

YOGA FOR CANCER

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Introduction

1.1 Overview

Yoga is a healthy way of life, originated in India. Now it is believed to be a form of science accepted all over the world. The western culture also is accepting it as a healthy form of scientific exercise. Although the origin of yoga is obscure, it has a long tradition. In course of time, various schools of yoga developed. The major schools of yoga are Jnana yoga, Bhakti yoga, Karma yoga and Raja yoga. These schools of yoga advocate methodology which includes a variety of systematized practices of yoga depending on their approach. However, all these are leading to the common goal of self-realization and integration of body and mind.

1.2 What is Yoga?

Yoga is a science of right living, and as such, it is intended to be incorporated in daily life. It works on all aspects of the person. – the physical, mental, emotional, social and spiritual levels.

The word Yoga means “Unity” or “Oneness”. It is derived from the Sanskrit word YUJ which in spiritual terms mean the union of the individual consciousness with the universal consciousness. On a more practical level, yoga is a means of balancing & harmonizing the body, mind & emotions and this state need to be achieved before union with the higher reality takes place.

In Yoga Sutras Maharishi Patanjali replies to the question of “What is yoga?” as, “*Atha yoga anushasanam*” - yoga is a form of discipline. The word for discipline in Sanskrit is anushasanam. The word Anu means 'atom', the most tiny and subtle one. We know the nature of an atom is invisible yet potent. Shasanam means 'to rule over' or 'to govern'. So, the concept of discipline in Yoga is a process in which we learn to govern the subtlest aspect, the unknown aspect of our own selves.



Sage Patanjali

Maharishi Patanjali quotes the result of this discipline as, *“Yogaha chitta vritti nirodhaha”* Through this discipline we will gain control over the different modifications of Chitta.

Chitta means the aspect which observes, which sees, which is consciously active in the world. The aim of the yogic discipline is to alter the Vrittis. Our mind is disturbed by the Chitta Vrittis (the five mental afflictions) which needs to be controlled.

The five Mental Afflictions are:

- Pramana: Right knowledge
- Viparyaya: Wrong knowledge
- Vikalpa: Imagination
- Nidra: Sleep
- Smriti: Memory

1.3 History of Yoga -

Yoga has its origin thousands of years ago in India. It has originated from a universal desire towards attaining happiness and getting rid of sufferings. According to yogic lore, Shiva is considered as the founder of Yoga. Several seals and fossil remain of Indus Valley Civilization, dating back to 2700 BC indicates that yoga was prevalent in ancient India. However, systematic reference of yoga is found in Patanjali's Yogadarshna. Maharishi Patanjali systematized the yogic practices. After Patanjali, many sages and yogis contributed to its development and as a result, yoga has now spread all over the World. In this sequence, on 11 December 2014, the United Nations Introduction 3 General Assembly (UNGA) with 193 members approved the proposal to celebrate 'June 21' as the 'International Yoga Day'.

Yoga is a 5000-year-old tradition. In India monks went into seclusion for years with the goal of creating a dis-ease free strong body. The original intention was to be able to sit in meditation for hours but with a achy body that is impossible to do. The postures of yoga were each created for a specific health purpose. To Detoxify, realign musculature, strengthen muscle, and create flexibility. Along with correcting the fallacies of the body, these yogis went about trying to find how to correct fallacies of the mind. An entire philosophy was created, based solely around leading a human being finding his or her bliss. The teachings were so dead-on that they are still practiced 5000 years later. Yoga has become more popular than ever, with celebrities, politicians, businesspeople, and almost every walk of life currently practicing. The important thing to understand about this way of thinking is yoga is not a religion. You can be from any background and reap its benefits.

1.4 The 4-Main Paths of Yoga –

There are various paths of yoga that lead towards the ultimate goal of union, each a specialized branch of a comprehensive system, the main four being Karma Yoga, Bhakti Yoga, Raja Yoga and Jnana Yoga. Each, with their own world of techniques, supports people with different temperaments and approaches to life. All the paths lead ultimately to the same destination - to union with Brahman/ God/ Oneness/ the Universe and the lessons from each need to be integrated if true wisdom is to be attained. For our sadhana, or spiritual practice, it is often suggested that we practice a balanced integral yoga, incorporating practices from all 4 paths.

1. Raja Yoga – Path of Self - Discipline

The "royal" or highest path of yoga, formalized by the sage Patanjali, is a comprehensive method for controlling the waves of thought by turning our mental and physical energy into spiritual energy. The chief practice is self-discipline, including Patanjali's Ashtanga Yoga & Meditation.

2. Bhakti Yoga – Path of Self-Surrender

The path of devotion is one in which we offer and surrender to the divine through a devotion in which one sees the divinity in every creature and all things. Mantra meditation is one form of Bhakti.

3. Jnana yoga – Path of Self-Awareness

The path of wisdom applies discriminative intelligence for spiritual liberation – reflecting and developing awareness of one's own sense of Being. The chief practice of Jnana Yoga is meditation & Self -Inquiry – Atma Vicharya – inquiry into the source of the "I" thought - "So Hum": Who am I? / I am that.

4. Karma Yoga – The Path of Selfless Action

Karma is the universal law of cause and effect. All actions have consequences. Karma Yoga is the knowledge that deals with how to come into harmony with these forces, by being in full awareness with actions while letting go of the outcome or results. Seva is a practice of karma yoga, selfless service to others as part of one's larger Self without thought of gain or reward, as it is an act of sublimating ego through having no attachments to the fruits of your actions, offering them up to the divine. Balancing the 3 Gunas, through mindful efforts, helps up to live in the bliss of the present moment, navigating through the endless obstacles that arise from the pull of karma.

1.5 The 8 Limbs of Yoga: Patanjali's Ashtanga Yoga

Ashtanga Yoga (Ashta – 8, Anga – Limb) is the path to enlightenment that offers guidelines for a peaceful, meaningful and purposeful life.

The first four stages of Patanjali's Ashtanga yoga concentrate on refining our personalities, gaining mastery over the body, and developing an energetic awareness of ourselves. They are preparation for the next 4 limbs. The second half of the journey deals with the senses, the mind, and attaining a higher state of consciousness.

The Yamas and Niyamas can be approached individually or they can be seen as a progressive system towards Realization.



1. Yamas

Ethical standards relating to the Golden Rule of “Do unto others as would have them do unto you. The five yamas are:

- Ahimsa: nonviolence
- Satya: truthfulness
- Asteya: non-stealing
- Brahmacharya: non-excess
- Aparigraha: non-attachment

2. Niyama

Niyama, the second limb, has to do with self-discipline and spiritual observances. Regularly attending temple or church services, saying grace before meals, developing your own personal meditation practices, or making a habit of taking contemplative walks alone are all examples of niyamas in practice. The five niyamas are:

- Saucha: cleanliness/purity
- Santosha: contentment
- Tapas: heat; spiritual austerities
- Svadhyaya: study of the sacred scriptures and of one's self
- Isvara pranidhana: surrender to God

3. Asana

Asana, the postures practiced in yoga, comprise the third limb. In the yogic view, the body is a temple of spirit, the care of which is an important stage of our spiritual growth. Through the practice of asana, we develop the habit of discipline and the ability to concentrate, both of which are necessary for meditation.

4. Pranayama: Breath Control

Generally translated as breath control, this fourth stage consists of techniques designed to gain mastery over the respiratory process while recognizing the connection between the breath, the mind, and the emotions. As implied by the literal translation of pranayama, "life force extension," yogis believe that it not only rejuvenates the body but also actually extends life itself. You can practice pranayama as an isolated technique (i.e., simply sitting and performing a number of breathing exercises) or integrate it into your daily hatha yoga routine.

5. Pratyahara: Sensory Transcendence

Pratyahara, the fifth limb, means withdrawal of senses, or sensory transcendence. It is during this stage that we make the conscious effort to draw our awareness away from the external world and outside stimuli. Keenly aware of, yet cultivating a detachment from, our senses, we direct our attention internally. The practice of pratyahara provides us with an opportunity to step back and take a look at ourselves. This withdrawal allows us to objectively observe our cravings: habits that are perhaps detrimental to our health and which likely interfere with our inner growth.

6. Dharana: Concentration

As each stage prepares us for the next, the practice of pratyahara creates the setting for dharana, or concentration. Having relieved ourselves of outside distractions, we can now deal with the distractions of the mind itself. No easy task! In the practice of concentration, which precedes meditation, we learn how to slow down the thinking process by concentrating on a single mental object: a specific energetic center in the body, an image of a deity, or the silent repetition of a sound. We, of course, have already begun to develop our powers of concentration in the previous three stages of posture, breath control, and withdrawal of the senses. In asana and pranayama, although we pay attention to our actions, our attention travels. Our focus constantly shifts as we fine-tune the many nuances of any particular posture or breathing technique. In pratyahara we become self-observant; now, in dharana, we focus our attention on a single point. Extended periods of concentration naturally lead to meditation.

7. Dhyana: Single-Pointed Concentration/ Flow

Meditation or contemplation, the seventh stage of ashtanga, is the uninterrupted flow of concentration. Although concentration (dharana) and meditation (dhyana) may appear to be one and the same, a fine line of distinction exists between these two stages. Where dharana practices one-pointed attention, dhyana is ultimately a state of being keenly aware without focus. At this stage, the mind has been quieted, and in the stillness it produces few or no thoughts at all. The strength and stamina it takes to reach this state of stillness is quite impressive. But don't give up. While this may seem a difficult if not impossible task, remember that yoga is a process. Even though we may not attain the "picture perfect" pose, or the ideal state of consciousness, we benefit at every stage of our progress.

