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Yoga: efficacy of asana and pranayama in prenatal care

It is said that Yoga is a practice that is nearly 5,000 years old. Although such antiquity is currently under dispute, there is no doubt that Yoga is an ancient discipline. Originating in India, its name derives from the Sanskrit *yug*, meaning to yolk or to bind. In its entirety, yoga is a comprehensive system for attaining enlightened living, union with the Divine. *Samadhi*, as this enlightenment is called, is the eighth step, or limb, of the eight-fold yogic path. The first seven are comprised of ethical, moral, physical and mental disciplines. The practice of *asana*, i.e. the performance of physical poses, is the third limb of yoga, designed to bring control to the body of the aspirant. In the United States *asana*, along with *pranayama* (control of the breath), is the most commonly practiced limb of Yoga. Such practice is generally known as *Hatha Yoga*. This word derives from the Sanskrit *ha*, meaning sun and *ta*, meaning moon, to refer to the integration of physiological energies through attentive physical discipline. At present, because it tones the nervous system, the endocrine glands, and the internal organs as well as the muscles, *hatha yoga* practice is enjoying unprecedented popularity in this age of alternative health care. Runners, weight trainers, senior citizens, the chronically ill: yoga has something to offer every population, including expectant mothers. ¶ With its emphasis on self-awareness, relaxation, and equanimity, yoga is the perfect preparation for pregnancy and childbirth; (Lasater, n.d.).

Fetal development is both dependent upon and transformative of a woman's body. Hormonal changes that occur upon implantation affect respiration, blood volume, and muscle tissue. Digestion, mood, and sexual interest are also often altered. There is an increase in blood volume as well as in wastes that must be discarded. The growing fetus impinges on digestive organs and on the diaphragm and alters the center of gravity, pushing the spine out of alignment. All of these changes, regardless of how longed for a pregnancy might be, can be problematic for the mother-to-be. What is more, a decrease in available energy, a heightened sense of vulnerability and dependency, and a perceived decrease in attractiveness are psycho-emotional factors that often affect the maternal prenatal experience. A regular and consistent yoga practice, even a short one, can positively address these issues as well as the entire range of maternal life.

A regular and consistent yoga practice also contributes to fetal health and well being. There is growing evidence that all of maternal experience--feelings of joy and anger, pain and pleasure—are bio-electrically and bio-chemically transmitted to the developing infant. In addition, the growing neo-nate is sensitive to the sound of its mother's voice and the rhythm of her heartbeat as well as to the movement of her breath. It can hear and feel within its watery home. It follows that a system of health that promotes maternal well being will also promote fetal health.

At the moment of implantation, about a week after conception, estrogen and progesterone levels increase. Besides causing the obvious breast enlargement, this increase softens smooth muscle tissue, which facilitates uterine expansion. However, in some women, this also facilitates a generalized muscular laxity and an overall lassitude. In addition to this physiological deterrent to muscular activity, there is sometimes a cultural deterrent as well in that pregnancy is often considered a delicate condition that would be adversely affected by

exercise. This is unfortunate since it is muscular activity that stimulates lymphatic drainage, especially important during pregnancy when the female body must circulate an increase in fluid and eliminate increased waste.

Further changes in the female body take place as the fetus gains in size and mass. The center of gravity, commonly in the pelvic saddle, shifts either forward or back, depending on the position of the growing child. This displacement disables the skeleton from providing optimal support. As a result, the muscles and ligaments do much of the work, which in turn can produce stiff, painful joints and lower back pain. In addition, postural misalignment, particularly lordosis, impinges on the diaphragm, causing breathing difficulties. Two other problematic situations commonly experienced in pregnancy, cramping in the calves and edema in the feet and legs, while addressed primarily through diet, can be ameliorated through yoga practice.

What follows is a brief discussion of several yoga poses as well as two breathing exercises that are effective during pregnancy. While this discussion is not meant to be comprehensive, it does comprise a core from which an efficacious practice can be built. To be optimal, practice should be begun before a woman becomes pregnant. Nonetheless it can be entered into at any time under the advisement of an experienced and competent teacher.

