

Final project for the 200h Yoga TTC – Yoga teacher training July/September 2019

Submitted to: KARUNA YOGA VIDYAPEETHAM school

“Yoga Practice During Menstruation”

General principles and restorative sequences

Letizia Rega

FEMALE PHYSIOLOGY AND MENSTRUATION

The human female reproductive system consists of the paired ovaries and fallopian tubes, the single uterus and vagina, and the external genital structures.

Reproduction begins with the development of ova in the ovaries. In the middle of each monthly sexual cycle, a single ovum is expelled from an ovarian follicle into the abdominal cavity near the open fimbriated ends of the two fallopian tubes. This ovum then passes through one of the fallopian tubes into the uterus; if it has been fertilized by a sperm, it implants in the uterus, where it develops into a fetus, a placenta, and fetal membranes—and eventually into a baby.

During fetal life, the outer surface of the ovary is covered by a *germinal epithelium*, which embryologically is derived from the epithelium of the germinal ridges. As the female fetus develops, *primordial ova* differentiate from this germinal epithelium and migrate into the substance of the ovarian cortex. Each ovum then collects around it a layer of spindle cells from the ovarian stroma (the supporting tissue of the ovary) and causes them to take on epithelioid characteristics; they are then called *granulosa cells*. The ovum surrounded by a single layer of granulosa cells is called a *primordial follicle*. The ovum at this stage is still immature, requiring two more cell divisions before it can be fertilized by a sperm. At this time, the ovum is called a *primary oocyte*.

During all the reproductive years of adult life, between about 13 and 46 years of age, 400 to 500 of the primordial follicles develop enough to expel their ova—one each month; the remainder degenerate (become *atretic*). At the end of reproductive capability (at *menopause*), only a few primordial follicles remain in the ovaries and even these degenerate soon thereafter.

Female Hormonal System and month sexual cycle

The female hormonal system consists of three hierarchies of hormones, as follows:

1. A hypothalamic releasing hormone, *gonadotropin-releasing hormone* (GnRH)
2. The anterior pituitary sex hormones, *follicle-stimulating hormone* (FSH) and *luteinizing hormone* (LH), both of which are secreted in response to the release of GnRH from the hypothalamus
3. The ovarian hormones, *estrogen* and *progesterone*, which are secreted by the ovaries in response to the two female sex hormones from the anterior pituitary gland.

Estrogens are steroid hormones produced by the granulosa follicle, the corpus luteum, and the placenta (if there is pregnancy). Its synthesis comes from cholesterol molecules. Progesterone is synthesized by corpus luteum and placenta, if there is pregnancy.

Of the estrogens, the most potent is estradiol. The actions they develop are:

- *Female genital apparatus*: they stimulate the growth and development of the female sexual organs and the proliferation of the endometrium during the sexual cycle.
- *Breast*: they favor the growth of the mammary ducts and are, in part, responsible for the development of the mammary gland during puberty.
- *Bone*: they regulate the osteoclastic activity and stimulate the osteoblastic activity, in such a way that they are essential to maintain adequate bone mineralization
- *Cardiometabolic*: estrogen relaxes the smooth muscle of arterioles, increases HDL cholesterol, and lowers LDL cholesterol, which has been associated with the lower incidence of cardiovascular disease that women have in relation to men, especially before menopause.

Progesterone is also a steroid hormone. It is responsible for the progestational changes of the endometrium. On the breasts, progesterone stimulates the development of the lobes, being its action

complementary to that of the estrogens. Progesterone is thermogenic and contributes to the increase in basal temperature experienced by some women after ovulation.

Besides from reproductive function female sex hormones are further known to affect numerous cardiovascular, respiratory, thermoregulatory and metabolic parameters. Which may plausibly be expected to have implications on exercise physiology, for example via fluid retention, changes in body temperature, and energy metabolism.

The normal reproductive years of the female are characterized by monthly rhythmical but drastic changes in the rates of secretion of the female hormones and corresponding physical changes in the ovaries and other sexual organs.

This rhythmical pattern is called the *female month sexual cycle* (or, less accurately, the *menstrual cycle*) The menstrual cycle is the cycle of natural changes that occurs in the uterus and ovary as an essential part of making sexual reproduction possible (Silverthorn, Dee Unglaub 2013; Sherwood, Laurelee 2013) [6]. - 80 - International Journal of Physical Education, Sports and Health

Its timing is governed by endogenous (internal) biological cycles. The menstrual cycle is essential for the production of eggs, and for the preparation of the uterus for pregnancy. The cycle occurs only in fertile female humans and other female primates.. The duration of the cycle averages 28 days. It may be as short as 20 days or as long as 45 days in some women, although abnormal cycle length is frequently associated with decreased fertility. There are two significant results of the female sexual cycle. First, only a *single* ovum is normally released from the ovaries each month, so normally only a single fetus will begin to grow at a time. Second, the uterine endometrium is prepared in advance for implantation of the fertilized ovum at the required time of the month.

The ovarian changes that occur during the sexual cycle depend completely on the gonadotropic hormones *FSH* and *LH*, secreted by the anterior pituitary gland. In the absence of these hormones, the ovaries remain inactive, which is the case throughout childhood, when almost no pituitary gonadotropic hormones are secreted. At age 9 to 12 years, the pituitary begins to secrete progressively more *FSH* and *LH*, which leads to onset of normal monthly sexual cycles beginning between the ages of 11 and 15 years.

This period of change is called *puberty*, and the time of the first menstrual cycle is called *menarche*.

A cycle may be described in terms of three phases: menstrual phase, follicular phase, and luteal phase.

