



Suryanamaskar – A Boon to Human Race

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Abstract

Sun salutation (Surya Namaskar) is a comprehensive Yoga technique which incorporates physical activity, breath regulation, relaxation and awareness. Without the Sun, there will be no life on Earth. Surya Namaskar or Sun Salutation is an exceptionally old method of paying admiration or communicating appreciation to the Sun that is the wellspring of all types of life on the planet. Apart from improving physical stamina and endurance, Surya namaskar has been shown to influence an individual's perception and performance. There are numerous health benefits of Surya Namaskar for different system of the body especially musculoskeletal, cardiovascular, gastrointestinal, nervous system, respiratory and endocrinal. By practicing Surya Namaskar each and every cell of body gets revitalized and regenerated, therefore it is highly recommended by all yoga experts for healthy routine life. Apart from these benefits, Surya Namaskar also helps to keep the mind stress free, calm and illuminated. Thus, a regular practice of Surya Namaskar is highly recommended to keep the body and mind healthy. Though the Surya Namaskar steps are very scientific and practical, still it needs modern scientific justification to spread it globally. Keeping this thing into the mind the present review has been framed to revalidate sacred steps of Surya Namaskar on the basis of available evidence based studies.

Keywords: Surya Namaskar, yoga, asanas, physical exercises.

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Introduction

Sun salutation (Surya Namaskar) is an ancient Indian method of offering prayers to the rising Sun in the morning along with a series of physical postures with regulated breathing aiming at range of physical, mental and spiritual benefits. In Sanskrit literature surya means sun, and the word namaskara means salutation. Therefore, this practice is known as the "Suryanamaskar" or 'salutation to the sun'. Facing east, in the early hours of morning, one standing with serene mind offers prayer to Lord Sun (Surya in sanskrit) with Surya namaskar. Along with physical postures, Suryanamaskar has specific spiritual connotations attached to it.

It has been said (by the old Rishis of India) that the distinctive parts of the body are administered by various Devas (divine motivations or awesome light). The sun powered plexus (situated behind the navel, which is the essential issue of the human body) is said to be associated with the Sun. This is the primary motivation behind why the old Rishis suggested the act of Surya Namaskar, on the grounds that the consistent routine of this method improves the sun based plexus,

which expands one's inventiveness and instinctive capacities. Surya namaskara is a series of asanas with strict breathing pattern. It revitalizes each and every cell of the body, gives physical strength, flexibility, and mental calmness. Surya namaskara includes a series of asanas (Specific posture of the body) which are-Pranamasan, hasta utthanasan, padahastasan, ashwasanchalanasan, ashtanaga namasakar, bhujangasan, and parvatasan[13]. While doing each asana a specific mantra should be chanted to worship the sun. According to the scriptures, if performed correctly, Suryanamaskar does not strain or cause injury. If performed in the morning, it relieves stiffness, revitalizes the body, refreshes the mind and purifies subtle energy channels [1]. Though the greatness of Surya namaskar has been greatly said in scriptures not much research has been done to understand its benefits. In an earlier study, it was speculated that Surya namaskar can be an ideal aerobic exercise as it involves both static stretching and slow dynamic component of exercise with optimal stress on the cardiorespiratory system [2]. A later study assessed the cardio-respiratory and metabolic responses of four rounds of Surya namaskar, a typical amount performed by practitioners, to determine its potential as a training and weight loss tool. It was found that participants exercised at 80% of age- predicted maximal heart rate (HRmax) during Round 2, 84% during Round 3, and 90% during Round 4. Average intensity during the four rounds was 80% HRmax, sufficient to elicit a cardiorespiratory training effect. Oxygen consumption

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averaged 26 ml/kg/min during each round, resulting in an energy expenditure of 230 kcals during a 30 min session for a 60 kg individual [3].

These findings support the use of Surya namaskar as an effective physical activity recommended by the American College of Sports Medicine i.e., 50% to 80 % VO₂ Max and 60% to 90 % heart rate reserve as effective physical activity. Recently Bhavanani & Colleagues evaluated the differential physiological effects of 6 months training in the fast and slow versions. The results suggested that Surya Namaskar has positive physiological benefits as evidenced by an improvement in pulmonary functions, respiratory pressures, hand grip strength and endurance, and resting cardiovascular parameters. It also demonstrated the differences between Surya namaskar when performed in a slow versus fast manner, concluding that the effects of fast version are similar to physical aerobic exercises, whereas the

effects of slow version are similar to those of yoga training [4].

