Building bone with Pilates

Osteoporosis Program
Abstract Page

Osteoporosis is a disease in which the reproduction of new bone cannot keep up with the loss of old bone. This results in weak brittle bone which is at great risk for fractures, this condition most commonly affects the spine, wrist and hip joints. The best way to treat this Osteoporosis is through appropriate exercise. Exercises which will aid in the strengthening, and potential reproduction of new bone are weight bearing, resistance, and flexibility training and thankfully Pilates includes all three. When designing an Osteoporosis program safety is key in the interest of avoiding any potential fractures. Contraindications for Osteoporosis include flexion, flexion with rotation, loaded lateral flexion at the thoracic lumbar junction, and any abrupt or explosive movement. Back extension, combating chin protrusion, kyphosis, and internally rotated shoulders are a few examples of complementary exercise. Thanks to Pilates we have wonderful tools to aid in increasing bone density, improving posture and quality of life for any client with Osteoporosis.
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Osteoporosis Explained

Worldwide Osteoporosis causes more than 8.9 million fractures annually, resulting in an Osteoporotic fracture every 3 seconds. By 2050, the world wide incidence of hip fracture in men is expected to increase by 310% and 240% in women, according to The International Osteoporosis Foundation. I have chosen to write my student paper on Osteoporosis due to the undeniable increase of this disease, as well as the fact that I have gained a client, Clara Hinderberger seeking my guidance to help increase her bone density through The Pilates Method.

Osteoporosis is a disease that causes bones to become weak or brittle. Bone is a living tissue that is constantly in a state of renewing itself, osteoporosis occurs when the rebuilding of new bone cannot keep up with the loss of old bone. The effect that this condition has on the human body is an increased risk of fractures most commonly occurring in the spine, hip or wrist joints. One can experience a number of symptoms such as back pain which can be brought on by an already fractured vertebra or a vertebra which is collapsing. Physical indicators of Osteoporosis include a decrease in height due to these collapsing vertebrae, which can create stooped posture or a Dowagers hump. The following images illustrate the effect Osteoporosis has on the spine, common fractures sites and areas of the body affected by this disease.
Diagrams and illustrations:
Contraindications and Indications:

In the interest of creating a safe and affective Pilates program I feel it is necessary to review contraindicated movement for this condition, as well as indicated or beneficial movement. Research confirms that excessive trunk flexion can cause, or will cause vertebral crush fractures. Forward flexion places too much pressure on the anterior portion of the vertebrae where spongy or trabecular bone is located, creating a dangerous position for a client with osteoporosis. Furthermore lateral flexion, should also be used with caution specifically when side bending where the lumbar and thoracic
spine meet. Flexion with rotation is contraindicated and can place clients at great risk for injury. Lastly, it is encouraged to avoid abrupt, explosive, or high impact movements in an osteoporosis client’s workout. To sum up, contraindicated movements remember no; flexion, flexion with rotation, high impact movement, and use caution with lateral flexion.

Moving onto indicated movement, and how to help our client! Though flexion is contraindicated the good news is that extension is very beneficial to an Osteo program. Science shows the posterior portion of the vertebral bodies or spinous process’ are naturally made of more dense bone allowing us implement spinal extension safely. It is important to say, that one must use caution in back extension exercises being sure to maintain intraabdominal pressure and proper muscle recruitment patterns.

When preparing an Osteo program we should implement exercises that correct or combat internal rotation of the shoulders, chin protrusion, thoracic kyphosis, and loss of lumbar lordosis. The use of isometric exercises are encouraged as well as work relating to increased range of motion. It is also of great importance to say that any osteoporosis program should include teaching a deep understanding of neutral spine, and strive to maintain this position when working in order to stay safe and out of flexion. Lastly, in the interest of a Pilates program having a lasting positive affect on our client one should add functional training exercises, such as teaching a client how to pick things up off of the floor, or brush their teeth while maintaining a straight back, hinging at the hip in order to stay out of spinal flexion. The following is a BASI Pilates program using the block system. I am creating a program that is safe and appropriate for my
client with established Osteoporosis, whom is almost 73 years old, so safety is one of my goals. In the event that a teacher works with an Osteo client whom is able to sustain a more vigorous program, as long as the previously stated guidelines are followed you can be confident that you will provide a safe Pilates workout experience.