Paramount in practice is the breath. This is true for all who do yoga, but especially for a woman who is about to deliver a child. The ujjayi breath, which is drawn into the back of the throat, is far more effective than the breathing techniques commonly taught in childbirth classes. Ujjayi is the conquering breath. In sanskrit, the prefix u signifies upward movement. It also suggests blowing or expanding. Jaya signifies conquest, success. Practically speaking, the ujjayi breath is a means of conquering the nervous system and its reactive, automatic responses. Although in many traditions the practice of breath control is often not taught until a person has gained some proficiency with the physical postures, this is the first technique that a pregnant woman should learn. Also known as the so-hum breath because of the sound it makes, ujjayi breathing is done by closing the glottis slightly and drawing air into the back of the throat. The nasal openings remain passive. When done correctly, the ujjayi breath is nearly as audible as that of the character Darth Vader in the original Star Wars movies. This sound alone has the capacity to soothe an overtaxed nervous system and to enable the woman doing the breathing to focus. Such focus is essential during delivery when it's of paramount importance not to become lost in pain or fear. Further, this breath technique optimizes oxygen intake and exchange.

A second breathing technique is called nadhi sodhana, alternate nostril breathing. In yoga physiology, nadhis are tubular vessels through which the life force, known as prana, flows. This life force is typically seen as being of two basic types, categorized by traditional polarities: as follows: solar and lunar, active and receptive, hot and cool, day and night, sun and moon. The breath is seen to be the regulator of prana, and each nostril is considered to specialize in one of the two polarities. The left nostril governs the day with all of its traditional associations. The right nostril belongs to the night. Nadhi sodhana, because it alternates use of these passages to the lungs and subsequently to the somata and to consciousness, balances the life forces. In western nomenclature, we would say that this breath balances the nervous system by regulating sympathetic and parasympathetic neuronal activity.

To perform nadhi sodhana, a woman must sit comfortably with the back straight. The thumb of the right hand is placed just above the flare in the right nostril, lightly so that it rests there but does not compress it. The index and middle fingers are placed either on the forehead or in the palm of the hand. The ring and small fingers rest on the indentation of the left nostril, again just lightly. To begin this breath, the woman gently closes the right nostril and inhales through the left; then she closes the left nostril and exhales through the right. When this has been done, she inhales through the right, closes it off, opens the left, and exhales. This is one cycle of breath. The recommended number of cycles varies. Some authors stipulate 3. Others do not stipulate a specific amount but rather state that the practice should be done for at least 5 minutes. Another text suggests that a woman do the breathing until both nostrils are clear. At first one might become light headed through this exercise, but in time this will discontinue and a feeling of calm and well-being will obtain. In my own practice I continue the breathing until I experience this settling of mind.

One of the most prevalent discomforts, especially in the later stages of pregnancy, is pain or tightness in the lower back. This occurs when the lumbar spine is displaced forward as the fetus grows. The sitting bones are simultaneously thrust back, and the pelvis tilts down and to the rear. Not only is this a source of discomfort as the muscles that circle the pelvis are stretched to support the enlarged and weighted abdominal cavity, but it also compresses the space available for uterine expansion and places undue stress on the hip joints and the head of the femur. This in turn adversely affects the knees, ankles, and feet. The most efficacious posture to remedy this very normal series of events caused by gravity's effect on the growing fetus is badha konasana, the bound angle pose. This asana works the ilio-psoas and the adductors that attach to the top of the femur. The psoas is the deep muscle that is responsible for structural stability and attaches to either side of the lumbar spine, just underneath and overlapping the place at which the diaphragm originates. From there the psoas wends its way through the hip sockets to attach to the inside of the head of the femur. The iliacus muscle attaches at the top of the saddle in the hip and to the outside of the head of the femur. Together with the adductors, which attach at the inside of the femur and the sitting bones, the ilio-psoas are responsible for the bend in the body when we sit or move forward as well as for our ability to stand erect. And, because the psoas overlaps the diaphragm's attachment, it indirectly affects breathing.