8. Samadhi: Total Absorption/Bliss

Patanjali describes this eighth and final stage of ashtanga, samadhi, as a state of ecstasy. At this stage, the meditator merges with his or her point of focus and transcends the Self altogether. The meditator comes to realize a profound connection to the Divine, an interconnectedness with all living things. With this realization comes the "peace that passeth all understanding"; the experience of bliss and being at one with the Universe. On the surface, this may seem to be a rather lofty, "holier than thou" kind of goal. However, if we pause to examine what we really want to get out of life, would not joy, fulfillment, and freedom somehow find their way onto our list of hopes, wishes, and desires? What Patanjali has described as the completion of the yogic path is what, deep down, all human beings aspire to: peace. We also might give some thought to the fact that this ultimate stage of

yoga— enlightenment—can neither be bought nor possessed. It can only be experienced, the price of which is the continual devotion of the aspirant.

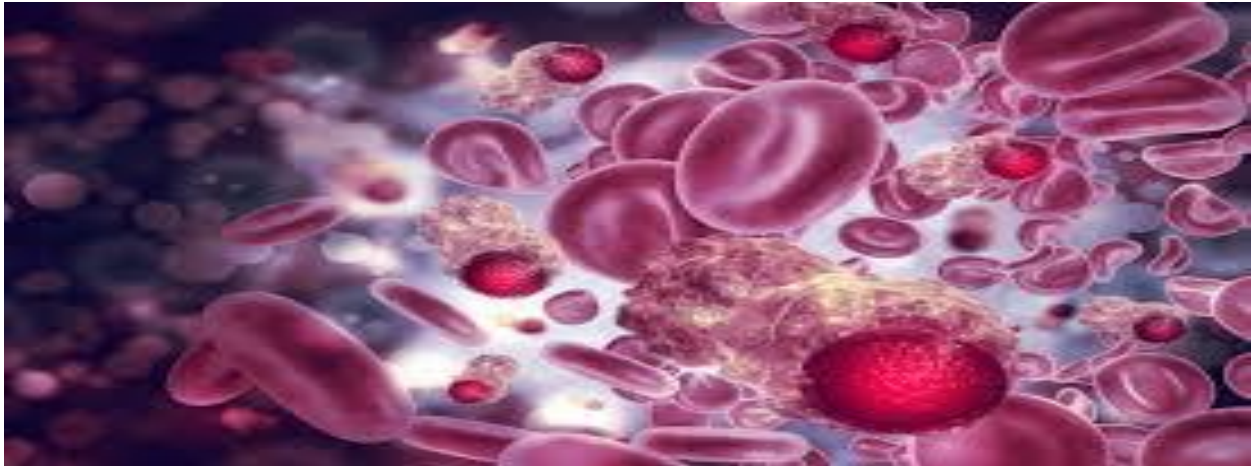
1.6 Benefits of Yoga -

The relaxation techniques incorporated in yoga can lessen chronic pain, such as lower back pain, arthritis, headaches and carpal tunnel syndrome. Aside from the physical benefits, one of the best benefits of yoga is how it helps a person manage stress, which is known to have devastating effects on the body and mind. Stress can reveal itself in many ways, including back or neck pain, sleeping problems, headaches, drug abuse, and an inability to concentrate. “Yoga can be very effective in developing coping skills and reaching a more positive outlook on life.”

- Increased flexibility.
- Increased muscle strength and tone.
- Improved respiration, energy and vitality.
- Maintaining a balanced metabolism.
- Weight reduction.
- Cardio and circulatory health.
- Improved athletic performance.
- Protection from injury
- Increases blood flow
- Perfects body posture
- Drops the blood pressure
- Lowers blood sugar
- Improves concentration
- Improves balance
- Boosts immunity
- Helps to sleep better
- Improves digestion
- Improves lung capacity
- Helps to keep oneself from drug addiction
- Controls food habits
- Calms down the mind

What, how & why of Cancer?

2.1 What is Cancer?



Cancer is the uncontrolled growth of abnormal cells in the body. Cancer develops when the body's normal control mechanism stops working. Old cells do not die and instead grow out of control, forming new, abnormal cells. These extra cells may form a mass of tissue, called a tumor. Some cancers, such as leukemia, do not form tumors.

Cancer may occur anywhere in the body. In women, breast cancer is one of the most common. In men, it's prostate cancer. Lung cancer and colorectal cancer affect both men and women in high numbers.

There are five main categories of cancer:

- Carcinomas begin in the skin or tissues that line the internal organs.
- Sarcomas develop in the bone, cartilage, fat, muscle or other connective tissues.
- Leukemia begins in the blood and bone marrow.
- Lymphomas start in the immune system.
- Central nervous system cancers develop in the brain and spinal cord.

2.2 How cancer begins?

Cells are the basic units that make up the human body. Cells grow and divide to make new cells as the body needs them. Usually, cells die when they get too old or damaged. Then, new cells take their place.

Cancer begins when **genetic changes** interfere with this orderly process. Cells start to grow uncontrollably. These cells may form a mass called a tumor. A tumor can be cancerous or benign.

A cancerous tumor is malignant, meaning it can grow and spread to other parts of the body. A benign tumor means the tumor can grow but will not spread.

Some types of cancer do not form a tumor. These include leukemias, most types of lymphoma, and myeloma.

2.3 How cancer spreads?

As a cancerous tumor grows, the bloodstream or lymphatic system may carry cancer cells to other parts of the body. During this process, the cancer cells grow and may develop into new tumors. This is known as metastasis.

One of the first places a cancer often spreads is to the lymph nodes. Lymph nodes are tiny, bean-shaped organs that help fight infection. They are located in clusters in different parts of the body, such as the neck, groin area, and under the arms.

Cancer may also spread through the bloodstream to distant parts of the body. These parts may include the bones, liver, lungs, or brain. Even if the cancer spreads, it is still named for the area where it began. For example, if breast cancer spreads to the lungs, it is called metastatic breast cancer, not lung cancer.

2.4 Symptoms & Diagnosing cancer

Cancer can cause many symptoms, but these symptoms are most often caused by illness, injury, benign tumors, or other problems.

- **Breast changes**
 - Lump or firm feeling in your breast or under your arm
 - Nipple changes or discharge
 - Skin that is itchy, red, scaly, dimpled, or puckered
- **Bladder changes**
 - Trouble urinating
 - Pain when urinating
 - Blood in the urine
- **Bleeding or bruising**, for no known reason
- **Bowel changes**
 - Blood in the stools
 - Changes in bowel habits
- **Cough** or hoarseness that does not go away
- **Eating problems**
 - Pain after eating (heartburn or indigestion that doesn't go away)

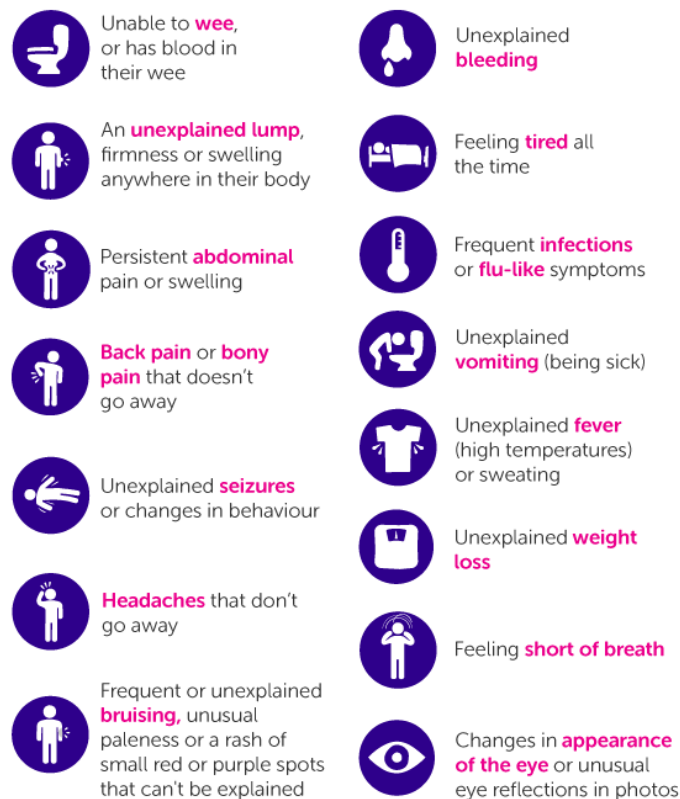
- Trouble swallowing
- Belly pain
- Nausea and vomiting
- Appetite changes
- **Fatigue** that is severe and lasts
- **Fever or night sweats** for no known reason
- **Mouth changes**
 - A white or red patch on the tongue or in your mouth
 - Bleeding, pain, or numbness in the lip or mouth
- **Neurological problems**
 - Headaches
 - Seizures
 - Vision changes
 - Hearing changes
 - Drooping of the face
- **Skin changes**
 - A flesh-colored lump that bleeds or turns scaly
 - A new mole or a change in an existing mole
 - A sore that does not heal
 - Jaundice (yellowing of the skin and whites of the eyes)
- **Swelling or lumps** anywhere such as in the neck, underarm, stomach, and groin
- **Weight gain or weight loss** for no known reason

Often, a diagnosis begins when a person visits a doctor about an unusual symptom. The doctor will talk with the person about his or her medical history and symptoms. Then the doctor will do various tests to find out the cause of these symptoms.

But many people with cancer have no symptoms. For these people, cancer is diagnosed during a medical test for another issue or condition.

Sometimes a doctor finds cancer after a screening test in an otherwise healthy person. Examples of screening tests include **colonoscopy**, **mammography**, and a **Pap test**. A person may need more tests to confirm or disprove the result of the screening test.

For most cancers, a biopsy is the only way to make a definite diagnosis. A **biopsy** is the removal of a small amount of tissue for further study. Learn more about **making a diagnosis after a biopsy**.



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2.5 How is cancer treated?

