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O Sun God, Sunita!
Than dazzling fraught of life-conserving light!
Sullievent mystery speeding from afar!
Swept became that burst too potent on the sight!
This radiant type of strength and youth!
Glowing eternally!

May the golden-eyed Sunita come hither!
Shining forth he rises from the top of the dawn!
Praised by singers, my God Sunita!
Stooped forth and never missed his place!
He steps forth the splendor of the sky the wide!
Seeing, far-shining, the shining wonderous!
- Rig-Veda, vi. 65

### Health and Nutrition

**TIACS-subscribe@yahooogroups.com** (The Indian American Chemical Society)

- **ALLOSPHERE, BEYOND THE CAVE, AVAILABLE HERE.**
- **BACTERIA-FILLED CHICAGO RIVER, AVAILABLE HERE.**
- **UNDERGRADUATE RESEARCH EXCELLENCE FELLOWSHIP (UGREF), AVAILABLE HERE.**
- **DIABETES COMPLICATIONS INCLUDE LIMB DISORDERS, AVAILABLE HERE.**

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**Issue 234**

5118 Kali Era, 2074 Vikramarka Era, 1938 Salivahana Era

Swasti Sri Hevilambi Year, JYESTHA Month

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CORE MUSCLES
High-intensity interval training (HIIT), weight training, or a combination of the two. HIIT is defined as mixing intense bursts of exercise with short periods of active rest; a run-walk combination is a good example of HIIT. Interval training can be incorporated into activities ranging from walking and biking to swimming. These bursts keep the heart rate up and help burn fat. High-intensity interval training is considered one of the best ways to improve cardiorespiratory and metabolic function. Strength training is also important to maintain good health as you age. In order to optimize results a person must be utilizing the appropriate amount of resistance, performing the exercises with proper form and building in recovery time. A new study finds that short, functional-movement and resistance training workouts, called functional high-intensity training (F-HIT), may improve beta-cell function in adults with type 2 diabetes. Studies have revealed that exercise induces the production of irisin and its precursor molecule, FNDC5 (fibronectin-type III domain-containing 5) protein, which convert white fat tissue into beneficial, calorie-burning brown fat. Irisin has been linked to improved glucose tolerance and weight loss in obese, prediabetic mice. Exercise-induced irisin may not only act as an endocrine factor capable of promoting the browning of white adipose tissue, but could also regulate bone metabolism by autocrine mechanism. A small banana, half a cup of oatmeal or a slice of whole-wheat toast with honey would suffice, but not all.

DUMBBELL BEAR CRAWL: Get on all fours with your hands under your shoulders (holding onto hexagon-shaped dumbbells) with your knees under your hips; keep your knees an inch above the ground. Crawl forward by taking a small step with your right arm and left leg simultaneously, then alternate. Keep your hips low and your head up.

TURKISH GET-UP: Lie on the ground with your right knee bent, right foot flat on the floor, right arm holding a dumbbell above you, and left arm and left leg at your side. Drive through your right foot and roll onto your left elbow. The n, straighten your left arm. Squeeze your right glute and drive your hips straight up. Pull your left leg underneath and behind your body, resting on the knee and ball of the foot. Move your torso straight up, then lunge to a stand. Reverse the sequence to descend. Do all your reps on one side and repeat on the other side. Keep your chest up and watch the dumbbell the entire time.

SINGLE-ARM FARMER’S CARRY: Grab a heavy dumbbell in one hand, keep your chest up and shoulder blades squeezed and walk forward.

SINGLE-ARM WAITER’S WALK: Grab a heavy dumbbell in one hand and hold it overhead. Keep your shoulder down-and-back and walk while keeping your hips and shoulders level. Keep your wrists as straight as you can.

T-PUSHUPS: Start in a pushup position while holding dumbbells. Descend to the bottom and, as you’re pushing up, and extend one hand to the sky. Watch that hand with your eyes. Repeat and reach up with the other arm.

SINGLE-ARM DUMBBELL OVERHEAD PRESS: With just one dumbbell held in front of your shoulder, drive it straight overhead and lock out your arm with your bicep by your ear. Don’t lean or twist with your body. Make sure to squeeze your glutes while you press to prevent your lower back from overarching as you reach overhead.
VEGETARIAN DIETS TWICE AS EFFECTIVE IN REDUCING BODY WEIGHT

Vegetarian diets proved to be the most effective diets for weight loss. Dieters who go vegetarian not only lose weight more effectively than those on conventional low-calorie diets but also improve their metabolism by reducing muscle fat, a new study published in the Journal of the American College of Nutrition has found. Subfascial fat was only reduced in response to the vegetarian diet, and intramuscular fat was more greatly reduced by the vegetarian diet. A vegetarian diet is much more effective at reducing muscle fat, thus improving metabolism.

