PILATES PREGNANCY AND OSTEOPOROSIS

GENERAL GUIDELINES AND APPLICATIONS

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PILATES AND PREGNANCY

Exercise during pregnancy is an important part of maintaining a healthy lifestyle. However, the physical changes that accompany pregnancy may require your clients to modify their exercise routines during their pregnancy and immediately after delivery. The general guidelines and precautions for the various stages of pregnancy are as follows:

FIRST TRIMESTER, UP TO 12 WEEKS

During the first trimester there are no specific contraindications as far as body positions or specific exercises. Exercise should be based on the energy level of the mother and geared to minimize fatigue. Some women continue on with all of their normal routines while others experience fatigue, nausea and disturbed sleep that limits their ability to perform at their previous level. Be sensitive to the individual's needs for rest or taking it easy during this period.

The primary exception to this rule is in high risk pregnancies for example:

- 1st pregnancies in women over 35
- Women with a history of miscarriages
- Women who are undergoing in vitro fertilization
- Women who tell you they are high risk for some other reason (high blood pressure, gestational diabetes, cervical incompetence etc.)

In this case you may suggest that they stop exercising or minimize their routine until they are past the 12 week mark. It is also important to make sure these women are being seen be a doctor and that they have been cleared to exercise before they resume their Pilates program.

EXERCISES TO FOCUS ON DURING THE FIRST 3 MONTHS

Early in pregnancy is a great time to develop a program that will address the key needs of the pregnant woman. These exercises include:

- Pelvic floor exercises
- Strengthening the adductors and abductors to improve pelvic stability
- Abdominal strengthening
- Core stabilization
- Arm and upper back strengthening
- Low back and chest flexibility
- Decrease inversion exercises such as short spine stretch and rolling exercises

MONTH 3 TO 4

Sometime around the end of the third month or during the fourth month, it will become uncomfortable to lie on the stomach and prone work should be discontinued. Your client will usually indicate when they start to feel like they don't want to lie prone. The abdominals also begin to feel a bit out of touch around this time as the abdomen stretches and the pregnancy starts to show. If your client was having issues with morning sickness and fatigue, they will usually ease up about this time and they will have more energy to work with.

PROGRAM MODIFICATIONS DURING MONTHS 3 AND 4

- Discontinue prone work
- Discontinue inversion exercises (Short Spine Stretch, Roll Over, Rolling)
- Develop stretches for the low back
- Find abdominals that are comfortable
- Maintain the flexibility of the abdominals by doing Cat/Cow or supine stretches over a fit ball
- If the client has issues with low blood pressure, teach them to change positions slowly

PROGRAM MODIFICATIONS DURING MONTH 4 - 5

During the fifth month the uterus is large enough to start putting pressure on the arteries that run along the inside of the spine when the client is supine.

- Discontinue supine work or limit it to no more than 5 minutes at a stretch. If your client starts feeling light headed or her legs feel weak or tingly, bring her out of supine immediately.
- Discontinue exercises that deeply work the psoas and the hip flexors as in Teaser
- Limit spinal rotation
- Discontinue adductor exercises with resistance

MONTH 6 – 9

At this point in the pregnancy the size of the mother's abdomen will start to affect her ability to flex her spine and to deeply flex her hips. The hormone relaxin is starting to circulate in the body at higher levels leading to a loosening of the ligaments around the joints. This can lead to a lack of stability around the pelvis and cause low back, sacroiliac joint and hip problems to flare up. If your client is having problems with instability, be careful of adductor and abductor exercises that stress the pubic symphysis and the sacroiliac joints as they may be especially vulnerable to displacement. Edema can also start to settle in the ankles and lower legs so keep the feet up as much as you can.

PROGRAM MODIFICATIONS DURING MONTHS 6 – 9

Modify abdominals to suit the growing abdomen by using a wedge pillow or back support and by choosing exercises that do not involve deep hip or lumbar flexion. Roll back with straight legs works better than Teaser at this point.

- Use a wider leg position on leg and foot work
- Emphasis the limbs rather than the core
- Increase stability of the pelvis and hips
  - Abductor exercises (lightly)
  - Light abdominal work with the upper body supported at a 30 degree angle
  - Gluteal strengthening
  - Quad strengthening
- Discontinue adductor exercises with resistance
- Work arm and upper torso strength for holding the baby
- Keep the feet up when possible to decrease swelling

As with any program, each individual will be different, particularly if there are any rehabilitative issues involved or if the mother is already 'super-fit' (dancer, yogi, Pilates goddess).

POST-NATAL

Once the baby is born the mother can start doing simple core activation, pelvic floor and pelvic stability work as soon as she feels like moving. If the delivery was vaginal, she will be able to return to a beginning level routine as soon as she has stopped bleeding and feels up to it. If she had any episiotomy repairs she may want to minimize hip adduction and anything uncomfortable for 4 to 6 weeks until the area begins to heal.