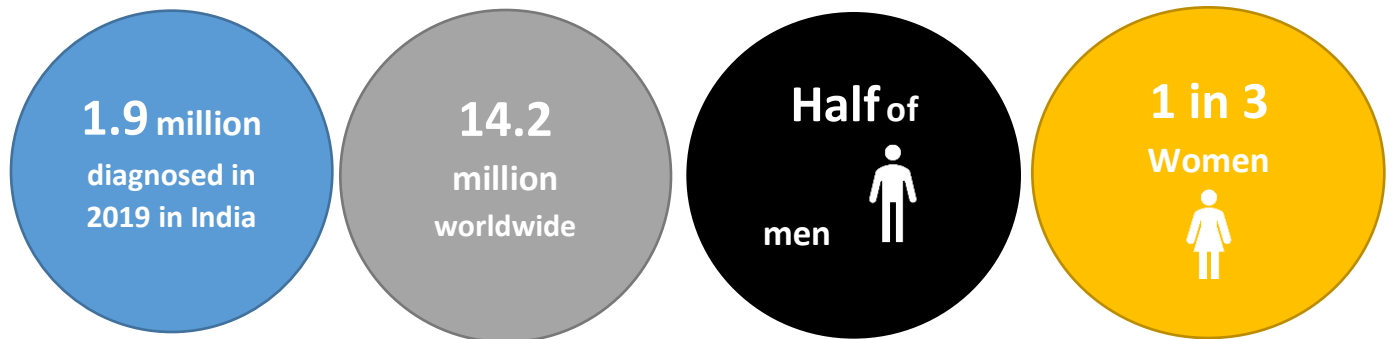
Treatment options depend on the type of cancer, its stage, if the cancer has spread and your general health. The goal of treatment is to kill as many cancerous cells while reducing damage to normal cells nearby. Advances in technology make this possible.

The three main treatments are:

- **Surgery:** directly removing the tumor
- **Chemotherapy:** using chemicals to kill cancer cells
- **Radiation therapy:** using X-rays to kill cancer cells

The same cancer type in one individual is very different from that cancer in another individual. Within a single type of cancer, such as breast cancer, researchers are discovering subtypes that each requires a different treatment approach.

Why Yoga for Cancer?



Cancer affects more than 4,600 people in the U.S. every day. An estimated 1.9 million Americans will be newly diagnosed in 2019,¹ and globally the number of new cases topped 14.2 million in 2019.² Half of men and one-third of women will receive a cancer diagnosis during their lifetimes.

Cancer is the second principal cause of death in Germany. Every year, 480,000 people receive a diagnosis of malignancy in Germany. The lifetime risk of developing cancer in women and men is 43 and 51%, respectively. Moreover, 1 in 5 women and 1 in 4 men die of a malignant tumor. As a result of our aging society, the incidence of cancer will continue to rise in the next few years. The Robert-Koch Institute estimates a 20% increase in tumor diseases by the year 2030. Although improved early detection and therapies extend the survival period, a tumor diagnosis still presents a grave emotional burden which often leads to anxiety. The 4-week prevalence of any mental disorder in cancer patients is about 32%. Breast cancer patients seem to be particularly vulnerable to mental disorders (4-week prevalence 42%). While the 4-week prevalence for anxiety disorders in the general population is 9%, it is 12% in cancer patients. The 12-month prevalence for any anxiety disorders shows an even bigger difference between the cancer population (19%) and the general population (15%). The exact prevalence of depression in tumor patients remains unclear ranging from 0 to 58%. Women seem to be more vulnerable to depression than men. Tumor-related fatigue seems to be an even more prevalent problem than anxiety and depression. In the US, 23% of the general population reported having experienced chronic fatigue. In cancer patients, however, about one-third is affected by fatigue.

Despite advancements in treatment, cancer patients and survivors continue to face unique challenges to their physical and mental health, some of which persist for decades after initial treatment. Cancer survivors are more likely than those without a cancer history to experience poor health and disabilities. Survivors, defined as are more susceptible to other illness, report increased anxiety, and experience disruptions in daily functioning and family life

Cancer takes a toll on survivors' financial security, as well as their contribution to the overall economy. In 2014, cancer patients paid nearly \$4 billion out of pocket for cancer treatments.⁴ In

In addition to the burden on individuals, the American Cancer Society reports that cancer alone is responsible for \$115.8 billion in lost productivity, projected to reach \$147.6 billion in 2020.⁵ Treatment and lingering health problems cause patients to reduce work hours, decline promotional opportunities, and take unplanned early retirement. For 27% of cancer survivors, financial hardships include reduced disposable income, increased debt, and/or bankruptcy.

Yoga is an effective, low-cost cancer management tool that has been shown to improve mortality rates, support individual health and well-being, and reduce health care costs and lost productivity due to cancer.

Like acupuncture, massage therapy, chiropractic care, and other complementary and alternative modalities, yoga interventions can help to ameliorate the immediate and long-term effects of cancer and its treatment and should become a regular part of the continuum of care for cancer patients and survivors.

Studies suggest yoga can not only help adult cancer patients and survivors manage symptoms and side effects, but also help them lead longer, healthier lives.

Yoga is a complex, holistic system that includes a wide array of practices. A standard yoga class may include asana (poses), pranayama (breathing techniques), meditation, and relaxation practices to support physical, emotional, and mental health. Because of the varied techniques embedded in the yoga tradition, experimental research on its therapeutic benefits presents a unique set of challenges and considerations. Standardized yoga interventions often vary widely in length and content, making comparison between studies difficult. Moreover, many yoga studies suffer from design and methodological flaws and small sample sizes.

Despite these limitations, the body of evidence on therapeutic effects of yoga interventions for cancer patients and survivors is robust and growing. A literature search on “yoga” and “cancer” in the U.S. National Library of Medicine (PubMed) yielded 435 results including observational studies, systematic reviews, and clinical trials. Although a full literature review is beyond the scope of this paper, the studies summarized here suggest yoga can not only help adult cancer patients and survivors manage symptoms and side effects, but also help them lead longer, healthier lives.

While studies on yoga for cancer populations vary in their methods and sample sizes, this overview of medical research incorporates systematic reviews and randomized controlled trials whenever possible. The studies summarized herein provide substantial evidence on the benefits of cancer-specific yoga interventions at clinically meaningful endpoints. The research includes a variety of cancers and stages (although breast cancer has been the most studied) and observes patients before,

during, and after treatment. While yoga is no cure-all, there is **strong** evidence that well-crafted interventions have measurable positive effects on health and healing.

Ample research suggests yoga interventions increase strength and flexibility; improve balance and mobility; lower blood sugar and cholesterol levels; support healthy body weight; improve psychological well-being; lessen fatigue; improve sleep; reduce anxiety and stress; improve quality of life; and enhance the immune system. These effects have been explored in both healthy populations and among people with a variety of diseases and disorders including chronic pain, arthritis, heart conditions, multiple sclerosis, PTSD, depression, anxiety, addictions, and cancers. What follows is a summary of key research on the benefits of yoga interventions for cancer patients and survivors, organized by clinically meaningful outcomes.



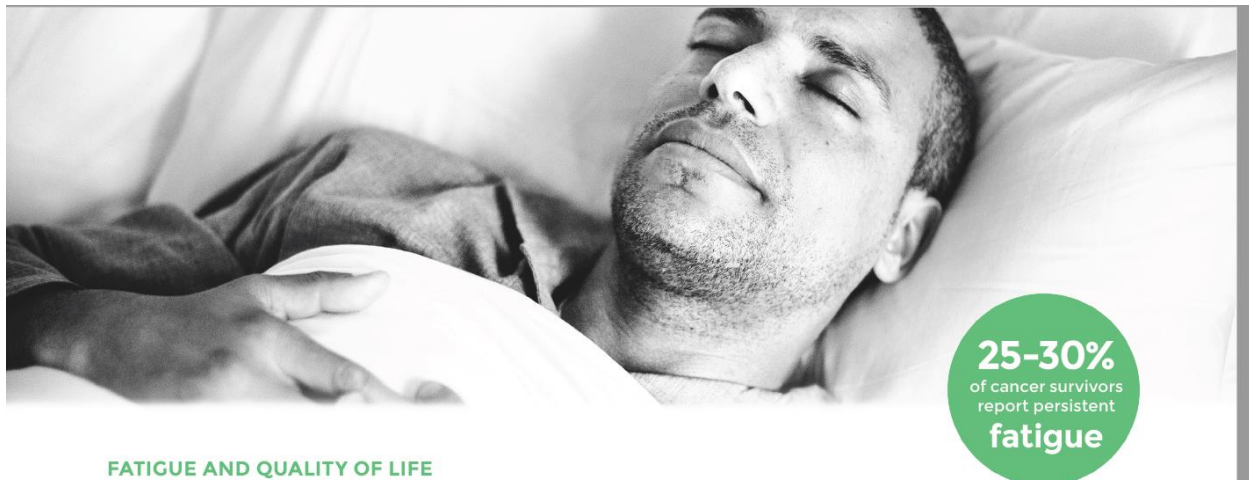
Role of Yoga for Cancer

4.1. Benefits of yoga for cancer survivors

There are wide Variety of Quality of Life Issues in Cancer Survivors

- Depressive symptoms
- Fatigue
- Sleep
- Cognitive changes
- Body image
- Sexual health and functioning
- Infertility
- Fear of recurrence
- PTSD and stress syndromes
- Economic/work issues
- Cardiac toxicities
- Late and long-term effects

1. Yoga has been shown to improve sleep and reduce fatigue for cancer patients and survivors.



Fatigue is one of the most frequently reported side effects among cancer survivors. Approximately 25-30% of cancer survivors report persistent fatigue for five to ten years post-treatment. Recent research suggests yoga interventions improve sleep and reduce persistent fatigue, which can boost quality of life, psychosocial adjustment, and inflammatory pathways.

A randomized controlled study conducted in 2004 investigated the effects of seven weekly 75-minute yoga sessions for patients with lymphoma. The regular practice of controlled breathing,

mindfulness techniques, and low-impact postures improved overall sleep, sleep quality and duration, and decreased participants' use of sleeping pills.

A more recent study found that three months of 90-minute biweekly Iyengar yoga classes significantly improved persistent fatigue for patients with breast cancer. A meta-analysis of 13 RCTs similarly found a small but significant effect of yoga interventions on fatigue.

A systematic review of 24 studies found yoga interventions for women with breast cancer improve sleep quality, decrease fatigue, and increase quality of life compared to no therapy. The review also found that yoga interventions were more effective than psychosocial and educational interventions in reducing depression, anxiety, and fatigue.