With a customary routine of Surya Namaskar and reflection, the sun powered plexus increments from the extent of an almond to the measure of a palm. This extension of sunlight based plexus, otherwise called the second mind, builds up our natural capacity and makes us all the more clear and centered. The complex advantages of Surya Namaskar keep the body sound and the brain quiet. Subsequently, a standard routine of Surya Namaskar is very prescribed by all yoga specialists. These Surya Namaskar tips can likewise enhance practice and gives better results [9,10].

S.No	Asana	Chakra Position
1	Pranamasana	Anahata (Heart)
2	Hasta Uttanasana	Vishuddhi (Throat)
3	Hastapaadasana	Swadhisthana (Sacrum)
4	Ashwa Sanchalanasana	Ajna (Third eye)
5	Adho Mukha Svanasana / Parvatasana	Vishuddhi (Throat)
6	Ashtanga Namaskara	Manipura (Solar plexus)
7	Bhujangasana	Swadhisthana (Sacrum)
8	Adho Mukha Svanasana/ Parvatasana	Vishuddhi (Throat)
9	Ashwa Sanchalanasana	Ajna (Third eye)
10	Hastapaadasana	Swadhisthana (Sacrum)
11	Hasta Uttanasana	Vishuddhi (Throat)
12	Pranamasana	Anahata (Heart)

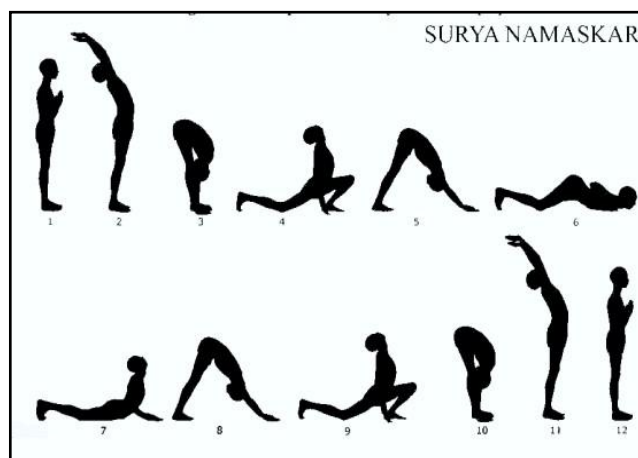


Table 1 Twelve asanas of Surya Namaskar

Figure 1 Postures of Surya Namaskar

Asana (Postures) of Surya Namaskar

Surya namaskar is a graceful combined sequence of twelve positions along with regulated breathing and relaxation. The consistent routine of Surya Namaskar enhances flow of blood all through the body, looks after wellbeing, and helps one remain malady free. There are various advantages of Surya Namaskar for the heart, liver, digestive system, stomach, mid-section, throat, legs. From head to toe, all aspects of the body is incredibly profited by Surya Namaskar, which is the reason it is exceedingly prescribed by all yoga specialists [6]. Stances go about as a decent connection between warm-ups and asanas and should be possible at whatever time on a void stomach. In any case, morning is thought to be the best time for Surya Namaskar as it rejuvenates the body and revives the brain, making us prepared to go up against all assignments of the day. In the event that done toward the evening, it empowers the body immediately and if done at sunset, it helps you loosen up. At the point when done at a quick pace, Surya Namaskar is a phenomenal cardiovascular workout and a decent approach to get in shape [7,8].

Pranamasana(Prayer pose) – 1st & 12th Pose

Pranamasana or the Prayer Pose is the starting and twelfth pose for Surya Namaskara. In Sanskrit the word ‘Pranam’ means ‘to pay respect’; so this asana known as Pranamasana.

Method: Stand erect with folded hands close to the chest and palms are held together in the form of prayer pose. Look straight ahead, Exhale the breath normally.

Benefits: It creates a sense of relaxation, calmness and concentration in the mind at beginning the Surya Namaskara.

Hasta Uttanasana (Raised arms pose)- 2nd & 11th pose

Hasta Uttanasana or the raised arms pose is part of the Surya Namaskara series of asanas come at 2nd and the 11th steps.