1. **Menstrual phase**—The loss of the functional layer of the endometrium is called **menstruation** or the **menses**. Although this is actually the end of a menstrual cycle, the onset of menstruation is easily pinpointed and is, therefore, a useful starting point. Menstruation may last 2 to 8 days, with an average of 3 to 6 days. At this time, secretion of *FSH* is increasing, and several ovarian follicles begin to develop.
2. **Follicular phase**—*FSH* stimulates growth of ovarian follicles and secretion of estrogen by the follicle cells. The secretion of *LH* is also increasing, but more slowly. *FSH* and estrogen promote the growth and maturation of the ovum, and estrogen stimulates the growth of blood vessels in the endometrium to regenerate the functional layer. This phase ends with ovulation, when a sharp increase in *LH* causes rupture of a mature ovarian follicle.
3. **Luteal phase**—Under the influence of *LH*, the ruptured follicle becomes the corpus luteum and begins to secrete progesterone as well as estrogen. Progesterone stimulates further growth of blood vessels in the functional layer of the endometrium and promotes the storage of nutrients such as glycogen. As progesterone secretion increases, *LH* secretion decreases, and if the ovum is not fertilized, the secretion of progesterone also begins to decrease. Without progesterone, the endometrium cannot be maintained and

begins to slough off in menstruation. FSH secretion begins to increase (as estrogen and progesterone decrease), and the cycle begins again. Also secreted by the corpus luteum during a cycle are the hormones inhibin and relaxin. **Inhibin** inhibits the secretion of FSH, and perhaps LH as well, from the anterior pituitary gland. **Relaxin** is believed to inhibit contractions of the myometrium (as does progesterone), which would help make implantation of the early embryo successful.

The 28-day cycle shown in is average. Women may have cycles of anywhere from 23 to 35 days, the normal range. Women who engage in strenuous exercise over prolonged periods of time may experience **amenorrhea**, that is, cessation of menses. This seems to be related to reduction of body fat. Apparently the reproductive cycle ceases if a woman does not have sufficient reserves of energy for herself and a developing fetus. The exact mechanism by which this happens is not completely understood at present. Amenorrhea may also accompany states of physical or emotional stress, anorexia nervosa, or various endocrine disorders.

In short:

About every 28 days, gonadotropic hormones from the anterior pituitary gland cause about 8 to 12 new follicles to begin to grow in the ovaries. One of these follicles finally becomes "mature" and ovulates on the 14th day of the cycle.

During growth of the follicles, mainly estrogen is secreted. After ovulation, the secretory cells of the ovulating follicle develop into a corpus luteum that secretes large quantities of both the major female hormones, progesterone and estrogen. After another 2 weeks, the corpus luteum degenerates, whereupon the ovarian hormones estrogen and progesterone decrease greatly and menstruation begins. A new ovarian cycle then follows.

Monthly Endometrial Cycle

Associated with the monthly cyclical production of estrogens and progesterone by the ovaries is an endometrial cycle in the lining of the uterus that operates through the following stages: (1) proliferation of the uterine endometrium; (2) development of secretory changes in the endometrium; and (3) desquamation of the endometrium, which is known as *menstruation*

Menstruation

Menstruation is the visible manifestation of cyclical physiologic uterine bleeding due to shedding of the endometrium as a result of invisible interplay of hormones mainly through hypothalamo-pituitary-ovarian axis. The first menstruation (menarche) occurs between 11–15 years **with a mean of 13 years**. It is more closely related to bone age than to chronological age. For the past couple of decades, the age of menarche is gradually declining with improvement of nutrition and environmental condition. Once the menstruation starts, it continues cyclically at intervals of 21–35 days with a mean of 28 days. Physiologically, it is kept in abeyance due to pregnancy and lactation. Ultimately, it ceases between the ages 45–50 when menopause sets in.

The duration of menstruation (menses) is about 4–5 days and the amount of blood loss is estimated to be 20 to 80 mL with an average of 35 mL. Nearly 70 percent of total menstrual blood loss occurs in the first 2 days. The menstrual discharge consists mainly of dark altered blood, mucus, vaginal epithelial cells, fragments of endometrium, prostaglandins, enzymes and bacteria. Average loss of iron in each menses is 13 mg.

Pre-Menstrual Symptoms

There may be premonitory symptoms such as pelvic discomfort, backache, fullness of the breasts or mastalgia just prior to menstruation.

Menstrual Symptoms

Menstrual symptoms are a broad collection of affective and somatic concerns that occur around the time of menses. Some women manage their monthly periods easily with few or no concerns while other women experience a number of physical and/or emotional symptoms that may be more problematic. In general, menstrual symptoms can be classified into menstrual-related diagnoses such as dysmenorrhea or premenstrual syndrome (PMS). However, many women may experience menstrual symptoms that do not necessarily fit within the aforementioned diagnoses based on the quality, timing, or interpretation of the symptoms.

Dysmenorrhea is more related to the symptoms of pain accompanying menses while PMS is generally focused on the emotional or psychological concerns. However, there is considerable overlap in the symptoms of both of these menstrual-related diagnoses. While the high prevalence of menstrual symptoms may connote a relatively normative occurrence, the possible effect on other aspects of women's lives may be cause for concern.