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MARITAL BLISS

*Find the Humor*. Infusing humor and laughter into a relationship can be beneficial, but it can also cause more issues if not done well. Humor and laughter can be a valuable tool for defusing tensions brought on by conflict, by breaking down walls and making people less defensive. Laughter and humor can help you bond with the person with whom you are in conflict. A joke that makes you both laugh builds an intimacy between you and these moments assist in making a relationship stronger. However, all parties involved should be in on the joke. Humor should not be mean-spirited. If they are not laughing, you have gone too far. The line between funny and hurtful can be thin so be sure to gauge the mood of the other person.

*Reconnect with Touch*. Couples need to just hold each other when nothing else seems to be working. Reconnecting through touch is very important.

*Stop Finger-Pointing*. Couples often derail a resolution when they acknowledge the other partner’s position and then add a “but” in their next breath, reaffirming their own. Remember what’s important and reflect upon these four words: help more, judge less. Before speaking ask yourself, “am I correct?” and “will this help?”

*Go To Bed Separately*. It was found that going to bed is often the best choice allowing partners to clear their thoughts, get some sleep, and make a date to resume the fight which might seem less important in the light of day. Take a break. Even a 30-second break can help a couple push the reset button on a fight. Own up to your part of the fight. Two things derail intense fights: admitting what you did to get your partner ticked off and expressing empathy toward your partner. Letting down our defenses in the heat of battle seems counterintuitive, but it is actually very effective with couples.

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BRAIN FOG

Brain Fog is not a medical condition. It is a term used for certain symptoms that can affect your ability to think. Feeling confused or disorganized, or finding it hard to focus or put thoughts into words. Many women find it is harder to remember things during pregnancy. Carrying a baby can change a woman’s body in lots of ways, and chemicals released to protect and nourish your baby may bring on memory problems.

Multiple sclerosis affects the central nervous system and can change the way the brain talks to the rest of the body. About half the people who have MS have issues with memory, attention, planning, or language. Learning and memory exercises can help, and a therapist can give you new ways to handle the tasks you have trouble with. Some kinds of drugs can cause brain fog. Chemotherapy can lead to chemo brain, which may cause trouble remembering details like names or dates, have a hard time multi-tasking, or take longer to finish things. It usually goes away fairly quickly, but some people can be affected for a long time after treatment. Women may find it harder to learn or remember things when they reach this stage of life. It happens about a year after their last period, usually around age 50. Along with brain fog, they also may have hot flashes, sudden sweating with a higher heart rate and body temperature, and other body changes. Hormone supplements and other types of medication may help.

Chronic Fatigue Syndrome (CFS) is a condition where the body and mind are tired for a long time resulting in confusion, forgetfulness, and inability to focus. There is no known cure for CFS, but medication, exercise, and talk therapy may help. Millions of people around the world already enjoy the health benefits of mind-body interventions like yoga, meditation, tai chi etc., which may reverse molecular reactions in DNA that cause poor health and depression.
BRAIN DIFFERENCE

The brain is one of the largest and most complex organs in the human body. It is also considered to be the sex organ and accordingly, it must be different for male and female human beings. It is made up of more than 100 billion nerves that communicate in trillions of connections called synapses. The brain is made up of many specialized areas that work together:

- The cortex is the outermost layer of brain cells. Thinking and voluntary movements begin in the cortex.
- The brain stem is between the spinal cord and the rest of the brain. Basic functions like breathing and sleep are controlled here.
- The basal ganglia are a cluster of structures in the center of the brain. The basal ganglia coordinate messages between multiple other brain areas.
- The cerebellum is at the base and the back of the brain. The cerebellum is responsible for coordination and balance.

The brain is also divided into several lobes:

- The parietal lobes manage sensation, handwriting, and body position.
- The temporal lobes are involved with memory and hearing.
- The occipital lobes contain the brain's visual processing system.

Documented gender differences in the brain are often taken as support of a sexually dimorphic view of human female brain or male brain. According to a report, the amount of overlap in sex-differentiated features of male and female brains undermines any attempt to distinguish between a male and a female form for specific brain feature. Analysis of MRIs of more than 1,400 human brains from four datasets reveals extensive overlap between the distributions of females and males for all gray matter, white matter, and connections assessed. Moreover, analyses of internal consistency reveal that brains with features that are consistently at one end of the “maleness-femaleness” continuum are rare. Rather, most brains are comprised of unique “mosaics” of features, some more common in females compared with males, some more common in males compared with females, and some common in both females and males.