**Osteoporosis BASI Pilates Workout:**

**Warm up**

Matwork:
Pelvic curl, spine twist supine (completing exercise with gentle rotation and paying extra attention to recruiting abs prior to pulling legs back to center)
leg lifts, leg changes, leg circles, single leg stretch, double leg stretch (with head down)

- Similar warm up can be done on the Reformer or Cadillac.
Reformer:
Pelvic curl with feet on reformer frame, spine twist supine, leg lifts, leg changes, single leg stretch with head down.

**Footwork**

Reformer: 2red1green
Parallel heels/toes, calf raises, open v heels/toes, prehensile, prances.

Cadillac: 1 red spring bottom loaded (or 2 long yellow)
Parallel heels/toes, calf raises, V position toes, open V heels/toes, prances

**Abdominal Work**

Reformer: 1red1blue
Hundred (head down), coordination (head down)

Cadillac: will need RUB and trapeze
Bottom lift with roll up bar

**Hip Work**

Reformer: 1green1blue
Supine leg series; frog, circles down/up, openings

Cadillac: cross bar ½ way up Cadillac frame with two purple leg springs
Supine leg series; frog, circles down/up, walking, bicycles, bicycles reverse

**Spinal Articulation-**

Reformer: 2red1blue
Bottom lift, bottom lift with extensions

Mat:
Pelvic Curl into Shoulder Bridge Prep
  - Though shoulder bridge prep is in the “bridging” block in the Mat work I feel it is an appropriate exercise to utilize during a Cadillac workout at this time as it will keep the client safe, out of flexion while offering an effective weight bearing exercise, all the while maintaining flow.

**Stretches-**

Reformer: 1red
Standing lunge (maintaining neutral)

Mat:
Lying supine using magic circle in two phase stretch
  - Hamstring stretch, underhand grip on circle w/ bend in knee if necessary
  - Keeping hips anchored to mat with no spinal rotation cross extended leg across the midline of the body to stretch deep external rotators and IT band.

**Full Body Integration-**

Reformer: 1red1blue
Knee stretch; flat back

Cadillac:
Thigh stretch with RUB (using knees pads if necessary)

**Arm Work-**

Reformer: 1red1blue
Arms supine series; extension, adduction, circles up/down, triceps

Cadillac: Using 2 long yellow arm springs attached to cross bar at throat height
Arms standing series; chest expansion, hug a tree, circles up/down, punches, biceps

**Leg Work-**

Reformer: 1 green with Jumpboard in place
Jumping series: Parallel position, V position, single leg parallel, leg changes
- It is worth noting the benefit of using the jumpboard in an osteo program as it provides an ability to perform highly effective weight bearing exercises that can help build bone density in a safe way, I personally prefer a lighter spring setting.

Cadillac: two yellow arm springs attached to cross bar, throat height
Squats

**Lateral Flexion/rotation-**

Reformer: all springs attached, short box twist on the short box – though traditionally used with short box series I feel this is the safest avenue in which we can integrate rotation as long as we keep a strong neutral spine.

Mat:
Side lifts

**Back extension-**

Reformer: 1 blue
Pulling straps 1 and 2

Cadillac: Top loaded PTB 1 blue spring
Prone 1

**Conclusion:**

Science has confirmed that the best treatment for Osteoporosis is exercise. There are specifically three types of exercise to implement into an Osteo workout in the interest of safely gaining bone density. First on the list is weight bearing exercises, any form of exercise in which the person exercising must support themselves, such as
walking, climbing stairs or using the Jumpboard in Pilates. Secondly, adding resistance training to a routine not only strengthens muscle, it also builds bone. Lastly, flexibility training is so important in the interest of having a body that can adapt when we fall or even to abrupt movements, is beneficial as the body will bend instead of breaking. As a Pilates instructor I know that a Pilates workout offers a vast variety of weight bearing, resistance, and flexibility exercises making Pilates an invaluable, safe and effective program for anyone that has been diagnosed with Osteoporosis.

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