Primary dysmenorrhea is defined as pain during menses in the absence of an identifiable pathologic lesion (Davis, Westhoff, O'Connell, & Gallagher, 2005). Lower abdominal cramping is the most common symptom of dysmenorrhea, but symptoms can include nausea, vomiting, headaches, backaches, and dizziness occurring during menses (Harel, 2006; Klein & Litt, 1981). Dysmenorrhea is a common gynecological disorder in young women with widely ranging prevalence estimates, between 50 percent and 91 percent (Alvin & Litt, 1982; Andersch & Milsom, 1982; Hillen, Grbavac, Johnston, Straton, & Keogh, 1999; Jamieson & Steege, 1996; Wilson & Keye, 1989). Mild symptoms may be relatively common potentially representing a normal experience of menstruation whereas severe symptoms may affect daily functioning. For example, 15 percent of adolescents describe their symptoms of dysmenorrhea as severe, affecting participation in regular activities for 1–3 days per month (Klein & Litt, 1981).

The effects of dysmenorrhea can cross over into many areas important to health and development. The disorder is highly prevalent among adolescent girls and has been identified as the leading cause of school and work absences among adolescents and young adults (Davis & Westhoff, 2001; Klein & Litt, 1981). Although dysmenorrhea is less common during the first two to three years after menarche, it becomes more prevalent during mid- and late adolescence (Klein & Litt, 1981). Further, the severity of symptoms of dysmenorrhea is positively correlated with early menarche and increased duration and amount of menstrual flow (Andersch & Milsom, 1982; Balbi et al., 2000), which may influence quality of life.

The American College of Obstetrics and Gynecology defines PMS by affective and somatic symptoms occurring in the five days prior to menstruation and resolving within four days after menstruation. The affective symptoms include depression, angry outbursts, irritability, anxiety, confusion, and social withdrawal; somatic complaints include breast tenderness, abdominal bloating, headache, and swelling of extremities (American College of Obstetricians and Gynecologists, 2000).

PHYSIOLOGICAL EFFECTS OF YOGA ON THE FEMALE REPRODUCTIVE SYSTEM

A LITERATURE REVIEW

Yoga practice and health benefits

According to B.K.S. Iyengar, yoga is an ancient Indian science which includes all aspects of one's being, from health to self-realization. Yoga is self-management of life, which includes changes in diet, mental attitude and the practice of specific techniques such as yoga asanas (postures), breathing practices (pranayamas), meditation, to attain the highest level of consciousness.

Yoga is a psycho-somatic-spiritual discipline for achieving union and harmony between our mind, body, and soul and the ultimate union of our individual consciousness with the universal consciousness.

Regular yoga practice has shown to have many positive changes on one's body and nervous system; many studies have highlighted the effects on different body systems and improvement in the overall wellbeing, as well in some specific conditions.

A review Exploring the Physiological Effects of Yoga found that there were considerable health benefits, including improved sleep pattern, cognition, body mass index, reproductive health, respiration, blood pressure, joint disorders, diabetes and recovery from and treatment of addiction. It reduced stress, anxiety, depression, chronic pain, cardiovascular and cancer risk. Yoga also influenced overall well-being, quality of life, autonomic function and immunity.

Therefore, Yoga is a novel emerging clinical discipline of mind-body medicine which is increasingly used worldwide under alternative medicine.

Yoga practice and menstruation

Intervention studies demonstrate that aerobic exercise increases hemoglobin, hematocrit, red cell count, and platelet count, and decreases the levels of prolactin, estradiol, and progesterone; resulting in improvement of fatigue, impaired concentration, confusion, and most other premenstrual symptoms. These findings reveal that exercise effectively reduces the symptoms of PMS and can be used as a treatment. Exercise is considered a CAM therapy for improving and maintaining physical and emotional health.

A growing body of evidence indicates that yoga benefits physical and mental health by down regulating the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, and yoga has become an increasingly popular form of CAM among people with pain.

A randomized controlled trial in India demonstrated Yoga Nidra practice was helpful in patients with hormone imbalances, such as dysmenorrhea, oligomenorrhea, menorrhagia, metrorrhagia, and hypomenorrhea. The study investigated the efficacy of Yoga Nidra on autonomic nervous system variables in patients with menstrual irregularities, therefore demonstrating Yoga Nidra practice can be helpful in patients with menstrual disorders.

One study reported that three yoga poses (specifically the cobra, cat, and fish poses) reduced the severity and duration of primary dysmenorrhea. Another study reported that a yoga intervention was associated with a reduction in the severity of dysmenorrhea and are a safe and simple treatment for primary dysmenorrhea. Even a simple home-based yoga program available on a DVD was shown to reduce menstrual pain and improve overall health status.

Recent studies reported an association between exercise and PMS, and indicated that a regular exercise habit might decrease some physical and psychologic premenstrual symptoms.

Pain, a common symptom of PMS, is a complex experience that affects mood and behavior, and can modify thought patterns leading to activation of different brain regions during cognitive tasks.

One study demonstrated that women with PMS participating in a short-term yoga exercise in the luteal phase felt better and had improved attention. Another study demonstrated that the mean scores of PMS and symptoms declined after 8 weeks of aerobic exercise training in the experimental group and suggested that 8 weeks of aerobic exercise effectively reduces the symptoms of PMS and can be used as a treatment. An increase in alpha wave production induced by yoga exercise is closely associated with slower abdominal breathing.

Yoga has positive effects on brainwave activity, and alpha brain waves are associated with states of peace, relaxation, creativity, mood elevation, and the release of serotonin; thus, the increase in alpha brain waves suggests that participants felt more relaxed after yoga exercise. Other studies investigated the mitigation of PMS effects in participants that actively performed yoga postures.

A yoga intervention reduces the severity of dysmenorrhea and may be effective for lowering serum homocysteine levels after an intervention period of 8 weeks. These findings indicate that yoga exercise can improve menstrual pain.

Schmidt *et al* reported a reduction in urinary excretion of adrenaline, noradrenaline, dopamine, and aldosterone, a decrease in serum testosterone and luteinizing hormone levels and an increase in cortisol excretion, indicating optimal changes in hormones.