Method: Raise both the hands up above the crown from Pranamasana pose. Inhale the breath normally while raising your hands. Bend the trunk and neck slightly backward.

Benefits: It improves digestive process; It strengthens and tones the abdominal and chest musculature. It supports respiratory system too.

Padahasthasana (Hand to Foot pose)- 3rd & 10th pose

Padahasthasana or the Hand to Foot pose is part of the Surya Namaskara series of asanas come at 3rd and the 10th steps.

Method: Bend forward from Hasta Uttanasana pose and try to touch the floor with your both hands. Exhales breathe normally while bending forward.

Benefits: Padahasthasana makes the body flexible and strengthen, helps to decrease excess abdominal fat and very beneficial for the gastrointestinal and nervous system.

Ashwa Sanchalanasana

(The Equestrian Pose) – 4th & 9th pose

Ashwa Sanchalanasana or the Equestrian pose is part of the Surya Namaskara series of asanas come at 4th and the 9th steps.

Method: Stretch the left leg as far back as possible from Padahasthasana pose while inhaling the breath normally. At the same time, bend the right knee. While looking straight ahead the hands should be kept straight with fingers touching the floor. Arch the back a little with head tilted back. The same steps should be repeated with left knee in the second round of Surya Namaskara.

Benefits: Ashwa Sanchalanasana tones the abdominal organs, It gives flexibility to the body and balances central nervous system.

Parvatasana (The Mountain Pose) – 5th & 8th pose

Parvatasana or the Mountain pose is part of the Surya Namaskara series of asanas and come at 5th and the 8th step. In Sanskrit terminology, “Parvata” means mountain and this pose looks like a mountain so it is known as Parvatasana.

Method: While exhaling, take the right leg backward from Ashwa Sanchalanasana pose and place it parallel to the left leg, raise the buttocks at the same time. Place the hands straight supporting the weight of the body. The head should be placed between the hands.

Benefits: Parvatasana strengthens the muscles of both upper and lower limbs, maintains the blood circulation to Central nervous system and tones peripheral nervous system.

Ashtanga Namaskara (Eight-Limbed salutation) – 6th pose

Ashtanga Namaskara or the Eight-Limbed salutation is part of the Surya Namaskara series of asanas come at 6th step. In this pose, the body touches the ground in eight locations –the head, the chest, the two palms, the two knees, and the two toes. In Sanskrit grammar, “ashta” means eight and “anga” means part. Hence this asana is known as Ashtanga Namaskara.

Method: Lower the body to the ground from Parvatasana pose in such a way that it touches the floor at eight locations – the head, the chest, the two palms, the two knees, and the two toes, Suspended the breath for a while. Try to lift other parts in air.

Benefits: It strengthens the muscles of the both upper and lower limbs and strengthens respiratory system.

Bhujangasana (The Cobra Pose)- 7th pose

Bhujangasana is also famous as a cobra pose in yoga. The meaning of “Bhujanga” in Sanskrit means “cobra snake” and “Asana” means “Pose”. In this asana person’s head and trunk resembles a cobra with raised hood, hence the name Bhujangasana. It is a major backward bending asanas used in yoga. It appears as the 7th pose in the Surya Namaskar series asanas.

Method: While inhaling raise the body by using the hands from Ashtanga Namaskara pose. Arch your head

backward. This position looks like the cobra which has raised its hood.

Benefits: Bhujangasana strengthens the whole back musculature especially lower back, It improves the flexibility of the spine and surrounding muscles, good for the gastrointestinal, reproductive and urogenital system.

General benefits of Surya Namaskar

The practice of surya namaskar as a whole gives a great number of benefits which are following:

1. Suryanamaskar, or Sun Salutations, ideally done facing the early morning sun, helps our body to soak in its benefits — sun rays are a rich source of vitamin D and helps to strengthen our bones and also helps to clear our vision.
2. This asana, apart from improving one's posture, also gives a proper workout to the body and so helps in losing unwanted body flab.
3. Regular practice of this asana can also help you lose the excess body fat.
4. It loosens up the joints in the body and tones the muscles and the internal organs.
5. Surya Namaskara balances the respiratory, circulatory, reproductive and the endocrine system.
6. The posture in Suryanamaskar stretch our muscular system and makes our body very flexible.
7. The moves and postures of the asana help all our internal organs function better the various poses regulates our blood flow, benefits the respiratory, circulatory, reproductive and the endocrine system and makes it more efficient.
8. It helps combat insomnia as it relaxes the body, calms the mind, removes lethargy and makes our mind alert.
9. It helps regulate menstrual cycles and makes childbirth easier.
10. Surya Namaskara activates the Pingala nadi (Surya nadi) which enhances the energy level in the body.

