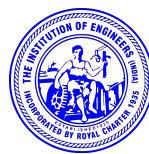Estd. 1957

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27th October 2021
Jointly Organized by
Department of Biological Science, Physical Science and Computational Science

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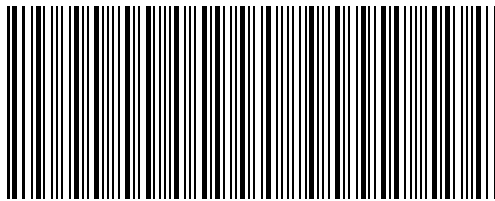An ISO 9001:2015 Certified Institution, Pollachi-642001.

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ABOUT THE INSTITUTION

A nations's growth is in proportion to education and intelligence spread among the masses. Having this idealistic vision, two great philanthropists late. S.P. Nallamuthu Gounder and Late. Arutchelver Padmabhushan Dr.N.Mahalingam formed an organization called Pollachi Kalvi Kazhagam, which started NGM College in 1957, to impart holistic education with an objective to cater to the higher educational needs of those who wish to aspire for excellence in knowledge and values. The College has achieved greater academic distinctions with the introduction of autonomous system from the academic year 1987-88. The college has been Re-Accredited by NAAC and it is ISO 9001 : 2015 Certified Institution. The total student strength is around 6000. Having celebrated its Diamond Jubilee in 2017, the college has blossomed into a premier Post-Graduate and Research Institution, offering 26 UG, 12 PG, 13 M.Phil and 10 Ph.D Programmes, apart from Diploma and Certificate Courses. The college has been ranked within Top 100 (72nd Rank) in India by NIRF 2021.

ABOUT CONFERENCE

The International conference on "Emerging Trends in Science and Technology (ETIST-2021)" is being jointly organized by Departments of Biological Science, Physical Science and Computational Science - Nallamuthu Gounder Mahalingam College, Pollachi along with ISTE, CSI, IETE, IEE & RIYASA LABS on 27th OCT 2021. The Conference will provide common platform for faculties, research scholars, industrialists to exchange and discus the innovative ideas and will promote to work in interdisciplinary mode.

LIST OF ARTICLES

Jointly Organized by

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Nallamuthu Gounder Mahalingam College, Affiliated to Bharathiar University, Tamilnadu, India.

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Yoga for Computer Professionals

Dr.S.Prasath[1] – S.Shanmugavadivu[2]

ABSTRACT: Increasing the number of software professionals means the number of health problems is also increasing in this world. In the past decades lots of scientific research have been conducted to found that yoga practice is as an alternative medicinefor various Physical and psychological problems.In the modern world computer professionals are facing various types of diseases like repetitive strain injury, Carpal tunnel syndrome, Computer vision syndrome, Insomnia, Lower back pain, Techno Stress and Computer Anxiety and Depression. This article mainly analyzes the physical and psychological health issues which are faced by computer professionals. Hence, this article highly recommended practicing yoga such as yogasanas, Pranayama and meditation, which could be beneficial for overcome from various psychological and physiological problems.

Keywords: Computer Professionals, Physical and psychological problems, Yogasanas, Pranayama, Meditation.

INTRODUCTION

Technology has changed a lot in every domain. Over the past decade, the use of computer has facilitated tasks and made it possible to conserve time and energy. The information technology is not only useful for IT professionals, but also for all other professional fields such as hospitals, banking sectors, educational institutions etc., People use the computer for all purposes such as project work, accounting, online purchasing, online reservation, commerce and marketing, etc., we can say that no one else in this world without using the computer for their everyday life. Some of apps and websites have changed the entire education and marketing areas system. So nowadays people are moving towards the apps for their educational and business purposes. India has established itself as one of the leading service providers in the Internet through information technology. More than 120 million people here are engaged in computer work and the number of people using computer has gradually increasing every day. Occupational health risks are common in computer professionals, who use the computer for more than four hours per day. As a result, employees are at an increased risk of physical illness and psychological issues. According to a research paper, there will be over 5.2 million software professionals working in India and the ratio is growing each day (world computer magazine). But not only the

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number of software professionals increases, but also increases the health issues among them. Numerous clinical research studies have been conducted to discover that yoga has an impact among computer professionals. In this study we have reviewed lots of research articles and the benefits of regular practicing yoga can prevent and manage repetitive strain injury, carpal tunnel syndrome, computer vision syndrome, insomnia, lower back pain, techno stress, computer anxiety and depression. The purpose of the study is to analyze the importance yoga postures such as breathing technique, meditation and amalgamation which are more beneficial for computer professionals and also it is highly recommended to practice regularly to overcome psychological problems and health issues among the computer professionals.