Tooley *et al* concluded that meditation can affect plasma melatonin levels resulting in health promoting effects of meditation. These observations suggest that yoga can be used to increase endogenous secretion of melatonin, which, in turn, might be responsible for improved sense of well-being.

A systematic review of five studies that examined three psychologic mechanisms (positive affect, mindfulness, and self-compassion) and four biologic mechanisms (posterior hypothalamus, interleukin-6, C-reactive protein, and cortisol), revealed that positive affect, self-compassion, and inhibition of the posterior hypothalamus and salivary cortisol mediated the effects of yoga on stress.

One report exploring the effects of yoga on persistent pain indicated that yoga could produce psychologic changes, such as increased awareness of mental and physical states, which may help patients to better understand their pain. Therefore, yoga practice might lead to increased pain acceptance—the willingness to experience pain and acknowledge negative thoughts and emotions. It is also possible that yoga improves self-efficacy for pain control.

Yoga may improve health through down regulation of the hypothalamo pituitary adrenal axis and the sympathetic nervous system. Exercise may benefit the metabolic and reproductive abnormalities associated with PCOS (Polycystic Ovary Syndrome).

Although several studies indicates that yoga has promotive, preventive as well as curative potential on menstrual symptoms and disorders, further studies are needed to examine and establish documented scientific evidence of the Physiological effects of regular yoga practice on women reproductive health system and its affections.

PRINCIPLES OF YOGA PRACTICE DURING MENSTRUATION

Asana practice - general principles

Most contemporary yoga teachers advise a fairly gentle approach toward asana practice during menstruation. These menstrual sequences generally consist of prop-supported restorative poses, mostly forward bends, supine and seated asanas, gentle twists and supported backbends.

The "period" is the most sensitive part of the female monthly cycle, so it is often suggested to avoid strenuous, energetic or demanding yoga poses at this time.

This kind of approach makes perfect sense for women who feel fatigued and/or in pain during their period. However, many other women don't feel the need to change anything about their practice during menstruation, except maybe to limit strenuous inverted poses.

Therefore, each student should decide for herself what kind of asana sequence is most appropriate for her body during menstruation according to her needs and sensations.

Good communication between the teacher and the student should be established, in order to understand the needs of the woman and appropriately guide her through her yoga path.

As a yoga teacher, we should ask the students to inform us before class if they have period.

As many of them might not feel comfortable in sharing this information, it is recommended to always ask women in the class not to do inversions if they have periods when the class is about to do them. We may suggest to perform a specific period sequence instead, if thought in advance and the student is experienced enough.

When a woman has informed us of the period but still joining a regular class, we adapt the poses accordingly and offer her more support (for example, standing poses may be performed with the back foot supported at the wall and the hand on a block); furthermore alternative asanas can be proposed (for example, Asanas suggested in alternative to salamba sarvangasana are supta baddha konasana, supta swastikasana, supta virasana, cross bolsters or setubanda sarvangasana with external support).

In general, it is advisable to beginners and teenagers to hold the poses for a shortest timeframe, as well as not engage in too intense practices. To intermediate practitioner holding for a shorter time than usual is recommended, maybe adding a second repetition.

If a beginner complains of cramps or other discomforts before class, we can suggest ardha chandrasana and supta padangusthasana to begin with; afterwards if the symptoms reduce she can join the class and proceed with the supported asanas.

Awareness of the modifications necessary to achieve balance in the poses and reduce intensity as required, together with judgement and an intelligent application of the sequence and duration of the asanas are all important factors when designing a practice for women during menstruation.

Props and external support are useful, especially in this phase, to find body alignment, reducing the intensity of the pose, therefore allowing the students to stay in the asana for longer and comfortably connect with the inner self..

By working with the support of something as simple as a chair or a wall, the students can overcome weakness and conserve energy. When there is stiffness or tightness in the joints or spine, prop support allows to work through stiffness or tightness of the joints, releasing rigidity more safely. A pose can also be more challenging and more deeply understood through the use of props.

Finally, The practice of yoga can be modified and adapted to suit the likely changed needs in this particular phase of the monthly cycle, helping every woman to achieve peace of mind and bodily poise.

Standing asanas and Vinyasa Flow

As anticipated, For those women complaining of heavy period and tiredness, as well as other menstrual symptoms, it is advisable to avoid standing poses, particularly during the heavy phase of their period. These poses are characterized by high energy demand and heat generation, which , in some cases, could worsen the symptoms.

Furthermore, the uterus should not be put through any kind of stress during menstruation. Since there is a tendency for women to tighten the lower abdomen and the pelvic region (and so the uterus) while practicing standing poses, they are best avoided , especially for those women already going through a lot of pain at that time.

According to Iyengar's teachers, practicing supported variations of Utthita Trikonasana and Ardha Chandrasana can be effective to relieve low back pain and reduce cramping, excessive bleeding, and bloating. The standing forward extensions, such as Uttanasana with Head Support, Adho Mukha Svanasana with Head Support, and Prasarita Padottanasana with Head on Block are indicated as helpful to relieve low back pain and reduce high blood pressure.

Low hormone levels during menses mean that energy should be conserved, so a practice that involves jumping, such as Surya Namaskara ashtanga A/B , should be not advised to those women feeling "sluggish" during their cycle. Chandra Namaskara (moon salutation) is an alternative which is more soothing and calming .

Strong Vinyasa and Power yoga flows should be avoided by those women complaining of fatigued and tiredness during their period . A more gentle restorative practice could be suggested to this population.