In a randomized controlled trial that compared a specialized yoga intervention to health education for breast cancer survivors, participants who practiced yoga experienced clinically significant improvements in fatigue and vigor. The yoga intervention included twice weekly 90-minute hatha yoga classes for twelve weeks. At three months, the yoga group reported less fatigue and more vitality. The group also showed decreased inflammation compared to those in the health education group. A 10-minute increase in the duration of yoga practice per day produced even greater changes.

Patients with cancer frequently experience significant fatigue. The prevalence rates may be as high as 75% in these patients. Besides the cancer, treatment with chemotherapy and radiotherapy is often associated with fatigue and this further reduces the patient's quality of life. In one study, a quarter of the cancer patients experienced severe fatigue during a six month follow up, during palliative treatment. Fatigue in cancer patients is also quite persistent and up to one third of them may experience it for up to 10 years after the cancer diagnosis. Cancer-related fatigue is the most important cause of a decreased quality of life in these patients. It's presence also appears to prognosticate a reduced survival.

Physical exercise has been suggested to combat this often stubborn and persistent symptom. Yoga has also been successfully tried. Besides incorporating exercise, yoga diminishes many adverse psychological emotions in cancer patients, further attenuating the feelings of fatigue. Many participants also experience improved sleep patterns. A Cochrane review, after performing a meta-analysis of 23 studies involving 2166 participants, concluded that yoga practice presented a moderate-quality evidence in reducing fatigue and sleep disturbances when compared with no therapy in cancer patients.

2. Yoga interventions have been shown to improve cancer-related mental and emotional health.

A randomized trial published in 2007 compared six weeks of 90-minute yoga classes to individual counseling for women with breast cancer. The study found clinically significant improvements in

anxiety, depression, and perceived stress in the yoga group. There was a 48% reduction in anxiety, 58% decrease in depression, and 27% reduction in stress. Evidence of cellular damage due to radiation therapy was also lower for the women participating in yoga interventions compared to the counseling group.

A meta-analysis of 13 randomized controlled trials (RCTs) of breast cancer patients also found that various yoga interventions resulted in statistically significant reductions in distress (75%), anxiety (77%), depression (69%), and fatigue (51%). In addition, there were moderate increases in emotional functioning (49%) and social functioning (33%). Although RCTs with larger and more diverse samples are needed to generalize the findings, the analysis offers preliminary support for the feasibility and effectiveness of yoga interventions for cancer patients.

3. Yoga has been shown to reduce various types of pain.

Pain in cancer is common and often the most feared symptom. Pain may be due to the cancer itself, or its treatments, which may include surgery, chemotherapy and radiotherapy. It is estimated that up to 20% of cancer patients are unable to find pain relief with conventional treatment. When the malignant disease is advanced, almost 70% of patients may be unable to get rid of the pain. Complementary therapies are often resorted to by these patients. Some studies have demonstrated benefits of yoga in pain reduction in these patients. Further studies are however needed for a better evidence-based analysis and practical recommendations.



In non-cancer populations, yoga has been shown to reduce many forms of pain, including arthritis pain, back pain, and carpal tunnel pain. For those with cancer, recent studies suggest yoga can reduce joint pain, muscle and body aches, and musculoskeletal symptoms.

Up to 50% of breast cancer survivors who use aromatase inhibitors (AIs) experience musculoskeletal symptoms such as joint and muscle pain. These symptoms often cause patients to stop taking AIs altogether. A recent study conducted a secondary analysis on data from a phase II/III randomized controlled trial examining a yoga intervention for breast cancer survivors. The yoga intervention consisted of gentle Hatha and restorative yoga postures, breathing, and mindfulness exercises. The 75-minute sessions were delivered in a group setting, twice weekly for four weeks. Compared with standard care, 88% of yoga participants reported reductions in musculoskeletal symptom severity. The yoga group reported significantly greater reductions in pain, muscle aches, time spent in bed, and feelings of weakness, sluggishness, and heaviness in the body.

4. Yoga has been shown to improve strength, range of motion, and bone health.

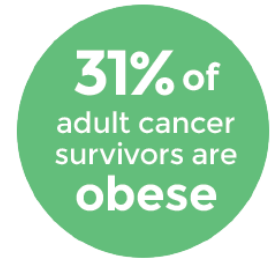
Cancer treatments such as radiation, chemotherapy, and medications can decrease muscle and bone strength, flexibility, and health over both short- and long-term periods. As a result, cancer survivors have an increased risk of osteopenia and osteoporosis. These conditions can result in back pain, loss of spinal flexion, and fractures, making it difficult to perform daily tasks, exercise, and maintain a healthy lifestyle.

Regular yoga practice increases muscle strength and flexibility, supports a full range of movement in different joints, and improves balance. A 2010 review found that yoga is as effective or better than other forms of exercise at improving a variety of health-related outcome measures, including muscle strength and flexibility. This was true for patients with chronic diseases and for those in good health.

Many yoga poses involve weight bearing, which has been shown to strengthen bones, increase spinal flexion, and improve posture. A seminal two-year pilot study of yoga and osteoporosis found that the participants (average age: 68) who did 10 specified yoga postures per day (about 10 minutes) experienced improvements in bone density. Several of the patients who had osteoporosis improved enough to be reclassified to osteopenia. The same study then followed the volunteers over a ten-year period to determine the long-term effects of a 12-minute yoga regimen and found increased bone mineral density in the spine, hips, and femur of moderately and fully compliant participants.

5. Yoga has been shown to support weight management.

People with a history of cancer diagnosis are more likely to be obese than the general population. The National Cancer Institute study published in 2015 reported that 31% of adult cancer survivors in the U.S. were obese. Weight management is critical for this population; studies suggest weight gain and obesity increase the risk of multiple cancers (e.g., bowel, prostate, endometrial, kidney, liver, gallbladder, esophageal, ovarian, stomach, advanced pancreatic, and postmenopausal breast cancer).



Findings like these have encouraged the American Cancer Society (ACS) to recommend that cancer survivors at normal weight include a minimum of 150 minutes of moderate exercise every week. For obese cancer survivors, the ACS recommends at least 320 minutes of physical activity per week. Although there is little data on how yoga supports weight management for cancer patients and survivors specifically, research on metabolic syndrome, diabetes, and obesity suggests that yoga interventions can facilitate weight loss.

A large randomized trial compared 48 weeks of 90-minute, Iyengar-influenced restorative yoga classes with stretching classes for patients with metabolic syndrome. The interventions were delivered bi-weekly for the first three months, weekly for the next three months, and then monthly for the remaining six months. Participants were also asked to practice yoga or stretching for at least 30 minutes three times per week at home. At 6 and 12-months, the yoga group saw significant reductions in weight and waist circumference. The stretching group lost weight at 6-months and waist circumference at 12-months. Both groups saw improvements in several metabolic factors. The yoga group saw significant improvements in fasting glucose, insulin levels, glycated hemoglobin, and HDL-cholesterol at six months. Only fasting glucose levels were sustained at one year. The stretching group saw a reduction in triglyceride levels at 6-months.

Studies suggest yoga is also as effective as walking to improve serum lipid profiles in overweight and obese persons. Sixty-eight overweight and obese participants between the ages of 20 and 55 were randomly assigned to either a yoga or walking intervention. The yoga group practiced a series of yoga postures and breathing techniques for 45 minutes twice a day, and the walking group engaged in two sessions of walking (about 1.6 miles at a speed of 2.1 miles per hour). Both groups showed a significant decrease in BMI, waist and hip circumference, lean mass, body water, and total cholesterol. Researchers found increased serum leptin and decreased LDL cholesterol in the yoga group, whereas walking significantly decreased serum adiponectin and triglycerides.

6. Yoga may help cancer patients manage lymphedema.

In addition to strength and flexibility, some evidence suggests that yoga may be beneficial in the management of lymphedema. The lymphatic system relies on muscular contraction, flexion and compression, respiration, arterial pulse pressure, and the natural pull of gravity to maintain tissue fluid balance and promote lymphatic drainage. Yoga postures, movements, and breathing techniques are uniquely suited to facilitate these processes.

Surgeries such as lymph node removal and other cancer treatments (such as radiation and drug therapies) can interfere with lymphatic flow and slow the detoxification process needed to mitigate toxicities from cancer treatments. Furthermore, treatments can result in a buildup of lymphatic fluid in the tissues of the limbs, neck, and abdomen (lymphedema). This buildup can be debilitating, painful, and increase risk of infection in affected areas. Manual compression, lymphatic massage, the use of compression garments, and exercise such as yoga may help to reduce buildup and promote lymphatic drainage.

At least 20% of women treated for breast cancer require lifelong lymphedema management. A randomized controlled pilot study of yoga interventions to manage breast cancer-related lymphedema found that yoga may help patients reduce lymphedema. The study assigned women to a weekly 90-minute yoga class taught by a yoga therapist with qualifications in manual lymphatic drainage or to maintenance of their usual self-care (i.e., wearing compression garments, self-massage, and usual lymphatic treatment). The yoga session involved postures and breathing practices to promote lymphatic drainage, meditation, and relaxation. At eight weeks, the yoga group showed a significant decrease in volume of arm lymphedema compared to the control. This result reversed at the 12-week follow-up, which suggests ongoing practice is necessary to manage lymphedema in the long term.

7. Anxiety

Symptoms of anxiety are part of everyone's life and are common in the general population, but pathological anxiety is significantly more common and often under-diagnosed in cancer patients. Significant anxiety may affect from 2% to 14% of patients with advanced cancer. Its presence is associated with a subjective increase in other symptoms and experiencing decreased physical functioning. Anxiety also results in a poorer quality of life in these patients. Survival time is decreased.

Yoga has beneficial effects in the complementary treatment of anxiety. Meditation helps decrease anxiety in the cancer patients. Yoga exercise also helps ameliorate cancer related anxiety. Though the available data is positive, clinical studies in cancer patients remain limited.