Common Health Problems:

Health problems are rampant among the computer professionals across Globe. The increasing use of computers is accompanied by new health problems. One of the reasons for computer-based health problem is lacking information about the ergonomic use of computers and underestimating the problems encountered. Today, those working in front of a computer suffer from various physical and psychological problems, yet they think do not need any treatment as they are not aware of how serious the situation is. The illnesses likely to be caused by inappropriate use of and poor use of computers can be grouped under two headings. These are physical problems and psychological problems.

Physical Problems:

1. Repetitive Strain Injury:

Since people constantly and repeatedly do certain movements in front of a computer, they have the risk of RSI. It is an occupational overuse syndrome affecting muscles, tendons and nerves in the arms and upper back and is also known as work related upper limb disorder (WRULD).

Symptoms:

➢ Tightness, discomfort, stiffness in the hands, wrists and fingers.

➢ Tingling or numbness in the hands.

➢ Loss of strength and coordination in the hands.

➢ Constant pain in the upper back shoulders or neck.

➢ Feeling the urge to massage hands, wrists and arm.

A number of breaks should be given while working in front of a computer to have a rest and to stretch out the body. During these breaks, doing the correct exercises with hands, wrists, arms, neck, legs and shoulders will be beneficial for the body health.

2. Carpal Tunnel Syndrome (CTS):

Carpal tunnel syndrome is a condition where a nerve known as median nerve that passes through the wrist gets compressed due to constant but restricted movement of the wrist joint. The tendon inflammation resulting from repetitive work, such as uninterrupted typing, can cause carpal tunnel symptoms.

Symptoms of CTS:

➢ Numbness and tingling of the hand, thumb, index, middle and thumb side of the ring fingers.

➢ Pain is worse at night & person may have sleepless nights.

➢ As disease advances – Burning sensation, weakness of hand.

➢ Decreased grip strength leading to frequent dropping of objects from the hand.

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➢ Occasionally, sharp shooting pains can be felt in the forearm.

➢ Chronic carpal tunnel syndrome can also lead to wasting of the hand muscles, particularly those near the base of the thumb in the palm of the hand.

3. Computer Vision Syndrome:

Those who spend most of their time staring at a computer screen are prone to suffer with a condition called as computer vision syndrome. Computer vision syndrome is characterized by dry eyes, sensitivity to glare, pain around the eyes, headache and overall fatigue. Nearly 7 out of 10 people who spend 8 to 12 hours a day staring at a computer screen will develop eye problems. Around 80% of individuals with eye problems hail from the IT profession, according to a report in Times of India. A national survey of doctors of optometry found that more than 14% of their patients present with eye or vision-related symptoms resulting from computer work.

4. Insomnia:

Insomnia or sleeping disorder is one of the common health problems seen in software professionals. This is encountered mote in people work in night shifts, as their normal sleep rhythm is disturbed and their day time sleep is poor & inadequate. A study in Finland found that 16% of IT professionals who work late develop insomnia. Another study looking at 91 software engineers in India found that 35% of them had mild insomnia while 21% had severe insomnia. Staring at a bright screen late into the night can alter the release of the sleep chemical melatonin. As time passes, the release of this hormone alters permanently, leading to chronic insomnia.

5. Lower Back Pain:

This is probably the most common problem suffered by IT professionals. Almost 80% of people who spend more than 8 hours in front of a computer which can lead to great stress on bony joints and cartilages of back leading to back pain. The problem lies in wrong posture and not taking frequent breaks in between the work. On a long run persistent stress & strain on the bone and ligaments leads to structural changes in the back bone thus leading to a chronic back pain.

6. Migraine:

A migraine is a primary headache disorder characterized by recurrent headaches that are moderate to severe. Typically the headaches affect one half of the head are pulsating in nature and last from 2 to 72 hours. Associated symptoms may include nausea, vomiting and sensitivity to light, sound or smell. Muscle Spasm and flickering lights are the causes of computer related headaches.

