiate slow rock forward
- Inhale, rock back up, supporting with arms
Leg Pull Front Prep

- Start on hands and knees, spine and pelvis neutral, knees under hips, legs together
- Inhale stay
- Exhale squeeze knees together and lift knees off mat ~2 inches
- Inhale Stay
- Exhale, lower knees to mat
- Repeat 3-6 times
Push Up Prep

- Start in push up position, legs together, feet on or off mat
- Inhale for 3 counts, flexing elbows more with each count
- Exhale, straighten elbows
- Repeat 2-3 times
To make the Push Up more difficult...
Spine Twist

- Inhale to prepare
- Exhale to slowly drop knees out to the side
  - Moving only as far as is comfortable
- Inhale stay
- Exhale while moving knees back to start position

This is OK

This is not safe if you have low bone density
Tips for Exercise

- Be careful and do only what you are capable of
- Start slow if these exercises are new to you
- Do not force any movement and modify exercises if needed
- Avoid spine flexion due to risk of vertebral fractures
If you take a Pilates Class here are some names of exercises to avoid...

- Roll up
- Roll over
- Rolling like a ball
- Open leg rocker
- Corkscrew
- Saw
- Neck pull
- Scissors
- Teaser

- Bicycle
- Boomerang
- Twist part of advanced Side Bend
- Seal
- Rocking
- Control Balance
- Crab
Here is what some of these look like...

Teaser
corkscrew
Open leg rocker
Summary

- Stretching and strengthening is beneficial for individuals with Osteoporosis
- Pilates can be done safely by those with Osteoporosis if modified
- As with any exercise, avoid spine flexion and exercise safely
- The end 😊
- Questions?