Also known as the tailor sit, badha konasana is done by sitting comfortably on the floor, by bending the knees, by opening them to the sides, and by placing the soles of the feet together. Using the force of gravity, the knees should be allowed to open as much as possible without strain and then coaxed from there, using the breath as a point of concentration, toward the floor. This coaxing should take place daily. It should be performed gently, attentively, and lovingly as it not only rights the ilio-psoas, freeing the diaphragm and lessening back pain, but it also strengthens the transverse abdominal muscles and elongates the adductors. It generates flexibility in the ankles, tones the ligaments surrounding the knees, and destresses the hips. Finally, it prepares the expectant woman for labor by creating spaciousness in the pelvic opening through which the baby will eventually emerge. For some women, there will come a time when sitting in badha konasana produces heavy breathing. When this occurs, performance of the asana should be discontinued until after delivery.

In addition to maintaining a healthy pelvic region and a stable lower back, it's desirable for the expectant mother to encourage healthy endocrine secretions. The pituitary, located in the hypothalamus, behind the middle of the forehead, and the thyroid, located in the

throat, are the most important of the endocrines. The pituitary is the master gland, whose secretions regulate the entire endocrine system, including the release of estrogen and progesterone. The thyroid is responsible for metabolism and has also been associated, in deficiency, with miscarriage. Traditionally, inversions--head and shoulder stands-- are used to regulate the pituitary and thyroid glands, respectively. While these should probably not be practiced during pregnancy unless a woman has had a regular yoga practice for some time before conception, there are modifications to these classical poses that can be beneficial. In the full supported shoulderstand (known as salamba sarvangasana), the spine is supported by the hands, which are placed so that the palms rest against the lower ribs and kidneys to either side of the vertebrae. Body weight is distributed evenly along the upper arm from the elbows to the shoulders and from there to the back of the skull. Cervical vertebrae, particularly c5 and c6, should bear no weight. Modifications to the shoulderstand include the use of a wall or a chair for support of the legs. Blankets can also be used strategically to avoid undue pressure on the cervical spine.

The headstand, sirsasana, is done with the head cradled in the interlocked palms of the hands. The weight is distributed evenly on the forearms, which regulate the amount of pressure absorbed by the head. A modified headstand keeps the feet on the floor. The head is cradled in the palms of the hands; the forearms and elbows support the spine; the feet are moved in as close to the arms and head as is comfortable; and the sitting bones are raised toward the ceiling. Sometimes a wall can be used to support the feet. In this position, the body looks like an inverted L. In addition to the aforementioned benefits to the pituitary and thyroid glands, inversions and their modifications have the added benefit of assisting venous return and ameliorating edema, pooling of fluid in the feet and legs, which is common in pregnancy. Despite their benefits, they should not be done if they result in breathing difficulties or in other discomforts.

As a result of increased calcium demands placed on the maternal body by developing fetal bones, cramped calves often make sleep problematic. While increasing the calcium supply through the ingestion of large quantities of green vegetables and supplements is one answer to this difficulty, a simple decramping calf stretch using a wall is also helpful. For best results this should be done daily at least once, preferably two or three times. To perform this stretch, the expectant mother stands about arms' length from a wall and leans into it with her arms at shoulder height. One of her feet should move forward so that its toes are raised and pressing against the wall as well. The other foot should remain behind about a pace and a half. It should be perpendicular to the wall, with the heel straight behind the toes. To stretch the calf, the woman presses the heel to the floor, steadily, consistently, and for several minutes. Then she reverses the legs. A variation is done by slightly bending the back knee and pressing the heel toward the floor. Experimentation determines which of these poses is most efficacious on any given day.

One of the most important effects of yoga is its ability to provide deep relaxation. Sivasana, the corpse pose, is the traditional posture for this. This pose is done by lying on the back, with legs outstretched, about hip width apart, and with the arms extended at the sides, about 15 to 45 degrees from the body. The breath is deep and rhythmic and the attention should be drawn inward. Ten minutes is the minimum amount of time the expectant mother should spend in this pose, and it should be done whenever there is a need for rest--before fatigue sets in. In this pose, because the body is flat against the floor, all muscular activity that is normally performed in order to counter gravity is suspended. The skeleton is drawn to the hard surface of the floor on which the body rests and from which the muscles receive gentle,

steady pressure, encouraging them to release their tension. In this state of quietude, the heart slows, blood pressure decreases, respiration becomes deepened, the body cools. Although 10 minutes will generate rejuvenating effects, for optimum results, the pregnant woman should rest in this pose for 15 to 20, several times a day.