7. Tension Neck Syndrome:

Tension neck syndrome is a term that encompasses a variety of disorders involving the neck and shoulder areas, collectively called "cervicobrachial" – cervico (neck) and brachial (shoulder or arm). Tension neck syndrome is related to both physical and psychological factors. Using a computer mouse is related to increases in the risks for neck pain as well as shoulder pain and may be associated with tension neck syndrome.

Psychological Problems:

1. **Techno Stress:**

   Techno stress is the negative psychological link between people and the introduction of new technologies. They feel compelled to work faster because information flows faster and have little time to spend on sustained thinking and creative analysis. There are four aspects of techno stress are physical aspects, emotional aspects, behavioral aspects and psychological aspects.

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The causes of techno stress amount to

> ➢ The quick pace of technological change
> ➢ Lack of proper training
> ➢ An increased workload
> ➢ Lack of standardization within technologies
> ➢ The reliability of hardware and software

2. Computer Anxiety and Depression:

Targets and deadlines! Hearing these two words is enough to induce stress and anxiety in most of IT professionals. Computer anxiety as feelings of fear and worry that occur while using a computer. Computer anxiety causes individuals to become introvert and makes them stay away from places where there are computers. Therefore, the society ends up with unsocial individuals. As per a recent survey published in a psychological journal, IT professionals and people who are addicted to internet were more likely to develop depression. Depression can greatly affect quality of life. It also can have a negative impact on personal relationships as well.

Yoga:

Yoga is the science of life and the art of living. Basically yoga is a system of physical and mental self-improvement and final liberation that people have been using for thousands of years. It is India's oldest scientific, perfect spiritual discipline. Yoga is science of life, it offers us simple, easy remedies and techniques and methods of health and hygiene to assure physical and mental fitness with a minimum of time, effort and expense. Yogic practices help to overcome these problems and create harmony in the body and mind.

Role of Yoga for Computer Professionals:

Yoga is an exercise form that bridges the gap between our physical, mental, and spiritual lives by easing chronic and acute pains from all realms. In addition, it also improves circulation, eases stiffness, alleviates inflammation, promotes digestion, lowers stress, relieves eye fatigues, eases headaches, and promotes overall well-being.

30 minutes of yoga each day is sufficient to simplify the lives of computer users. The various postures open up our hips and shoulders, release wrists and massage our back. The breathing technique helps in releasing the stress, while the meditation promotes overall wellness.

Why yoga is effective therapy?

> ➢ Self-practice
> ➢ Less expensive
> ➢ Moral concept
> ➢ Preventive therapy
> ➢ Tells about rules and regulation of life

The Health Benefits of Yoga:

The potential health benefits of yoga include,

> ➢ Stress reduction – A number of studies have shown that yoga may help reduce stress and anxiety. It can also enhance our mood and overall sense of well-being.
>
> ➢ Improved fitness – Practicing yoga may lead to improved balance, flexibility, range of motion and strength.

➢ Management of chronic conditions – Yoga can help reduce risk factors for chronic diseases. Such as heart disease and high blood pressure. Yoga also helps to alleviate chronic conditions, such as depression, pain, anxiety and insomnia.

Yoga Module for Computer Professions:

Loosening Exercise:

➢ Hand movements clockwise and anti-clockwise

➢ Elbow movement in and out

➢ Wrist rotation, clockwise and anti-clockwise, in and out

➢ Hip rotation, clockwise and anti-clockwise

➢ Neck movements, up and down, right and left, rotation clockwise and anti-clockwise

Asanas:

An asana is a body posture that is performed to benefit the health of body and mind. The term has been derived from a Sanskrit term that means "posture" or "pose". According to yogic texts the number of Asanas runs in to 84 lakhs. However they present the techniques of around a hundred asanas or so. Asana is one of the most ancient yogic practices. It plays a very important role in yoga training from the beginning to the end. Today asana are the most popular aspect of yoga. Asanas are performed to improve flexibility, strength, and balance. Asanas or yoga poses help the body's joints, ligaments, and muscles strengthen through movement. A regular yoga practice can, over time, increase flexibility and mobility, lubricating the spine and alignment to aid in everyday activity.