8. Depression

According to current diagnostic criteria,⁴⁴ major depression is characterized by five or more of the following symptoms being present concurrently for at least two weeks:

- A. Depressed mood,
- B. Loss of interest in previously pleasurable activities
- C. Feelings of inappropriate guilt or worthlessness
- D. Recurrent thoughts of death or suicide
- E. Psychomotor slowing or agitation
- F. Disturbance of appetite
- G. Disturbance of sleep
- H. disturbance of energy and
- I. Impaired concentration

One of the five symptoms must include depressed mood or diminished interest in previously pleasurable activities. It is a common ailment globally and carries the heaviest burden of disability among mental and behavioral disorders. Major depression has a high rate of co-occurrence with other medical conditions.

Depression is common in cancer patients, with prevalence rates of 13% to 40%. These rates are much higher than that seen in the general population. About 20% to 30% of breast cancer patients experience severe depression. Depressed cancer patients have a decreased quality of life. The negative effect on mortality has also been documented. Unfortunately, despite the availability of excellent therapeutic pharmaceuticals for this ailment, antidepressant therapy is often associated with non-efficacy, drug resistance polypharmacy non-compliance, relapses and a high cost.

Several studies have provided persuasive evidence attesting to the benefits of yoga therapy in patients with depression. Attenuation of depression has also been noted in patients with cancer, especially breast cancer, in several clinical trials. A recent Cochrane meta-analysis of studies involving 2166 participants concluded that moderate quality evidence exists in supporting the use of yoga for a therapeutic reduction in depression, anxiety and fatigue, when compared with other psychosocial/educational interventions, in patients with breast cancer. Reduction of depression has also been noted in other cancers. Interestingly, emotional benefits have also been seen in cancer caregivers with yoga therapy.

9. Nausea and vomiting

Nausea and vomiting in most animals are a protective function that serves to expel potentially harmful substances from the gastrointestinal tract prior to their absorption and/or to prevent indigestible material from entering the gut. In humans, nausea and vomiting is also seen in many physiological conditions, such as pregnancy and motion sickness. However, nausea and vomiting

may accompany and often alerts humans to many disease processes, especially those involving the gastro-intestinal tract. Nausea and vomiting are also a common side effect of cancer chemotherapy and can be very distressing. It remains one of the most difficult of all side effects to treat in these patients. It greatly reduces their quality of life. Its appearance may also lead to a dangerous refusal to continue essential cancer treatment.

Yoga therapy has also been studied in these patients, as a complementary modality. A small study in 2007, reported a significant decrease in post-chemotherapy-induced nausea frequency, nausea severity and intensity of anticipatory nausea and vomiting in patients practicing yoga when compared with the non-yoga control group. However, a recent 8-week study did not demonstrate a benefit stemming from the practice of yoga in ameliorating symptoms of nausea and vomiting related to cancer chemotherapy.

10. Insomnia

Insomnia means poor-quality or inadequate sleep. It is characterized by one or more of the following problems: difficulty falling asleep, difficulty maintaining sleep, waking up too early in the morning or sleep that is not refreshing. Sleep disturbances are common in the general population. Pharmacological agents are commonly prescribed to help improve sleep quality and/or duration. Lifestyle interventions and cognitive behavioral therapies are also commonly used. Insomnia adversely affects the quality of life in many patients. Yoga therapy, including mindfulness, has been helpful in the complementary management of sleep.

Poor quality of sleep is extremely common in cancer patients, but often ignored. The causes are multifactorial and include cancer related symptoms, treatment side effects and a host of associated emotional factors. The positive benefits of yoga in establishing better sleep in cancer patients has been reported in some studies. A recent trial involving 410 patients demonstrated that the group participating in yoga noticed an improvement in several sleep parameters, including reduction in post-intervention medication use, when compared with standard care participants. Yoga appears to play a beneficial role in the management of sleep disturbances in cancer patients.

4.2. Quality of life

The World Health Organization defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Quality of life (QOL) or health - is an individual's perceived physical and mental health and can be measured by several means, including self-reported questionnaires, such as the Health-related quality of life (HRQOL), SF-36, EuroQol and WHOQOL. Quality of life is becoming an important consideration and its improvement, one of the therapeutic goals, in the treatment of many diseases, including cancer.

Quality of life in cancer, is the physical, emotional, social and functional well-being and perceived symptom burden, from a patient's point of view. Cancer diagnosis, treatment and survival greatly affect the QOL in these patients. Several demographic risk factors also are related to cancer related QOL. QOL also appears to prognosticate survival in many cancers. Yoga can improve the quality of life in cancer patients. Several studies have shown that women with breast cancer realize a marked improvement in quality of life scores and emotional well-being with yoga therapy. The beneficial effect of yoga on the quality of life has also been noted in other cancers.

4.3. Yoga Detoxifies the Body

Detoxification is the vital metabolic process by which dead cells and toxins (the flu virus, a rogue cancer cell, or another pathogen) are excreted from the body. Yoga is the muscle of the lymphatic system—the body's plumbing and trash-removal system. Like how the heart muscle circulates blood, yoga increases lymphatic flow with specific breathing and movement practices. Inversions, a fundamental part of a strong yoga practice, utilize movement and body positioning to reverse the effects of gravity on our body, enhancing the process of cardiovascular and lymphatic drainage.

Another way in which yoga detoxifies the body is through compression. B. K. S. Iyengar called it the “squeeze and soak” process, which cleans internal organs in the same way that a sponge discharges dirty water when squeezed. For example, abdominal twists activate internal organs and guide the release of toxins into the lymphatic system. Yoga detoxifies the mind as well. A survivor lives with the fear of cancer returning, and this daily anxiety is a mental toxin. We can detoxify the mind by using the movement of the breath, by relaxing into gravity in a restorative pose, and by quietly watching our thoughts in meditation.

Yoga Asanas for Cancer

Yoga may not cure cancer, the deadly killer that the disease is. However, yoga postures designed for cancer sufferers are easy and relaxing to encourage resilience. They rejuvenate a person enough to fight for their lives. Depending on the symptoms of a cancer sufferer's condition or side-effects of the treatment, each day brings a new pain. Yoga can help a patient cope with nausea and pain using relaxation postures, fatigue using rejuvenating postures and deterioration with strengthening postures. Meanwhile, controlled breathing helps balance the nervous system

The below are few asanas and sukshma vyayama which helps cancer patients to relieve their pain & fatigue.

1. Reclining Butterfly Pose:



1. Sit down comfortably with a few soft cushions behind you.
2. Bring your feet together, with the knees bent.
3. Allow the knees to fall away from your hips; let gravity pull your knees down.
4. Now slowly lean back as you exhale.
5. Let your lower back rest on the cushions behind you and bring the upper back towards the floor.
6. Support your head with another cushion if desired.
7. Rest your arms on the floor, palms facing up.
8. Breathe deeply in the posture for about 15-20 minutes.

The posture relieves tension in the shoulders and chest. It is particularly effective for breast cancer recovery.

2. Leg Up the wall

1. It's a simple pose where you lie on your back with your legs propped up against a wall.
2. Make a 90-degree angle with your body with the legs resting flat on the wall's surface.
3. Place a cushion beneath your lower back for comfort.

4. Concentrate on your breathing for about 20 minutes.
It works well at rejuvenating your mind while improving circulation.



3. Cat Cow Pose –



1. Start the pose on your hands and knees.
 2. Exhale curve your spine outwards.
 3. Look up during this movement.
 4. Inhale curve your back inwards.
 5. Face downwards.
 6. Repeat the movements as often as possible.
- This posture improves flexibility in your back while revitalizing you.

4. Shashankasana

1. Sit comfortably in Vajrasana.
2. Make a fist of the right hand & hold it from left hand.

3. Inhale and arch back slowly.
4. Exhale and bend forward with the forehead touching the ground.
5. Repeat for 6 to 8 rounds.

This asana helps in relieving the fatigue and constipation in cancer patients.



5. Neck Stretches



1. Take your right hand over your head and place middle finger on the left ear.
2. Inhale through the nose as your stomach rises, and exhale through the nose as your stomach contracts and gently draw your head to right shoulder. Hold for 1 – 2 breaths. Return to starting position and repeat on the other side. This will increase the motion and releases tight muscles.

6. Modified Camel



1. Inhale through the nose as your stomach expands.
2. As you exhale, circle the arms around to the back of the chair and hold. Hold for several breaths then return to start. Repeat 3-4 times. This asana helps in opening the chest muscles.

The below table provides the list of yoga practices for the management of Cancer related symptoms.

	Fatigue	CINV	Constipation	Head and neck	General Stress/QoI	Myofascial pain (Upper extremity)	Myofascial pain (Lower extremity)	Pre Surgery/ Post Surgery	Headache
Loosening exercise- Upper extremity	✓	x	x	✓	✓	✓	x	✓	✓
Loosening exercise lower extremity	✓	x	✓	x	✓	x	✓	✓	✓
Breathing exercises	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hand and shoulder stretch Breathing	✓	x	x	✓	✓	✓	x	✓	✓
Ardhakatchakrasana	✓	✓	✓	✓	✓	✓	✓	✓	✓
Padahasthasana	✓	x	✓	x	✓	✓	x	✓	✓
ArdhaChakrasana	✓	x	✓	✓	✓	✓	✓	✓	✓
Trikonasana	✓	x	x	x	✓	✓	✓	✓	✓
Uttanapadasana	x	x	✓	x	x	x	✓	x	✓
Pavanamuktasana	x	x	✓	x	x	x	✓	✓	✓
Sethubandasana	x	x	✓	x	x	x	✓	x	x
Bhujangasana	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ardhashalabhasana	✓	✓	✓		✓	✓	✓	✓	✓
Shashankasana+m Kara chanting	✓	✓	✓	✓	✓	✓	✓	✓	✓
Yogic breathing	✓	✓	✓	✓	✓	✓	✓	✓	✓
Relaxation techniques*	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slow pranayama*	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cooling Pranayama*	✓	✓	x	✓	✓	✓	✓	✓	✓
Pranayama *	✓	✓	✓	✓	✓	✓	✓	✓	✓

Special practices such as Cyclic Meditation, Mind Sound resonance Technique for all conditions& Mind Imagery Relaxation Technique

Pranayama Practices

THE EXPERIENCE OF CANCER chemotherapy is often characterized by symptoms of sleep disturbance, stress, anxiety, fatigue, and impaired quality of life, imposed on a background of usual life challenges. Despite numerous advances in cancer treatment, effective symptom management interventions have lagged. While pharmacologic interventions have been studied for symptoms such as cancer-related fatigue, these drugs are frequently expensive, ineffective, and often associated with their own side-effects. Behavioral interventions, such as *pranayama*, are generally free of side-effects and inexpensive.