Sitting Poses and Twists

Sitting poses, when combined with side-bending poses like Parsva Adho Mukha Swastikasana, can reduce swelling and stiffness in the joints. They also can provide relief from low back pain, menstrual cramps, and migraine headaches. Therefore, they are largely included in asanas sequence during menses; however use of external support is often suggested to minimize effort and avoid strain during this time.

Furthermore, during menstruation deep abdominal Twists should be avoided, because they can pressurize the lower abdominal organs (which includes the ovaries, uterus, and vagina).

In gentle twists, such as Bharadvajasana II, Parsva Virasana, and Parsva Swastikasana, there is minimal disturbance to the abdominal organs. These asanas can be comfortably practiced during menstruation, as long as the flow is not heavy. Furthermore, they may provide a welcome relief from low back pain.

Seated Forward Bends

These poses are highly recommended for practice during menstruation.

Gentle forward bends massage the abdominal and pelvic region, helping to relieve congestion and heaviness. They quiet the brain and reduce headaches, backache, and fatigue. Some seated forward bends, like Janu Sirsasana with Legs Apart, can also reduce heavy bleeding. As general precautions, excessive compression, twisting and tightening of the abdomen should be avoided.

Reclining Poses

These asana reduce pelvic soreness and abdominal cramps, relax the nerves, and counteract fatigue. The spine and back are supported on the floor, reducing the energy demand and help practicing more comfortably and safely.

However, reclining poses that require strong abdominal work, such as SuptaPadangustasana III, as well as reclining leg lifts in which the abdomen is pumped up and down, compress and irritate the internal organs and may cause the menstrual flow to become heavy.

Hip openers

Asanas targeting the hip and groin muscles, in particular the psoas, are effective in reducing cramps and pain. In fact, some theories consider spasm of the ileopsoas cause of the pain and discomfort in the abdominal area during menstruations.

Inversions

Inverted asanas, are well known to be contraindicated during menstruations. These include all the poses where the head is lower than torso, hips, and legs.

According to ayurveda, *mala*, which means "waste" (urine, feces, phlegm, mucus, and menstrual blood), has to be thrown out of the body in order to avoid disease. As such a woman's body is designed to allow the menstrual discharge to flow unrestricted. If the body is turned upside down, this process is disturbed. Since the menstrual process is one of discharge, it is considered a commonsense precaution to avoid these poses.

From an energy prospective, when doing inversions one type of prana, known as apana, which normally flows from the Manipur chakra to the muladhara chakra, is reversed. Usually, this is useful to help increase the prana in the body and to awaken the kundalini; however when menstruating it goes against the natural flow.

In his book "yoga sequencing – designing transformative yoga classes", Mark Stephens challenges this rule, nowadays as in the past "well established" among the yoga community, pointing to the value of always asking "why" or "why not" when told that something must not be done or must be done only in a certain way or at a certain time.

Stephens reported that, *"As the NASA Medical Division has confirmed through studies of women in zero-gravity environments, medical science in general has established that menstrual egress is caused by intrauterine and intravaginal pressure along with the peristaltic action of muscles, which are not measurably influenced by gravity. This is also why four-legged females have no problem with healthy menstrual flow despite not having a vertical orientation to gravity, and why a menstruating woman will flow just as normally whether sleeping on her belly or back despite her uterus and vagina being turned in opposite relation to gravity.".... "Whether the various admonitions about women in yoga (indeed, about everyone in yoga) are valid deserves to be studied, discussed, and ultimately considered through one's personal yoga experience"*.

In advising students on the question of menstruation and inversion, longtime yoga teacher Barbara Benagh (2003) says that since *"no studies or research make a compelling argument to avoid inversions during menstruation, and since menstruations affect each woman differently and can vary from cycle to cycle, I am of the opinion that each woman is responsible for her own decision."*

Back Bends

Back bends are stimulating poses requiring more physical strength and exertion, which may be lacking during menstruations and could be, depleted further by these poses.

However gentle backbends, especially when supported, can alleviate backpain and pelvic discomfort. An example includes Viparita Dandasana II with Head and Feet Supported, which is reported to be beneficial, provided that the reproductive organs are kept soft and in their proper alignment within the pelvis.

Bandhas

Bandhas should be avoided during this period by those women complaining of cramps and muscular tightness. On a pranic level they move the apana upwards instead of down, and physically they add more contraction to an already tight region. Furthermore, uddiyana banda is reported to increase the heat which could lead to heavier bleeding.

Pranayama

Pranayama can be very useful during menstruation as it helps to calm the mind, relax and balance the emotions. Also, it could help women to deal with the pain experienced in this phase of their cycle.

However, during menstruation demanding or forceful breathing techniques that tighten the abdomen or challenge the nervous system should not be practiced.

There should be no strain with the breath, as well as bandhas and breath retention practice should be avoided.

Fast breathing, bhastrika (bellow's breath), .Surya bedan (right nostril breathing) and kapalabhaati (frontal brain cleansing) are contraindicated, as they will increase the heat and they put excessive pressure on the abdominal region, also they redirect the prana in the upward direction; as stated before, during menses, the body's energy is naturally moving downward instead.

Deep breathing techniques are very beneficial, especially when practiced in shavasana. Bhramari (humming bee breath), ujjayi (victorious breath) sheetaly (cooling breath through the tongue), sheetkari (cooling hissing breath through the teeth) alternate nostril are all recommended.

In general, it is advisable to limit pranayama practice to 15 minutes during menstruations.

Shatkarma

Most cleansing practice should be postponed to the end of the menses, to avoid interference with the biological processes the woman's body is already going through at this time.

Particularly, As Many women complain of symptoms affecting the digestive system practices focused on this level should be avoided.