Yogasanas for IT professionals:

➢ **Padahastasana   :Spinal nerves are stimulated and toned, Improves the**
**   Metabolism and concentration.**

➢ **Shashankasana   :Release the stress from spinal vertebrae, stretches the back**
**   muscles making them stronger.**

➢ **Setubandhasana   :Calms down our brain, reducing anxiety and stress,**
**   strengthens our back muscles.**

➢ **Shalabhasana   :Increase the blood circulation, reducing weight, the spine**
**   and waist becomes flexible.**

➢ **Bhujangasana   :Strengthens the spine, helps relieve stress and fatigue,**
**   stretches chest, lungs, shoulders and abdomen.**

➢ **Suryanamaskar   :Strengthens muscles and joints, helps combat insomnia,**
**   spinal cord and abdominal muscles are stretched.**

These above asanas are helpful for computer professionals to improve their physical and mental health**.**

Pranayama:

The term pranayama is derived from several Sanskrit roots; prana means 'vital life force', yama means 'control' and ayama means 'extension' or 'expansion'. The breath is symbolic of prana, and pranayama can be understood as methods to extend and expand vital life force energy through the deliberate control of respiration. The type of breathing techniques in pranayama are divided into three stages: Inhalation through nose (Purak), retention (Kumbak) and exhalation (Rechak). These breathing techniques are not only used in yoga practices but also in meditative practices. The rhythm of pranic energy can be controlled through pranayama.

Recommended Pranayama practices for IT professionals:

- **Kapalbhati** : Strengthening the diaphragm and abdominal muscles.
- **Nasishoddi pranayama** :Helps in purifying the energy channels of the body, reduce stress and anxiety.
- **Chandra bedana** :Reduce the body heat, the mind becomes steady, reducing tension, stress and other mental problems.
- **Brahmari** :Inducing deep sleep, curing paralysis and migraines, relieving from hypertension.

Meditation:

Meditation is a practice to keep the mind at the preferred level and enable one to reduce the frequency of mind to the extent one wishes. Such a practice is called 'Inner Travel'. We do various exercises for maintaining the strength and flexibility of the physical body. Similarly, inner travel is the practice to increase one's Intellectual capacity, receptivity and mental strength. The goal of meditation is not to free our mind of all thoughts but to be aware of our thoughts and to reflect on them without judgment. Regular meditation can be used a tool for personal growth or to reduce the stress, pain, and anxiety associated with physical and mental ailments. Meditation is a mental practice where an individual exercises their mind to have a state of focus, to train attention, and to create self-awareness.

Conclusion:

As we all know the fact that computers became one of the most important tools in our life style. Today, computer technology has provided for people with many benefits; educational activities can be designed; online shopping is available; is possible to get in touch with people overseas and to chat with them; it is possible to search for anything. At the same time we ought to know the disadvantages and effects of the computers over the health. Use the technology but not at the cost of the health. The above yoga practices have been good benefits among computer professionals. So we should practices yoga in our daily life. The regular practice of yoga as a 'Way of Life' helps to reduce the levels of physical, mental and emotional stress. This yogic way of life lays emphasis on right thought, right action, right reaction and right attitude.

References:

1. Farias Zuniga, A. M., & Côté, J. N. (2017). Effects of dual monitor computer work versus laptop work on cervical muscular and proprioceptive characteristics of males and females. Human factors, 59(4), 546-563.

2. Sudharshini, S., Anantha Raman, V. V., & Mathew Arumai, M. (2018). Computer Professionals and their Health issues and Managements. Public Health Review: International Journal of Public health Research, 5(3), 117-122.

3. Pandey, S., & Bhatnagar, A. (2013). Effects of Yoga on Discomfortness of Vision in Regular Users of Computer in Population of Western Uttar Pradesh. Medical Science, 2(12).

4. Telles, S., Pathak, S., Singh, N., & Balkrishna, A. (2014). Research on traditional medicine: What has been done, the difficulties, and possible solutions. Evidence-Based Complementary and Alternative Medicine, 2014.

5. BKS. Iyengar, Lights on yoga. Harper Collins publication, New Delhi, eleventh edition – 1997.

Education is the manifestation of the perfection already in man

- Swami Vivekananda