Because the pressure of the enlarged fetus may interfere with blood flow to and from the feet and legs, it may be advisable to discontinue the corpse pose during later pregnancy. One substitute is a sidelying relaxation pose, which is done by reclining on a carpeted floor with a pillow or two positioned at the head and shoulders and one between the legs and perhaps one at the ankles. The purpose of this pose is the same as that of sivasana: total surrender to gravity. Another alternative that facilitates relaxation and relieves fatigue is child's pose, which is performed by first lowering oneself to one's hands and knees, heels together and knees slightly wider than the hips. The torso is then bent forward until the forehead touches the floor. For those women whose heads do not touch the floor, bolsters and dense blankets may be used to support the weight of the torso. In addition to being supremely relaxing, child's pose has the added benefit of opening the hips.

Other asanas that are of benefit throughout pregnancy follow. Upavista konasana, wherein the legs are spread to the sides as far as is comfortable and the torso allowed to fold forward between them. . .as far as is comfortable. . . opens the pelvic region, stretching adductors and toning the perineum and the ilio-psoas. Supta padangustasana and knee to chest pose are done on the back. Both tone the ilio-psoas. The first is an alternating straight leg stretch that also stretches the hamstrings. The second brings a bent knee close to the chest. For posture there is tadasana, the basic standing pose, with or without arms raised. For spinal flexibility, uttanasana, the standing forward bend is recommended. A sister pose, prasarita padottanasana, a wide-legged forward bend allows space for the enlarged uterus. For balance, the tree, vrksasana, a one-legged pose with the raised foot resting on the standing leg. is useful.

Actually, all of yoga can be beneficial to the pregnant woman. In the classical texts, written by men, primarily from the Brahmin, or priestly caste, women were advised to practice yoga with caution, especially during their menses or while carrying a child--if they were allowed to practice at all. Modern teachers-- Geeta Iyengar, Beryl Bender Birch, and Judith Lasater among the most well-known in the US--have had wonderful success coaching women throughout pregnancy as well as assisting them through practice during the postpartum period. These women and their students have demonstrated that the old taboos are largely unfounded. Pregnancy is not a medical condition. It is a normal phase through which the female body passes. A woman who is healthy can expect to do most, if not all, of the asanas throughout the majority of her pregnancy. Because it is a psycho-physical discipline involving attentive observation, i.e. centering, as well as toning and stretching, it is the perfect preparation for delivery and for motherhood. It is a tool of empowerment and an act of self-love.

References

Balaskas Janet. (1994). Preparing for birth with yoga. Rockport, MA.: Element Books.

Birch, Beryl Bender. (1995). Power yoga: the total strength and flexibility workout. New York: Fireside.

- Gach, Michael Reed and Marco, Carolyn. (1981). *Acu-yoga*. Tokyo: Japan Pub.s
- Iyengar, B.K.S. (1970). *Light on yoga*. New York: Shocken Books.
- Iyengar, Geeta. (1990). *Yoga: a gem for women*. Spokane, WA: Timeless Books.
- Koch, Liz. (May/June 1999). "The psoas is." *Yoga Journal*. 146: 64-71.
- Lasater, Judith. (n.d.) "Yoga for pregnancy." *Yoga Journal*. reprint. Berkley, CA: California Yoga Teachers Association.
- Lidell, Lucy, et. al. (1983). *Sivanda companion to yoga*. New York: Simon & Schuster.
- Mohan, A.G. (1993). *Yoga for body, breath, and mind: a guide to personal reintegration*. Portland, OR: Rudra.
- Schatz, Mary Pullig, M. D. (1992). *Back care basics: a doctor's gentle yoga program for back and neck pain relief*. Berkley, CA: Rodmell.