Physiological effect of Surya Namaskar on body

Effect on musculoskeletal system

Regular training of Surya Namaskar required four times more energy than the daily requirement, Thus it is a very good fat burner. It's training improves the flexibility of body muscles especially leg, back, chest and buttock muscles [14]. It is found that by practicing Surya Namaskar regularly can significantly increase Hand grip, strength and endurance [15- 16].

Effect on respiratory system

Surya namaskar training significantly increases maximum inspiratory pressure and maximum expiratory pressure [17]. This suggests that its training improves the strength of both expiratory and inspiratory muscles. It also improves the strength of the intercostal muscles ultimately leads to Increase vital capacity and

contractility of lungs [16]. It is also found that by regular Surya Namaskar training there is significant change noted in forced vital capacity (FVC), forced expiratory vital volume in 1st second (FEV1), peak expiratory flow rate (PEFR) and Vital capacity (VC) [18,19].

Effect on cardiovascular system

It reported that yoga practice incorporating Surya Namaskar in daily routine life can improve cardiorespiratory efficiency and fitness. An increase in systolic blood pressure, peak expiratory flow rate, forced vital capacity, and reduction of respiratory rate, heart rate, and diastolic blood pressure also reported in practitioner [20-22]. There are a number of reports, which show that regular Surya Namaskar practices lead to relative vagal dominance, reduced sympathetic tone, and improved cardiovascular function. [23-26].

Effect on endocrinal system

Regular practicing Surya Namaskar modulates endocrinal system of the body especially, pancreas, thyroid, adrenals and pituitary glands. The overall effect is very beneficial for Metabolic Syndrome, Obesity, Diabetes Mellitus, Hypothyroidism and menstrual disorders [27].

Effect on nervous system

Surya Namaskar tunes the central, Peripheral and autonomic Nervous system. This effect is a boon for patients with lower backache, diabetes mellitus, and different neuronal weaknesses [28,29].

Effect on gastrointestinal system

Regular Surya namaskar practice improves digestion, combat constipation and different gastrointestinal problems [30,31].

Effect on mind

Many studies have shown that Surya Namaskar exerts positive effects on both the physiological and psychological variables. It's different postural, breathing and chanting pattern produces calm, relax, more stable and stress free mind [32,33].

Effect on different biochemical parameters

Surya Namaskar significantly decreases in fasting blood sugar, postprandial blood sugar and Glycosylated haemoglobin HbA1c level in diabetic patients.[34]. The Autonomic nervous system generally involved in diabetic patients but by practicing Surya Namaskar, a positive impact also noted on autonomic function of the body. Its regular practice of significantly decreases the oxidative stress of the body which plays a key role in insulin resistance [35] and complication in diabetes patients [36]. It also improves the lipid profile in diabetic patients which plays a supportive role in its complications. This results in the reduction of weight, BMI and waist-hip ratio. [37,38].

Conclusion

Surya Namaskar is a common sequence of asanas. Its roots are hidden within the ancient tradition of Surya worshiping Hindu population of the Indian subcontinent. Surya Namaskara comprehensively includes asana, pranayama, mantra and meditative awareness. Different evidence-based study suggested that Surya namaskar improves metabolic function, strengthen and flexible musculoskeletal system, balances endocrinal system, tunes central nervous system, supports urogenital system and boosts gastrointestinal system. Surya Namaskar practice revitalizes body and keeps mind calm, attentive and stress-free. Most of the physiological and psychological effect of Surya Namaskar still unexplored on the scientific ground but thousand years old tradition of these yogic practices explains its immense therapeutic potential. Thus, It should be a need to incorporate Surya Namaskar practices in modern lifestyle for healthy mind and body.

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