As one of the steps on Patanjali's eight-step path of yoga, *pranayama* has been practiced by yogis for thousands of years to quiet the mind and tap into the subtle, energetic realms of the body. *Prana* is a Sanskrit term for the vital life force that animates all things; *ayama* translates as extension or elongation. Pranayama enables the practitioner to access prana and connect with the vast energetic network of the subtle body by controlling and playing with the flow of breath.



Pranayama, which works with the mind and the organs of respiration, is both a physical practice and a form of meditation. *Prana* means spirit, life force, or breath, and *yama* means expansion, control, or regulation. *Pranayama* is the regulation and expansion of breath. Though originally designed to quiet the mind, these breathing techniques have also shown health benefits, especially in the area of mind–body illness. Studies have suggested that *pranayama* practices create a relaxed state by enhancing parasympathetic tone

Several studies have investigated the efficacy of a multimodality yoga intervention, which includes breathing, postures, and/or meditation, in a population of patients with cancer. However, conclusive results are lacking. Many studies have small and mixed samples (i.e., included both patients who were receiving cancer treatment and those post-treatment) and others have methodological limitations leading to challenges in drawing definitive conclusions. All published studies have investigated multimodality yoga interventions, making it difficult to determine which

component of yoga is most beneficial. There are no studies that have evaluated yoga breathing as a single modality to improve symptoms among oncology patients. A yoga breathing intervention is appealing because it is relatively easy to learn, can be done without equipment, and can be done at any time, even during the infusion of chemotherapy.

Yogic breathing “pranayama” has been shown to be an effective treatment for cancer patients in improving their sleep, relieving anxiety and improving quality of life. A dose–response relationship has been found in numerous studies relating pranayama use and improvements in chemotherapy-associated symptoms and quality of life. Indeed, further studies have also shown that pranayama can have immediate down-regulating effects on the HPA axis response to stress. Usually pranayama practices like “nadi shodhana,” or “alternative nostril breathing” is taught for cancer patients. However, there is one key difference in the traditional practice – we do not hold breath. Due to the circumstances of their health, and all the other ancillary stresses that accompany a cancer diagnosis (financial, relational, occupational, etc.), cancer patients and survivors already experience vast amounts of stress. The “flight or fight” response of the nervous system is already on overdrive, and breath holding can intensify the feelings of stress and anxiety. So, no breath holding in the traditional nadi shodhana. But! We do want to practice alternative nostril breathing because it is the perfect tool to bring our attention to our breath and learn to control our breath, thus taking back control of our hyped-up nervous systems.

6.1. Nadi Shodhana (Alternate Nostril Breath)



Sit comfortably in an upright position. Spread the fingers of the right hand. Create *Vishnu Mudra* by curling the right index and middle fingers in towards the palm, while the thumb, ring finger and pinky remain extended. Hold the right hand just beside the nose as you take a deep breath in through both nostrils. Close the right nostril with the thumb then exhale through the left. Inhale through the left, close both nostrils by lightly touching the ring finger to the left nostril and

the thumb to the right. Lift the thumb and exhale through the right nostril. Inhale through the right nostril, close both, then lift the ring finger and exhale through the left. Continue for several cycles of breath.

6.2. Bhramari Pranayama



Sit in any meditative posture with eyes closed. Inhale deeply through the nose. Close the eyes with index finger, mouth with ring finger and ears with respective thumb fingers. This is also called shanmukhi mudra. Exhale slowly in a controlled manner while making a deep, steady and humming sound such as that of black bee. This is one round of Bhramari. This pranayama relieves stress and provides a soothing effect on mind and nervous system.

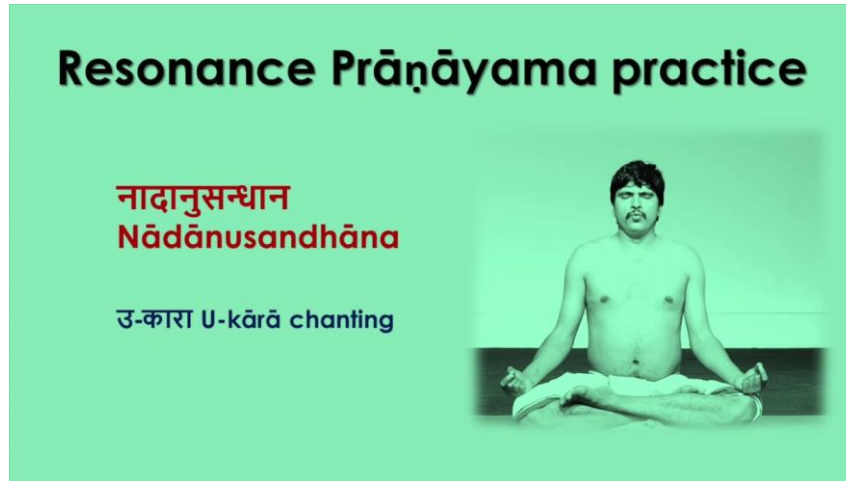
6.3 Ujjayi Pranayama (Victoriously Uprising Breath)



Sit or lie in a comfortable position. Keeping the mouth closed, inhale and exhale through the nose. Partially close the glottis (the opening between the vocal folds) by slightly constricting the muscles at the back of the throat. The action in these muscles should feel the same as when you exhale your breath onto a mirror to create fog. As the muscles contract, you'll notice that your breath creates a

soft whispering sound similar to the sound of the ocean. Continue to create this sound with the breath and find a steady rhythm, breathing in for the same amount of time that you breathe out.

6.4 Resonance Pranayama



Mind sound resonance technique that involves chanting and meditating on sound “a,” “u,” and “m,” and mantras have been shown to reduce fear, anxiety, and instill restful state of mind.[61] Other schools of yoga that have used props to facilitate stretching followed by relaxation have also found to reduce fatigue and pain in cancer patients.

Further adding, Cooling Pranayama such as Sheetalī, Sheetakari, and Sadanta have been useful in managing CINV (nausea & vomiting) and relaxation techniques have been shown to be effective in managing fatigue, pain, and sleep problems.

Meditation for Cancer Patients

Meditation may have several benefits for people living with cancer, and many cancer centers are now offering this “alternative” treatment. Possible benefits include a reduction in anxiety and depression, reduced stress, greater energy, and a decrease in chronic pain among other symptoms. At the same time, there are very few risks. Unlike many complementary treatments used to control the symptoms of cancer, anyone can begin at any time.

7.1. What Is Meditation?



Meditation is most easily defined as a practice of finding a place to sit quietly, clearing your mind of past struggles and future worries, and focusing on the present. In mindfulness meditation, the goal is to quiet your mind and be present now without intruding thoughts. Meditation may include focusing on a sensation, such as your breathing, and simply observing that sensation without judging or analyzing. Some people recite a verse or repeat a mantra, while others let their mind go blank to achieve a meditative state. Most often, meditation is done while sitting quietly, but may also be done with light activity (for example, walking meditation). Meditation may be self-directed or guided.

7.2. Why people with cancer meditate?

Meditation has many benefits for general health and well-being. It has been found to decrease heart rate, lower blood pressure, ease muscle tension, and improve mood. Emotionally, the practice of meditation has helped many people restore a feeling of calm by centering their thoughts and closing their minds to fears about the future and regrets about the past. But meditation may also have specific benefits for people who are living with cancer. One of the main reasons people with cancer use meditation is to help them to feel better. Meditation can reduce anxiety and stress. It might also help control problems such as:

- **Chronic pain**

Chronic pain is a common and very frustrating symptom among people with cancer. The cause may be due to cancer itself, due to treatments for cancer, or secondary to other causes. Whatever the cause, it's estimated that roughly 90% of people with lung cancer experience some degree of pain. Meditation appears to help with this pain and may lessen the number of pain medications needed to control pain.

- **Sleep Problems**

Difficulty with sleep is a common problem for people living with cancer. In studies, meditation is associated with less insomnia and improved quality of sleep.

- **Fatigue**

Cancer fatigue is one of the most annoying symptoms of cancer and cancer treatment. Studies suggest that meditation may improve energy levels and lessen fatigue for people living with cancer.

- **Stress**

Several studies have found meditation to significantly improve the perception of stress in people coping with cancer. This benefit may go beyond the subjective feeling of well-being when stress is reduced and contribute to a healthier immune system as well. Stress hormones — chemicals that are released in our bodies when we experience stress — may play a role in how well someone responds to cancer treatment, and even affect survival. One study found that meditation decreased the levels of stress hormones in people with breast and prostate cancer and that the effects were still present a year later. Meditation may also lower the levels of Th1 cytokines, which are inflammatory factors produced by the body that may affect how we respond to cancer and our healing from cancer.

- **Depression and Anxiety**

One study found a decrease in symptoms of depression for people with cancer after mindfulness-based cognitive therapy. And unlike some alternative treatments that only have short-term benefits for cancer patients, these effects were still present three months later.

It can take time to feel the benefits of meditation. At first you might feel more stressed as you see how busy your mind is. But if you keep trying to meditate for even a short time each day, you will find that it gets easier. Gradually you'll feel calmer and less stressed. Regular practice is key.

7.3. Types of Meditation for Cancer Patients

There are different types of meditation for cancer patients as a way of reducing stress in both the mind and body.