Practices such as Jal neti and danda neti can be performed safely.

YOGA SEQUENCES FOR MENSTRUATION

As Yoga teachers we have plenty of freedom in designing the practice to offer to the students, as well as a plethora of books and resources from where one can get inspiration and guidelines.

There are as many approaches to planning and sequencing yoga classes as there are styles, traditions, and brands of yoga

The following, are sequences designed by worldwide known yogi and experienced yoga teachers. These templates can be an efficient way to get started in crafting classes for women during their menses.

In fact, they can be useful tools to understand the basic sequencing principles to create beneficial and sustainable yoga classes, leading our female students through a beautiful, integrated and effective practice.

The "Moon Club" Series

In *Relax and Renew*, Judith Lasater presents The Moon Club series, a restorative yoga sequence that assists the body in releasing the menstrual flow, reducing fatigue, and moderating hormonal shifts.

It may also be beneficial for premenstrual syndrome (PMS), endometriosis, and irregular periods. The sequence consists of six restorative poses, designed to open the abdomen and alleviate cramps and lower back discomfort.

1. Supported Bound-Angle Pose - (5 to 15 minutes)

Props Bolster (sacrum to head support), 4 long-roll blanket (support each forearm and knee), double-fold blanket (head and neck support), belt or sandbag(to hold legs and feet in place)

Optional Props Extra single-fold blanket , eyebag, extra blanket for warmth

2. Reclining Crossed-Legs Pose 3 to 10 minutes

Props bolster and 2 single-fold blankets(to support the head, neck, and shoulders)
4 long-roll blankets (1 under each outer thigh and arms)

Optional Props standard-fold blanket, 1 or more single-fold blankets.(under ther buttocks To alleviate back discomfort, Eye bag, extra blanket for warmth

3. Supported Forward Bound-Angle Pose 3 to 5 minutes

Props Bolster (support torso and folded arms), 2 long-roll blankets (1 under each outer thigh)

Optional Props 1 to 2 single-fold blankets (to increase height of support), chair (instead of the bolster in case higher support is needed), towel (on the chair for comfort), eye bag, extra blanket for warmth

4. Supported Seated-Angle Pose 3 to 5 minutes

Prop Bolster (between the legs to support torso, arms, and head)

Optional Props chair (as alternative to the bolster), 1 or more single-fold blankets (under the hips, in case the lower back rounds), towel (on the chair) extra blanket for warmth

5. Supported Child's Pose 1 to 5 minutes

Prop bolster (to support the torso)

Optional Props 1 or more single-fold blankets (on the bolster to raise height) 2 towels (1 folded lengthwise, into the bend of the knees to create more space in the knee joint, the other towel, rolled lengthwise, under the front of the ankles), sandbag long (on the lower back to enhance relaxation) -roll blanket extra blanket for warmth

6. Savasana variation - Basic Relaxation Pose with Calves Supported 5 to 20 minutes

Props standard-fold blanket (head and neck support) 3 or more single-fold blankets (calves support)

Optional Props Sandbag (on the ankles to anchor the legs to the blanket), eye bag extra blanket for warmth

Yoga for Easing Menstrual Discomfort

The following sequence is suggested by Mark Stephens in his book "Yoga sequencing- designing transformative classes".

It is a relaxing practice for those women experiencing cramps, bloating, fatigue during their period. Performing the asanas in this sequence will help to reduce pressure in the uterus and abdomen, therefore easing menstrual discomfort.

1. Supta Baddha Konasana

Prop the back and head onto a set of bolsters or folded blankets and allow the thighs and arms to release toward the floor.

Stay for 5–10 minutes.

2. Apanasana

Gently draw the knees toward the chest and move them around in increasingly large circles for 1–2 minutes.

3. Ananda Balasana

Clasp the feet to draw the knees toward the floor, slightly and gently rocking from side to side for 1 minute.

4. Supta Padangusthasana B

Extend one leg out to the side, resting it on a bolster. Stay for 1 minute, switch sides, and then repeat.

5. Supta Virasana

Propped as for Supta Baddha Konasana, place strap around the thighs to keep them from splaying out and to reduce pressure in the lower back. Stay for 2–5 minutes.

6. Bidhalasana

Hold for 1 minute, alternately extending the legs back to release tension through the knees.

7. Adho Mukha Svanasana

Hold for 1 minute before resting in Balasana for 5 breaths. Repeat 2–4 times.

8. Setu Bandha Sarvangasana

Keep the tailbone tucked to maintain ease in the lower back while focusing the back bend more up the spine and into the heart center. Repeat once or twice.

9. Supta Parivartanasana

Press the upper hip away from the shoulder while pressing the lower leg back to reduce pressure in the lower back and sacroiliac joints. Hold for 1 minute, switch sides, and repeat 2 times.

10. Gomukhasana

Hold for 1–3 minutes on each side.

11. Upavista Konasana

Hold for 2–5 minutes. Consider placing a stack of bolsters under the torso and head.

12. Paschimottasana

Hold for 1–3 minutes. Consider placing a stack of bolsters under the torso and head.

13. Viparita Karani

Elevate the pelvis on bolsters, release the arms overhead onto the floor, and stay for 5–10 minutes.

Effortless Practice For The Period

Bobby Clennell, author of *"The Woman's Yoga Book: Asana and Pranayama for All*

Phases of the Menstrual Cycle," Provide different sequences for each phase of the monthly cycle based on the work of B. K. S. Iyengar. In her book She emphasizes the importance for women to acknowledge the changes happening within themselves throughout the menstrual cycle and "celebrate" them.