Despite the fact that all cells in a human body are derived from a single cell zygote, the body consists very different and diverse organs and tissues as that single cell differentiates into stem cells differentiating to various unique organs, with distinct functions. Accordingly the brain must differentiate itself to distinguish these diverse organs and tissues. The male and female physical distinctions with distinct organs must also result in such clear differences in the male and female brains. Female reproductive system is quite different from the male reproductive system.
The genital-sensing brain areas in women and men correspond to an area of the brain called the medial paracentral lobule, which sits in the crevice between the two brain hemispheres. The parts of the brain that light up during sexual experiences are associated with some of our most sophisticated forms of thought. The higher regions may be priming the visual cortex to be more sensitive to certain kinds of information—in essence, instructing the eyes on what kind of person looks sexually desirable. The brain regions that handle self-awareness and understanding others may also be telling the emotional centers what to feel\textsuperscript{10}.

Sexual desire is the culmination of several different neural mechanisms, each is controlled in different areas of the brain and is activated at different times of the sexual experience. The euphoric and pleasurable experience of sex stems primarily from the limbic system. The colloquial term for areas including the amygdala, hippocampus and limbic lobe (dentate and cingulate gyrus). This area is common to all mammals and is considered one of the oldest areas of the brain. It regulates emotion and encourages the avoidance of painful or aversive stimuli and the repetition of pleasurable experiences\textsuperscript{11}. From a physiological perspective sexual arousal is controlled by the parasympathetic portion of the autonomic nervous system and manifests itself as vasodilation in sexual organs along with several other physiological phenomena including an increase in heart rate. An orgasm and in particular male ejaculation is controlled by the sympathetic portion, this is also accompanied by deactivation of many areas in the brain relating to external stimuli in particular fear, allowing the mind to focus on the task at hand. The amygdala is sexually differentiated, males on average have a 16% larger cortico-medial area which is the area responsible for steroid uptake, specifically the male and female sex hormones testosterone and oestrogen. These are known to produce sex specific behaviours. Males were found to have greater amygdala activation when presented with a sexually pleasing, visual stimuli, than that of females.

The labia and clitoris are part of the vulva, which is outside the vagina. The labia consists of the fleshy lip-like parts that surround the opening of the vagina, and the clitoris is the very sensitive area located near the top of the inner labia. The vagina is a narrow, muscular canal that connects the uterus and cervix to the outside of the body. There are many differences in vaginas among women depending upon factors such as age and height of a woman\textsuperscript{12}. The sensations from the nipples, vagina, clitoris, and cervix travel to the same part of the brain.

Four major nerves bring signals from women's genitals to their brains: the pudendal nerve connects the clitoris, the pelvic nerve carries signals from the vagina, the hypogastric nerve connects with the cervix and uterus, and the vagus nerve travels from the cervix and uterus without passing through the spinal cord (making it possible for some women to achieve orgasm even though they have had complete spinal cord injuries). The genital sensory
cortex, identified in the classical Penfield homunculus based on electrical stimulation of the brain only in men, was confirmed for the first time in the literature by the present study in women applying clitoral, vaginal, and cervical self-stimulation, and observing their regional brain responses using fMRI. Vaginal, clitoral, and cervical regions of activation were differentiable, consistent with innervation by different afferent nerves and different behavioral correlates. Activation of the genital sensory cortex by nipple self-stimulation was unexpected, but suggests a neurological basis for women’s reports of its erogenous quality. Nipple stimulation, alongside the genital sensations, lights up the area in the medial paracentral lobule.

The G-Spot. In 1950, German physician Ernst Grafenberg suggested that an area of the anterior vaginal wall, named after him as the G spot, is sensitive to touch and that stimulation of this area can bring about orgasm, but researchers came to one conclusion - G-spot does not exist - after reviewing 96 published studies of surveys and scans and biopsies of women to locate and define the presumably orgasmic area the G-spot.

Hygiene. Vaginal discharge changes in amount, color, and consistency throughout the menstrual cycle. It may be clear or milky, and the consistency may range from creamy, sticky, or similar to that of egg whites, depending on the phase of the menstrual cycle. There is a normal vaginal odor. Leaving a tampon in the vagina for longer than 8 hours can lead to toxic shock syndrome (TSS), an infection caused by bacteria. Symptoms of TSS include a high fever, lightheadedness or fainting; a sunburn-like rash; vomiting or diarrhea; severe muscle aches or muscle weakness; redness in the eyes, mouth, throat, and vagina; headache; and disorientation. Because a thong is a close-fitting strip of fabric, it can transport bacteria and fecal matter from the rectum to the vagina and urinary tract. An observable odor is probably coming from outside the vagina, near the vulva. Keeping that area clean with a gentle soap and water will prevent that. Symptoms such as an unusual increase in discharge, a change in the odor of your vaginal discharge, and irritation or itchiness in the vulva around the vagina, which could be reflecting inflammation of the vagina, vulva, cervix, or vaginitis, all of which can be caused by any of several things that upset the balance of a healthy vagina. These include douching or using feminine hygiene sprays, pregnancy, or antibiotics. Douching can change the pH balance of the vagina leading to yeast infections, may spread an infection to the uterus, and increase the risk of PID, an infection of a woman’s pelvic organs.