1. MBSR (mindfulness-based stress reduction)
2. OM Meditation
3. Cyclic Meditation

7.3.1. MBSR (mindfulness-based stress reduction)

Some studies have shown that MBSR can help to relieve symptoms and improve quality of life for people with cancer. It might:

- Improve mood
- Improve concentration
- Reduce depression and anxiety
- Reduce symptoms and side effects, such as feeling sick (nausea)
- Boost the immune system

The studies have generally been small so far, and often have very different study designs which can make it difficult to compare results. So larger studies are needed. There is no evidence that meditation can help to prevent, treat or cure cancer, or any other disease.

Mindfulness based stress reduction (MBSR) is an 8-week program which teaches mindfulness meditation to help you cope better and be more at ease in your life. It was developed in the US by a man called Jon Kabat-Zinn. Many hospitals and clinics offer this type of meditation.

MBSR includes:

- Sitting meditation (breath awareness, focused attention)
- Body scanning (awareness of sensations in the body)
- Mindful movement
- Walking meditation
- Insight meditation
- Looking at how our thoughts and emotions affect us, which can help us to respond more effectively to situations

A related type of MBSR is mindfulness based cognitive therapy (MBCT).

7.3.2. OM Meditation

Om is the first sound that emerged from the vibrations of the cosmic energy that created the universe. It is the representation of the creator. Om is self-begotten, i.e., it is on its own and doesn't need another syllable to make its sound. Chanting Om will give you a sense of the source of the universe, and when chanted right, Om's sound reverberates through your body, filling it with energy and tranquility.

Meditation that involves the chanting of 'Om' or 'Aum' is called Om meditation. In Om meditation, the two great spiritual possessions that belong to us – breath and sound – are combined to form a comprehensive meditation technique.



The OM Meditation Approach –

- **Sitting Right**
Sit either in the Lotus Pose or Vajrasana. If you cannot sit down, sit on a chair. Make sure your back is erect, and you feel relaxed and comfortable in your sitting position. Keep your hands either on your knees or your thighs. You can also keep them in your lap, with one hand resting on the other. Clear your head and sit peacefully.
- **Eye Placement**
Gently close the eyes or glance downward.
- **Breathing Pattern**
Close your mouth and breathe naturally. Make sure the air goes in and out only through your nose. Keep your jaw muscles relaxed and your upper and lower teeth slightly parted instead of clenching them together or touching one another. Observe your breath while it goes in and out. Don't force it or add any frills to it. Let it be.

- **OM Chanting**

While you inhale and exhale, chant 'Om.' Fit the chant to your breath duration rather than breathing to the chant. Break down the 'Om' syllable to 'A-A-U-U-M', followed by silence and back again. Say the first two syllables with your mouth opened widely and the next two by pursing your lips together. Place the tip of your tongue on the roof of your mouth to pronounce the last two syllables. Then, get engrossed in the silence that ensues.

- **Combining All**

Continue the Om chanting, keeping it in sync with your breath. Naturally, the cycle of chanting will fall into place and relax your mind. You can also chant 'Om' mentally. Listen to the internal vibrations created in your body while chanting 'Om'. Slowly and gradually, your being will sink into its waves.

- **Overall Effect**

As you gradually go deeper into the meditation, the Om vibrations become softer and subtle, almost like a whisper. Slowly, it will become silent, and you realize that Om has always been present and active in your body. You will notice that even your breath slows down and becomes light.

In Om meditation, you do not concentrate on any part of your body. Your mind does waver around, but make sure it comes back to focus through chanting. Make a note of all the thoughts and sensations that arise while you meditate and deal with them in a calm and detached manner without deviating from your breath and chanting.

Benefits of Om Meditation

- Om meditation will give you peace, calm, tranquility, and serenity
- It brings you closer to your true nature and self
- It will make you open-minded and treat others without any prejudice
- Om meditation is healing and will keep you healthy
- It increases your creativity and ingenuity
- Your spinal cord improves
- It detoxifies your body by getting rid of the toxins, keeping you young and fresh
- Chanting Om purifies your ambiance and makes it a positive space
- It improves your concentration
- The Om vibrations open up your sinus and clear it
- Om meditation will keep your heart healthy
- You will have better control over your feelings and emotions and look at various scenarios in a clearer and understanding manner.

- Om meditation stimulates your metabolism, leading to weight loss
- It cleanses your face and imparts a glow to it
- Om meditation improves your mind and balances hormonal secretions

7.3.3. Cyclic Meditation

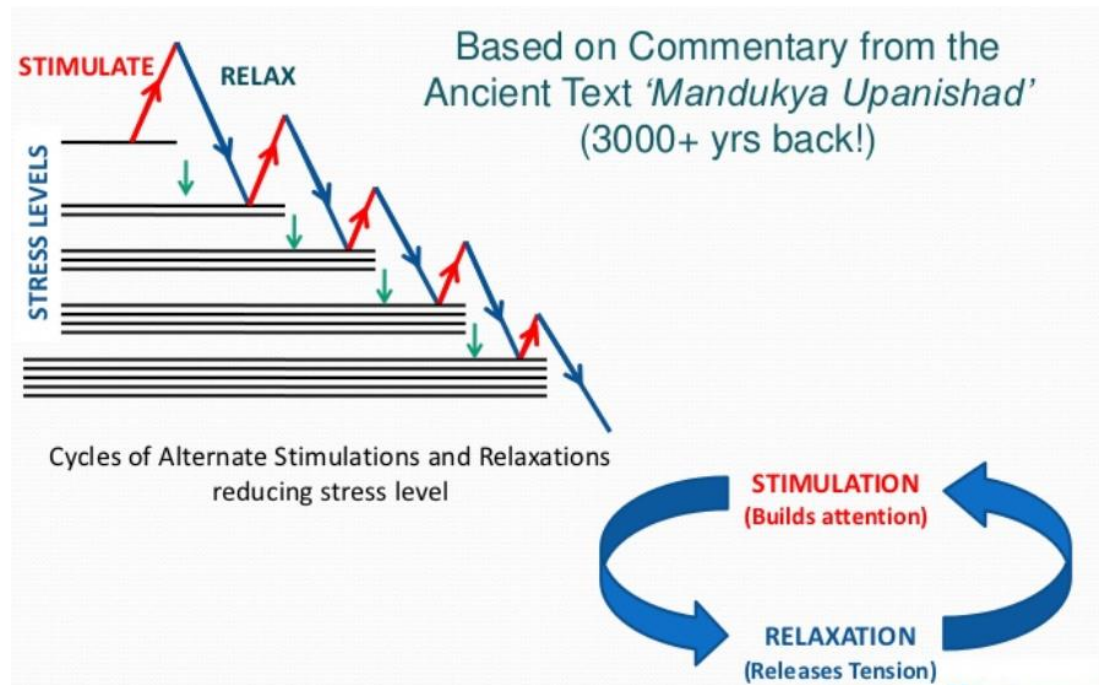
Cyclic Meditation built on the principle of alternate stimulation and relaxation incorporates this concept of cyclicity as explained in the introduction and hence is in tune with the nature. Several stimulations of varying intensity suited to different levels of stress bringing out harmonious growth in tune with one's innate nature.

The smallest and the most profound amongst the Upanisads is the Mandukya Upanisad. In tradition, the commentary kaarika on the Upanisads is regarded as part of the Upanisads itself. In that, we have essence of all saadhana beautifully described thus:

**Laye Sambodhayeccittam vikshiptam samayetpunah|
Sakasaayam vijaniyatsamapraptam na calayet|| (Mandukyopanisat Karika 3.44)**

Stimulate and awaken the sleeping mind, calm down the distractions, recognize the innate stagnations and stay in steadiness without distributing it.

The logic behind cyclic meditation is explained below in the diagram –



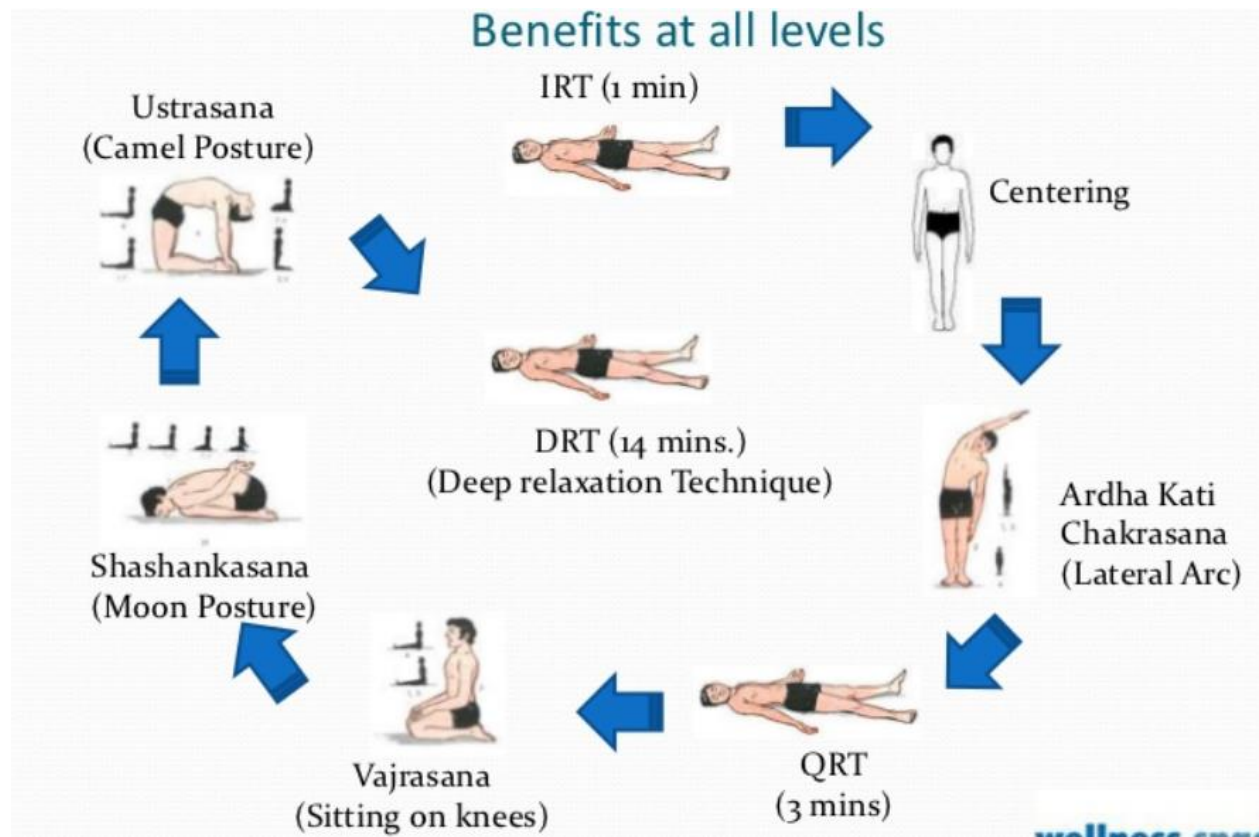
Method –

STEP 1: STARTING PRAYER

Lie on your back. Relax and collapse the whole body on the ground; legs apart; hands apart; palms facing the roof; smiling face; let go all parts of the body. As you repeat the prayer feel the resonance throughout the body.