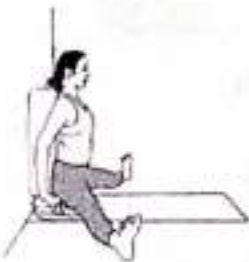
During menstruation, in particular, she recommend to all women to slow down and take care of themselves; take time to gather more energy and allow the menstrual process to take place undisturbed by external events.

For the bleeding phase, she suggests the following restorative practice

This sequence of asanas could help to reduce the symptoms that women experience during menses, including cramps, fluid retention, heaviness and/or bloating in abdomen and lower limbs, fatigue, low back pain, irritability and mood fluctuations



Baddha Konasana Against Wall (1-5 minutes)



Upavistha Konasana with Wall and Bolster
(1-2 minutes)



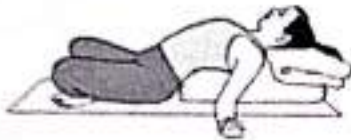
Supta Virasana with Arms Above Head
1-2 minutes, increasing
to 5 minutes or more with practice



Adho Mukha Virasana with Bolster
30-60 seconds



Supta Baddha Konasana I
5-10 minutes



Supta Swastikasana
(beginning practice)
2 minutes, change legs,
2 minutes



Matsyasana with Bolster
(continuing practice)
30-60 seconds or more,
change legs,
30-60 seconds or more



Paschimottanasana with
Horizontal Bolster
20-30 seconds



Janu Sirsasana with
Horizontal Bolster
30–60 seconds, each side



Mukaikapada
Paschimottanasana with
Horizontal Bolster
(continuing practice)
30–60 seconds, each side.



Ardha Padma
Paschimottanasana
with Horizontal Bolster
or Chair (continuing practice)
30–60 seconds, each side



Paschimottanasana
with Horizontal Bolster
3–5 minutes



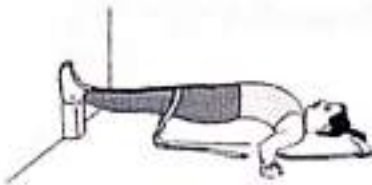
Adho Mukha Upavistha
Konasana with Bolster
and Blanket
30–60 seconds



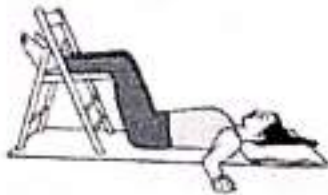
Parsva Upavistha
Konasana with Bolster
20-30 seconds,
each side



Viparita Dandasana II with
Head and Feet Supported
5 minutes



Setu Bandha Sarvangasana II
3-8 minutes



Savasana with Legs
Supported on Chair
5-10 minutes

Yoga sequence for Menstrual pain

This sequence, designed by B K S I Y E N G A R, focuses on relieving Cramps in the pelvic region, which are caused by contractions of the uterus while it sheds its lining.

As in traditional Iyengar style the practice is performed with the support of block, blankets, bolsters, chair and straps.



Baddhakonasana



Upavista Konasana with blanket and blocks



Supta Baddhakonasana with blankets and bolster



Virasana



Supta Virasana With Blankets And Bolster



Supta Padangustasana with block and strap



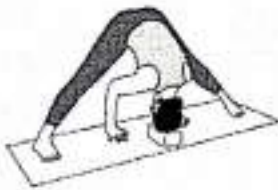
Tadasana Urdhva Hastasana



Utthita Parsvakonasana with block and wall support



Ardha Chandrasana with block and wall support



Prasarita Padottanasana



Adhomukha Svanasana with head supported on blocks



Uttanasana with head supported on blocks.



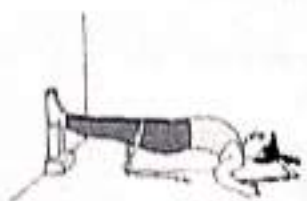
Viparita Dandasana with blocks, bolse and blanket