Sexercise. Almost three out of every four women will have pain during intercourse at some point in their lives due to many possible causes. The American Congress of Obstetricians and Gynecologists recommends the following tips: Use a lubricant; set aside a time for sex when neither you nor your partner is tired or anxious; try sexual activities that don’t cause pain; or try sensual activities, like massage. Kegels, also called pelvic floor exercises, squeeze the muscles around the vagina as if to stop the flow of urine. Kegels can help prevent urine leakage as well as accidental passing of stool or gas by keeping the uterus, urethra (the tube that carries urine outside the body from the bladder), and bowel from sagging into the vagina.

Childbirth. A woman who’s had a baby by cesarean delivery has the option of undergoing a trial of labor after cesarean delivery (TOLAC) and attempting to give birth vaginally (vaginal birth after cesarean, or VBAC). Certain criteria have to be met. Between 60% and 80% of women who choose TOLAC are able to give birth vaginally.
Aging Masculinity: Penis Life Cycle. With age comes wisdom along with many bodily changes. Age and larger health issues can impact virility, endurance and your overall sex life. As the man ages, the penis also changes in size, shape, and function. There is a life cycle associated with all organs of the body, including the penis - a barometer of a man's health.

Between the ages of 9 and 15, the pituitary gland releases hormones to start making testosterone to begin puberty. Testes (testicles), scrotum, penis, and pubic hair all begin to grow. Testosterone levels peak from late teens to early 20s. The amount of testosterone may drop slightly in late 20s through 40s, but the change is minimal. After 40, a protein called sex hormone binding globulin (SHBG) that binds to the testosterone to lower the amount has available to use, and yet penis doesn't change much, while pubic hair may grey and thin, testicles may shrink, and scrotum may sag due to natural decline skin elasticity. However, the nerves in the penis get less sensitive due to aging resulting in trouble with arousal and having an orgasm. Additionally, penis may lose the ability to hold blood and not keep it. Blood flows in, but the aging muscle that surrounds the erectile tissue can't hold it there, resulting in lost hardness. As the penis curves during intercourse, some penises may curve permanently. Scar tissue that forms along the tunica albuginea a tough sheath around the spongy tissue that fills with blood to create an erection, and as the scarred portion can't expand, a curved erection results, a condition called Peyronie’s disease. The head of the penis (glans) gradually loses its purplish color, the result of reduced blood flow. And there is a slow loss of pubic hair. As testosterone wanes, the penis gradually reverts to its prepubertal, mostly hairless, state. As fat accumulates on the lower abdomen, the apparent size of the penis changes. In some cases, abdominal fat all but buries the penis. The average woman’s vagina is approximately four inches long and the average man’s penis is approximately five to six inches when erect, and three to four inches when flaccid; therefore, size is really a moot point.

Also, numerous studies have shown that the penis becomes less sensitive over time. This can make it hard to achieve an erection and to have an orgasm. Men also experience a gradual decline in urinary function. Studies show that a man's urine stream weakens over time, the consequence of weakened bladder muscles and, in many cases, prostate enlargement. A man's personal hygiene should also include taking good care of the penis. The tip of the penis can be cleaned by pushing back the foreskin and then washing the exposed area with water – there is no need for circumcision. The base of the penis is an area where there is a growth of pubic hair. As fat accumulates on the lower abdomen, the apparent size of the penis changes. In some cases, abdominal fat all but buries the penis. The average woman’s vagina is approximately four inches long and the average man’s penis is approximately five to six inches when erect, and three to four inches when flaccid; therefore, size is really a moot point.

A study, published last month in the Journals of Gerontology, Series B: Psychological and Social Sciences, finds that people who engaged in more regular sexual activity scored higher on tests that measured their verbal fluency and their ability to visually perceive objects and the spaces between them.
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Micropenis, Inconspicuous Penis Less Common Than Small Penis Syndrome. How to Measure a Penis: Press the ruler tight against the pubic bone at the base of the penis. Gently, but very firmly, stretch the penis as far as it will go. Measure from the pubic bone to the tip of the stretched penis. Most adult men are within about a half inch of 5.24 inches, according to statistics. The medical term "micropenis" applies to the 0.6% of men with the smallest penises. When discovered in infancy, micropenis can be treated with testosterone, which can stimulate penis growth in childhood, even after puberty. While the safety and long-term efficacy of this treatment remains to be proved, available data suggest the treatment does not affect normal development during puberty. [http://www.webmd.com/men/guide/is-my-penis-too-small#1](http://www.webmd.com/men/guide/is-my-penis-too-small#1)


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