**Laya Sambodhayeccittam vikshiptam samayetpunah|
Sakasaayam vijaniyatsamapraptam na calayet|| (Mandukyopanisat Karika 3.44)**

Meaning: In the state of oblivion awaken the mind; when agitated pacify it, in between the mind. If the mind has reached the state of perfect equilibrium, then do not disturb it again.



STEP 2: INSTANT RELAXATION TECHNIQUE (IRT)

Bring your legs together, join the heels, toes together and palms by the side of the thighs. Keep your face smiling till the end. Gently bring your awareness to the tip of the toes. Stretch the toes, tighten the ankle joints, and tighten the calf muscles. Pull up the knee caps. Tighten the thigh muscles. Compress and squeeze the buttocks. Exhale and suck in the abdomen. Make the fists of

the palms and tighten the arms. Inhale and expand the chest. Tighten the shoulders, neck muscles and compress the face. Tighten the whole body from the toes to the head. Tighten...tighten...tighten...Release and relax. Legs go apart, arms go apart, palms facing the roof. Assume the most comfortable position; let the whole body sink down. Let all the groups of muscles beautifully relax. Collapse the whole body. Enjoy the relaxation.

STEP 3: CENTERING

STANDING POSTURES

Taadasana (Palm Tree Posture)

1. Taadasana is the sthiti or starting posture and relaxation posture, stand at ease position with legs apart for all standing Aasana. Stand erect with feet and legs close together, hands by the side of the body along the thighs, fingers pointing downwards, shoulders collapsed and relaxed. Be firm and Steady, but not tensed and tight. Breathe normally with eyes gently closed; face smiling Chant Omkara or Bhraamari to generate 3-D Awareness.
2. Feel the whole body resonating.
3. Feel the fine massaging effect.

STEP 4: STANDING AASANAS

ARDHAKATI CHAKRASANA

1. Now we pass on to the first set of stimulation and relaxation.
2. Archakati chakraasana – the half wheel posture.
3. Slowly start raising the right arm sideways up, to raise the arm slowly and continuously to horizontal position, enjoy the movement. As the right arm reaches 90 degree positions twist the palms at the wrist. Concentrate on pointed awareness at the wrist and glide the right arm up to 135 degrees position. Beautiful pointed awareness on the deltoid muscles of the right arm. As right arm reaches up the vertical position, feel the nice stimulation in the shoulder muscles. The right biceps touching the right ear, feel the beautiful surface awareness. Feel the blood gushing down the arm. Smiling face. Stretch the right arm from the tip of the fingers of the right palm. The entire right portion of the body gets stretched, but not the face. Keep the face always smiling and relaxed. Slowly start bending down to the left. Left palm sliding down along the left thigh. Fine movement of surface awareness. Enjoy the fine stretch of the waist muscles on the right side and compression on the left side. Observe all the changes taking place in your body. Slowly start coming back to vertical position. Feel the blood flowing down and spread of nerve impulses throughout the body. Again stretch and pull up the right arm. Feel the entire right portion of the body stretched from the toes to the tip of the fingers. Slowly start bringing the right arm down

to 135 degrees gliding down smoothly. Feel the pointed awareness at the shoulder as you reach horizontal position and at the wrist as you slowly turn the palm downwards. Further, bring down the right arm to 45 degree. Feel the tingling sensation at the tips of the fingers. Continuously glide down the hand by the side of the thigh and hang it freely. Have a glance of the whole body again from toes to head. Entire right portion of the body is beautifully charged with nerve impulses and energized.

4. Now let us perform AKC from the left side.

STEP 5: QUICK RELATIONATION TECHNIQUE (QRT)

Now slowly sit down and then lie down to Savasana from the right side. Let all the movements be slow and continuous. The entire right arm stretched, head on the right biceps, left leg on the right leg, left palm on the left thigh, the weight getting transferred to the ground from the right side, beautiful sharp linear awareness. Slowly turn over, the muscles of the back collapsing on the ground, bring down the right arm along the ground. Legs apart, arms apart, palms facing the rot. Assume the most comfortable position.

PHASE 1 – OBSERVING THE ABDOMINAL MOVEMENTS

Bring your awareness to the movements of the abdominal muscles moving up and down as you breathe in and out. Recognize the haphazardness the jerky movement of the abdominal muscles. Do not manipulate the breathing, let it be natural, simply observe the abdominal movement. Count five rounds mentally, one inhalation and one exhalation forming one round.

PHASE 2 – ASSOCIATE WITH BREATHING

Synchronize the abdominal movements with the breathing. While inhaling the abdomen bulging up and while exhaling the abdomen sinking down. Inhale....deeply and exhale....completely. continue up to five rounds.

PHASE 3 – BREATHING WITH FEELING

As you inhale, the abdominal muscles are coming up. Feel the whole body getting energized and feel the lightness. As you exhale, feel the whole body collapsing and sinking down nicely. Release all the stresses and tensions completely. Inhale deeply and exhale completely. Continue up to five rounds. Bring your legs together and hands by the side of the body. Come up straight with the support of the elbows to the sitting, legs stretched, relaxation position (Sthiti) – Dandaasana.

STEP 6: SITTING AASANAS

Now we pass on to the next set of stimulation and relaxation. Vajraasana, Sasankaasana and Ardha-ustraasana /ustraasana combination.

VAJRASANA

Slowly fold the right leg backward and then the left leg, sitting on the heels, coming to the Vajraasana position. Palms on the thighs and keep the spine erect. Enjoy the effect of harmonizing, the beautiful balance. Recognize all the changes in the body.

SASAANKAASANA

Now slowly start taking the arms behind. Hold the right wrist with the left palm. Start feeling the pulse at the right wrist, feel the heart beat. Now slowly start bending down forward for Sasankasana. The abdominal and chest muscles pressing on the thigh, beautiful surface awareness. Now collapse the forehead on the ground. Fine surface awareness. Collapse the shoulders. Observe all the changes going on, the increased flow of blood into the head and feel the heaviness in the head region. Inhale and chant M-kara, Mmm..... Feel the resonance throughout the head, 3D awareness. Slowly come up to Vajraasana. Carefully follow all the changes in the head region. Feel the lightness in the head. Feel the heart beat, fine 3D awareness throughout the body. Slowly release the arms, place them on the thighs near the knees.

USTRAASANA

Slowly rise up to stand on the knees for Ardha-Ustrasana,. Standing on the knees, observe all the changes in the head region. Slowly slide the palms up along the thighs, fingers together and support the waist with the palms, fingers pointing, forwards. Slowly start bending backwards from the waist. Relax the neck muscles, head hanging freely down. Beautifully stretching of the abdominal and thoracic muscles. This is Ardha-Ustrasana.

Those who can, go further down to Ustrasana by placing both the palms on the soles of the feet. Have a beautiful smile on the face. Inhale and chant Aaa; slowly return by releasing the arms and placing them on the waist. Feel the avalanche of nerve impulses throughout the body. Feel the heartbeat. Slowly come back to Vajraasana and place the palms on the thighs. Feel all the changes and let the changes continue; fine 3-dimensional awareness throughout the body. Unfold the right leg and the left leg. Assume the leg stretched position. Head hanging freely backward or resting on either of the shoulders.

STEP 7: DEEP RELAXATION TECHNIQUE (DRT)

Slowly slide down to savaasana with the support of the elbows. Legs apart, hands apart, palms facing the roof. Let the whole-body collapse on the ground. Let us make ourselves comfortable and relax completely.

STEP 8: CLOSING PRAYER

Conclusion

Yoga therapy may be used to alleviate anxiety symptoms in cancer patients and should be the subject of further research. Due to the small number of studies, often with limited participants, no causal relationship between yoga and cancer connected pain alleviation, or yoga and cancer related nausea and vomiting relief, can be made. However, evidence-based data clearly demonstrates that yoga therapy is a safe and acceptable adjunctive therapeutic intervention in cancer patients with many other disturbing ancillary symptoms. Larger and more robust studies have demonstrated that most cancer patients experience a decrease in fatigue and become more physically active, with yoga therapy. There is also a measurable improvement in their psychological wellbeing, especially with a clinically relevant reduction in depression. The overall quality of life is also significantly improved. Because of the small sample size of studies and a lack of a standardized yoga study protocol, the role of individual yoga interventions in alleviating specific cancer related symptoms, cannot be delineated. In general, however, yoga therapy, as a complementary therapeutic modality, has viable evidence-based role, for alleviating several extremely distressing symptoms experienced by cancer patients.

Yoga breathing was a feasible intervention among patients with cancer receiving chemotherapy. *Pranayama* may improve sleep disturbance, anxiety, and mental quality of life. A dose–response relationship was found between *pranayama* use and improvements in chemotherapy-associated symptoms and quality of life. These findings need to be confirmed in a larger study.

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