If the baby was delivered by caesarian section, strenuous exercise is usually not suggested for 6 to 8 weeks following delivery. Gentle core work is very helpful but it is not wise to put stress on the sutures that are healing. Once they are cleared by their doctor for exercise, it is wise for them to start off slowly until they feel they have their full energy back.

RESOURCES FOR FURTHER INFORMATION

Books and videos

Balanced Body's website, Pilates.com, has several books and videos available for working with pre and post natal clients.

Courses

Fusion Pilates for Pregnancy and Post Pregnancy
Jennifer Gianni
Fusion Pilates
fusionteachertraining.com
Phone 828.333.4611

Pre/Post Natal Pilates Specialist Course
Carolyn Anthony
4 South Orange Ave. #260 South Orange, NJ 07079
info@thecenterforwomensfitness.com
Phone 800.701.0937.

Osteoporosis Information for Pilates Instructors

The following information is from National Osteoporosis Foundation www.NOF.org

DEFINITION

Osteoporosis, or porous bone, is a disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased susceptibility to fractures, especially of the hip, spine and wrist, although any bone can be affected.

DETECTION

Specialized tests called bone density tests (BMD) can measure bone density in various sites of the body. A bone density test can:

- Detect osteoporosis before a fracture occurs.
- Predict your chances of fracturing in the future.
- DXA BMD can determine your rate of bone loss and/or monitor the effects of treatment.

CATEGORIES OF BONE LOSS

The screening technique most commonly used is dual energy x-ray absorptiometry or DEXA for short. Bone loss is measured in relationship to the normal bone mass of a young adult and is called the T-score.

- Low bone mass or osteopenia is indicated by a T-score of -1 to -2.5 which is equivalent to 1 to 2.5 standard deviations below young adult bone mass and indicates a bone loss of 10% to 25% of normal. Fractures are more common in people with osteopenia than in those with osteoporosis.
- Osteoporosis is indicated by a T-score of >-2.5 indicating bone loss of more than 25% to 30%.

PREVALENCE

An estimated 44 million Americans, or 55 percent of people 50 years of age and older have osteoporosis or osteopenia. In the U.S. today, 10 million individuals are estimated to already have osteoporosis and almost 34 million more are estimated to have low bone mass or osteopenia, placing them at increased risk for osteoporosis.

- Of the 10 million Americans estimated to have osteoporosis, 80% are women and 20% are men.
- One in two women and one in five men over age 50 will have an osteoporosis-related fracture in her/his remaining lifetime.
- Significant risk has been reported in people of all ethnic backgrounds although osteoporosis is more common in people of Caucasian and Asian descent and less common in people of Hispanic and African descent.
- While osteoporosis is often thought of as an older person's disease, it can strike at any age.

SYMPTOMS

Osteoporosis is often called the "silent disease" because bone loss occurs without symptoms. People may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump or fall causes a fracture or a vertebra to collapse. Collapsed vertebrae may initially be felt or seen in the form of severe back pain, loss of height, or spinal deformities such as kyphosis or stooped posture.

PREVENTION

By about age 20, the average woman has acquired 98 percent of her skeletal mass. Building strong bones during childhood and adolescence can be the best defense against developing osteoporosis later. There are four steps, which together, can optimize bone health and help prevent osteoporosis. They are:

- A balanced diet rich in calcium and vitamin D;
- Weight-bearing exercise;
- A healthy lifestyle with no smoking or excessive alcohol intake; and
- Bone density testing and medication when appropriate.

NUTRITIONAL CONSIDERATIONS

Encourage client to increase calcium and Vitamin D intake or to consult with a nutritionist to help them modify their diet.

MEDICAL CONSIDERATIONS

Make sure that your students with osteoporosis are under the care of an appropriate medical practitioner who can oversee their care and any needs for testing, medication or other treatment.

EXERCISE CONSIDERATIONS

Exercise is one of the best ways to build bone mass, improve posture and balance, and decrease a person's likelihood of getting osteoporosis or falling and causing a fracture. The only types of exercise that have been studied in relationship to osteoporosis prevention are weight bearing exercise and weight training. Studies show that both of these can be helpful if the person is persistent and keeps progressing or changing their program to keep their bones responding. Pilates has not been directly shown to help and in fact many traditional Pilates exercises are contraindicated for clients with osteoporosis.

Wolff's Law: Bones become stronger in response to increased stress. In order to continue to build bone the stress placed on it must be greater than the stress to which it has become accustomed. So in order to build bone you need to challenge the client to keep working harder or to place different kinds of stress on the bones in order to make them respond.

A Pilates program that is specifically designed for clients with osteoporosis or osteopenia should include:

Spinal extension exercises

Including Swan, Swimming and prone work in any position including:

- Mat: Swan, Swimming
- Reformer: Swan on the box, Pulling Straps, Breast Stroke

Weight bearing exercises

These can include standing, kneeling, all fours and plank position exercises for example:

- Mat: Leg Pull, Push Ups,
- Reformer: Leg work, Knee Stretch, Sitting Arm Work, All Fours Abdominals, Long Stretch series, Standing (with balance support)

Moderate impact loading

In order to increase bone mass, exercise needs to be moderately strenuous. Keep progressing the resistance you use with each exercise to maintain a moderate level of effort with your client.