Janu Sirsasana with blanket and strap



Paschimottasana with blanket and chair



Setubandha Sarvangasana with blocks, bolster and blanket



Savasana with upper back supported

REFERENCES

- Constantini NW, Dubnov G, Lebrun CM. The menstrual cycle and sport performance. *Clin Sports Med.* 2005; 24(2):e511-82, xiii-xiv. <https://doi.org/10.1016/j.csm.2005.01.003> PMID: 15892917
- Wen-Lan Wu, Tzu-Ya Lin, I-Hua Chu, and Jing-Min Liang. *The Journal of Alternative and Complementary Medicine.* Jun 2015, ahead of print <http://doi.org/10.1089/acm.2015.0070>
- Normal Menstrual Cycle--Barriga-Pooley Patricio and Brantes-Glavic Sergio
J Health Psychol. Author manuscript; available in PMC 2015 Jan 21. Published in final edited form as: *J Health Psychol.* 2009 Oct; 24(7): 899-908. doi: 10.1177/1359105309340995 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4301608/>
- Guyton and Hall Textbook of Medical Physiology John E. Hall, Ph.D. Arthur C. Guyton Professor and Chair Department of Physiology and Biophysics Associate Vice Chancellor for Research University of Mississippi Medical Center Jackson, Mississippi
- The woman's yoga book : asana and pranayama for all phases of the menstrual cycle / written and illustrated by Bobby Clennell ; Yoga sequencing: designing transformative yoga classes / Mark Stephens
- Madanmohan, Mahadevan SK, Balakrishnan S, Gopalakrishnan M, Prakash ES. Effect of 6 wks yoga training on weight loss following step test, respiratory pressures, handgrip strength and handgrip endurance in young healthy subjects. *Indian J Physiol Pharmacol.* 2008; 52:164-70. [PubMed] [Google Scholar]
- BKS IYENGAR yoga path to holistic health Published in the United States by DK Publishing, 375 Hudson Street New York, New York 10014
- Relax and Renew restful yoga for stressful times (2nd edition, 2011) Judith Hanson Lasater, Ph.D., P.T.
- Exploring the Physiological Effects of Yoga: A State of the Art Review Manjula Suri, Namita Saini, Shipra Gupta *International Journal of Physical Education, Sports and Health* 2016; 3(2): 316-320
- Bruner B, Chad K, Chizen D. Effects of exercise and nutritional counseling in women with polycystic ovary syndrome. *Appl Physiol Nutr Metab.* 2006; 31(4):384-92.
- Schmidt T, Wijga A, Von Zur Muhlen A, Brabant G, Wagner TO. Changes in Cardiovascular risk factors and hormones during a comprehensive residential three month kriya yoga training and vegetarian nutrition. *Acta Phys Scand Suppl.* 1997; 161:158-62.
- Tooley GA, Armstrong SM, Norman TR, Sali A. Acute increases in night-time plasma melatonin levels following a period of meditation. *Biol Psychol.* 2000; 53:69-78.
- Borenstein, J.E.; Dean, B.B.; Leifke, E.; Korner, P.; Yonkers, K.A. Differences in symptom scores and health outcomes in premenstrual syndrome. *J. Womens Health* 2007, 16, 1139-1144. [CrossRef] [PubMed]
- Farrokh-Eslamlou, H.; Oshnouei, S.; Heshmatian, B.; Akbari, E. Premenstrual syndrome and quality of life in Iranian medical students. *Sex. Reprod. Healthc.* 2015, 6, 23-27. [CrossRef] [PubMed]
- Bertone-Johnson, E.R.; Hankinson, S.E.; Johnson, S.R.; Manson, J.E. Cigarette smoking and the development of premenstrual syndrome. *Am. J. Epidemiol.* 2008, 168, 938-945. [CrossRef] [PubMed]
- Masho, S.W.; Adera, T.; South-Paul, J. Obesity as a risk factor for premenstrual syndrome. *J. Psychosom. Obstet. Gynaecol.* 2005, 26, 33-39. [CrossRef] [PubMed]
- Potter, J.; Bouyer, J.; Trussell, J.; Moreau, C. Premenstrual syndrome prevalence and fluctuation over time: Results from a French population-based survey. *J. Womens Health* 2009, 18, 31-39. [CrossRef] [PubMed]
- Rani, M.; Singh, U.; Agrawal, G.G.; Natu, S.M.; Kala, S.; Ghildiyal, A.; Srivastava, N. Impact of Yoga Nidra on menstrual abnormalities in females of reproductive age. *J. Altern. Complement. Med.* 2013, 9, 225-229. [CrossRef] [PubMed]. Rakhshae, Z. Effect of three yoga poses (cobra, cat and fish poses) in women with primary dysmenorrhea: A randomized clinical trial. *J. Pediatr. Adolesc. Gynecol.* 2011, 24, 192-196. [CrossRef] [PubMed]

Chien, L.W.; Chang, H.C.; Liu, C.F. Effect of yoga on serum homocysteine and nitric oxide levels in adolescent women with and without dysmenorrhea. *J. Altern. Complement. Med.* 2013, 19, 20–23. [CrossRef] [PubMed]

Sakuma, Y.; Sasaki-Otomaru, A.; Ishida, S.; Kanoya, Y.; Arakawa, C.; Mochizuki, Y.; Selishi, Y.; Sato, C. Effect of a home-based simple yoga program in child-care workers: A randomized controlled trial. *J. Altern. Complement. Med.* 2012, 18, 769–776. [CrossRef] [PubMed]

Rani, M.; Singh, U.; Agrawal, G.G.; Natu, S.M.; Kala, S.; Ghildiyal, A.; Srivastava, N. Impact of Yoga Nidra on menstrual abnormalities in females of reproductive age. *J. Altern. Complement. Med.* 2013, 9, 925–929. [CrossRef] [PubMed]

Samadi, Z.; Taghian, F.; Valiani, M. The effects of 8 weeks of regular aerobic exercise on the symptoms of premenstrual syndrome in non-athlete girls. *Iran. J. Nurs. Midwifery Res.* 2013, 18, 14–19. [PubMed]

Wu, W.L.; Lin, T.Y.; Chu, I.H.; Liang, J.M. The acute effects of yoga on cognitive measures for women with premenstrual syndrome. *J. Altern. Complement. Med.* 2015, 21, 364–369. [CrossRef] [PubMed]

Desai, R.; Tailor, A.; Bhatt, T. Effects of yoga on brain waves and structural activation: A review. *Complement. Ther. Clin. Pract.* 2015, 21, 112–118. [CrossRef] [PubMed]

Riley, K.E.; Park, C.L. How does yoga reduce stress? A systematic review of mechanisms of change and guide to future inquiry. *Health Psychol. Rev.* 2015, 9, 379–396. [CrossRef] [PubMed]

Wren, A.A.; Wright, M.A.; Carson, J.W.; Keefe, F.J. Yoga for persistent pain: New findings and directions for an ancient practice. *Pain* 2011, 152, 477–480. [CrossRef] [PubMed]

International Journal of Environmental Research and Public Health Article Effect of Yoga Exercise on Premenstrual Symptoms among Female Employees in Taiwan Su-Ying Tsai Department of Health Management, I-Shou University, Kaohsiung, Taiwan No.8, Yida Rd., Yanchao Township, Kaohsiung Country 824, Academic Editor: Anthony R. Mawson Received: 1 May 2016; Accepted: 13 July 2016; Published: 16 July 2016