Muscle group specific strength training

Target spinal extensors, pelvic and scapular stabilizers, upper and lower limbs in all muscle groups while keeping the spine neutral.

Aerobic activity

Encourage your clients to walk, use low impact aerobic machines, swim or other activities that encourage increased aerobic capacity and overall physical fitness.

Balance and coordination training

Add balance challenges such as standing on one leg or moving on unstable surfaces in order to train the nervous system and the muscular system to react appropriately to balance challenges. Very important to prevent falling and fractures.

Flexibility exercises

Maintain flexibility in the torso, shoulder girdle and hips in order to help the client to maintain good posture.

Examples of safe Pilates exercises include:

MAT

- Pre-Pilates
  - Fingertip Abdominals, All Fours Abdominals, Sternum Drops, Opposite Arm/Leg Lift, Mini Swan
- Extension exercises
  - Swan, Single Leg Kick, Double Leg Kick,
- Plank exercises
  - Leg Pull Down, Push Ups (modify as needed),
- Leg exercises
  - Side Leg series

REFORMER

- Any exercises that focus on strength, stability and posture without flexion, rotation or lateral flexion
  - Footwork, Kneeling Abdominals, Supine Arms, Feet in Straps, Long Box Pulling Straps, Overhead Press, Swan, Arm Work in any direction, Standing,

CONTRAINDICATED MOVEMENTS

Several studies have been done relating specific movements to increased risk of fracture, particularly in the spine.

A Pilates program that is specifically designed for clients with osteoporosis or osteopenia should NOT include:

- Loaded Spinal Flexion: Especially with resistance as in Hundreds and abdominal curls.
- Loaded Spinal Rotation: Especially when combined with spinal flexion as in oblique abdominal exercises.

This means that many of the traditional Pilates core strengthening exercises are unsafe for clients with osteoporosis or osteopenia for example:

MAT

- Abdominals:
  - Hundreds, Roll Up, Neck Pull, Single Leg Stretch, Double Leg Stretch, Single Straight Leg Stretch, Double Straight Leg Stretch, Criss Cross, Teaser
- Rolling exercises:
  - Rolling Like a Ball, Open Leg Rocker, Seal
- Spinal exercises:
  - Spine Stretch Forward or Side or Saw, Roll over, Jackknife, Corkscrew (full version), Hip Circles

REFORMER

- Abdominals:
  - Hundred, Coordination, Roll Downs, Short Box Abdominals, Teaser, Back Stroke
- Spinal Exercises
  - Short Spine Stretch, Long Spine Stretch, Jackknife, Corkscrew

RESOURCES FOR FURTHER INFORMATION

Books and videos

Osteoporosis Exercise Protocols by Physicalmind Institute
Available through www.themethodpilates.com or www.pilates.com

The Osteoporosis Exercise Book by Sherri Betz, PT Available through www.pilates.com or www.therapilates.com.

The Osteoporosis Exercise Book by Sherri Betz, PT Available through www.pilates.com or www.therapilates.com.

Pilates for Buff Bones by Rebekah Rotstein,
A wide array of videos are available on her website, www.incorporatingmovement.com.

Courses

Pilates for Buff Bones
Rebekah Rotstein
Incorporating Movement
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917.334.1252

Therapilates for Osteoporosis
Sherri Betz, PT
TheraPilates Physical Therapy & Gyrotonic Clinic
920-A 41st Avenue Santa Cruz, California 95062
www.therapilates.com
831-476-3100

Websites

NIH website – www.osteo.org

National Osteoporosis Foundation – www.nof.org

Foundation for Osteoporosis Research – www.fore.org

ADDITIONAL OSTEOPOROSIS FACTS

Fractures

Osteoporosis is responsible for more than 1.5 million fractures annually.

The primary fracture sites are:

- Vertebra (45%)
- Hip (20%)
- Wrist (15%)

Risk Factors

Certain people are more likely to develop osteoporosis than others. Factors that increase the likelihood of developing osteoporosis are called "risk factors."These risk factors include:

- Personal history of fracture after age 50
- Current low bone mass
- Being female
- Being thin and/or having a small frame
- Advanced age
- A family history of osteoporosis or fractures
- Estrogen deficiency as a result of menopause, especially early or surgically induced
- Abnormal absence of menstrual periods (amenorrhea)
- Anorexia nervosa
- Low lifetime calcium intake
- Vitamin D deficiency
- Use of certain medications, such as corticosteroids and anticonvulsants
- Presence of certain chronic medical conditions
- Low testosterone levels in men
- An inactive lifestyle
- Current cigarette smoking
- Excessive use of alcohol
- Women can lose up to 20 percent of their bone mass in the five to seven years following menopause, making them more susceptible to osteoporosis.