

EFFECT OF SURYA NAMASKAR ON SCHOOL CHILDREN

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ABSTRACT

Sun salutation (Surya Namaskar) is a comprehensive Yoga technique which incorporates physical activity, breath regulation, relaxation and awareness. Apart from improving physical stamina and endurance, Surya namaskar has been shown to influence an individual's perception and performance. Hence, the present study has been designed to measure the performance of school children in a digit letter substitution task following the practice of Surya namaskar compared to physical exercise. 320 school children between the age group of 12 to 14 years, belonging to both genders were screened and 64 healthy volunteers were selected. They were randomly allocated to 2 groups with 32 students each (Experimental group and Control group). Subjects were assessed at the beginning and end of 30 days of intervention (Surya namaskar or Physical Exercise) using a Digit Letter Substitution Task. The data were normally distributed and the baseline data across the groups were not statistically different. The pre-post data within each group was analyzed using a paired 't' test. There was a significant increase in number of letters substituted per digits in both yoga as well as control groups. The difference between the groups was not statistically significant.

Key Words: Yoga, Surya Namaskar, sun salutations.

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. 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, surya namaskar has specific spiritual connotations attached to it. Surya namaskar is a graceful combined sequence of twelve positions along with regulated breathing and relaxation.

According to the scriptures, if performed correctly, Surya namaskar 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. Though the greatness of Surya namaskar has been described in scriptures

extensively, 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. A later study assessed the cardiorespiratory 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 averaged 26 ml/kg/ min during each round, resulting in an energy expenditure of 230

kcal during a 30 min session for a 60 kg individual.

While the above two studies have looked at the cardio-respiratory changes and metabolic cost during Surya namaskar in young adults, a single report evaluated its influence on children belonging to 8-14 years of age. The results showed that the Systolic Blood Pressure, Peak Expiratory Flow Rate and Forced Vital Capacity increased significantly and Respiratory Rate, Heart Rate and Diastolic Blood Pressure decreased significantly after the practice of Surya namaskar. Apart from physical health and physiological rest, an improved attentional process and cognitive function determines the scholastic performance in school children. While the above studies have looked at Surya namaskar as an effective physical activity and earlier studies have suggested that physical exercise can improve executive functions in school children, we have designed the present study to evaluate the influence of Surya namaskar on attention span in school children.

Starting Prayer: (30 sec.)

Hiranmayenapatrena Satyasyapihitam mukham| Tatvam Pushanapavrunu satyadharmaya Drushtayet Like a lid to a vessel, Oh sun, your golden orb covers the entrance to the truth. Kindly open the entrance, to lead me to the truth.

Loosening exercise: (10 min.)

Finger movement, wrist rotation, shoulder rotation, neck rotation, toe movements, ankle movement & rotation, knee movement, butterfly,

Suryanamaskara: (12 mins.)

Twelve Sun salutations

Step 1: Hasta uttanasan (raised arms pose)

Inhale and maintain it in standing position with hands joined together near chest, feet together and toes touching each other.

Step 2: Padhahastasan (standing forward bend pose)

Exhale and bend forward at the waist till palms touch the ground in line with the toes. Don't bend knees while performing.

Step 3: Ekapadaprasaranasana (equestrian pose)

Inhale and take the left leg back with left toes on the floor, press the waist downwards and raise the neck, stretch the chest forward and push shoulders backwards. Keep the right leg and both the hands in the same position. Keep the right leg folded.

Step 4: Dwipadaprasaranasana (steep parallel pose)

Hold the breath and raise the knee of left leg. Take the right leg backwards and keep it close to the left leg. Straighten both the legs and both hands. Keep the neck straight and site fixed. Keep both the toes erect. Take care that the neck, spine, thighs and the feet are in a straight line.

Step 5: Sasankasana (moon pose)

Exhaling bend both the hands in elbows and touch forehead on the ground, touch the knees on the ground, keep both the elbows close to chest. The forehead, chest, both the palms, both the toes, knees should touch the ground and rest of the body not

touching the floor. Since only eight parts rest on the ground, it is called 'Ashtanga' position.

Step 6: Sashtanga Namaskar (Salute with 8 limbs pose)

Inhale and straighten the elbows, stretch the shoulders upwards, press the waist downwards but

Don't bend the arms. Keep the knees and toes on the floor. Push the neck backwards and sit upwards.

Step 7: Bhujangasan (cobra pose)

Hold the breath, bend the neck downwards and press the chin to the throat, push the body backwards and touch the heels on the ground, raise the waist upwards, do not move the palms on the floor.

Step 8: Parvatasan (mountain pose)

Hold the breath as in position 7, bring the right leg to the front and place it in between the hands and place the left leg at the back with left knee and toes on the ground.

Step 9: Sasankasana (moon pose)

Exhale and bring the left leg forwards as in the position 2 and place it in between both the arms.

Step 10: Ekapadaprasaranasana (equestrian pose)

Inhaling start getting up and attain the position as in position 1.

Step 11: Padhastasan (standing forward bend pose) & Step 12: Hasta uttanasan (raised arms pose)

Same as position 2 and position 1 After 45 days of regular practice all the above parameters were reassessed.

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. A subsequent study evaluated the differential physiological effects of 6 months training in the fast and slow versions. Following Surya namaskar there was an improvement in pulmonary function, hand grip strength and endurance, and resting cardiovascular parameters. This study also demonstrated the differences between Surya namaskar training in a slow and fast manner, concluding that the effects of the fast version are similar to physical aerobic exercises, whereas the effects of slow version are similar to those of yoga training.

Apart from the two studies mentioned above which looked at the cardio-respiratory changes and metabolic cost during Surya namaskar in young adults, a single report has illustrated its influence on children belonging to 8-14 years of age. The Systolic blood pressure, Peak Expiratory Flow Rate and Forced Vital Capacity increased significantly and Respiratory Rate, Heart Rate and Diastolic Blood Pressure decreased significantly after the practice of Surya namaskar.

It is clear from earlier reports that Surya namaskar can be used as a potential equivalent to aerobic exercise with respect to cardiorespiratory endurance. However, its other applications are being explored recently. Improving scholastic performance in school children has been identified as a major application of Surya namaskar as earlier reports on physical exercise have shown its beneficial effects

on improving the executive functions in children.

The results of the present study are in line with the earlier report that physical activity influences attentional tasks. Improvement following the practice of Surya namaskar can be attributed to physical activity interspersed with regulated breathing and relaxation as the influence of relaxation on attention span is well documented. The changes seen in the control group (physical exercise followed by supine rest) are similar to that of the experimental group suggesting that structured physical activity of any form followed by supine rest can induce alertful rest. The group which practiced Surya namaskar had 16.7% improvement compared to 13.2% in physical exercise group. However, the difference between the groups was statistically not significant. The marginal better performance in the Surya namaskar group can be attributed to the aspect of Surya namaskar i.e. Physical activity interspersed and slow breathing and relaxation as mentioned earlier. Hence, the present

study speculates that physical activity of any form followed by supine rest can influence the attentional processes.

Conclusion

Scientific research has shown that yogic techniques produce consistent and beneficial physiological changes. A few weeks of disciplined yoga practice can lead to improvement in many physiological and psychological functions. It is claimed that suryanamaskar practice improves general health and fitness. It improves pulmonary, cardiovascular function. Suryanamaskar is the combination of asana and Pranayama and it is simple to practice, consumes only less time so that children can practice it every day. Yoga develops many wonderful qualities, and makes the children healthy for their future life. It also sharpens the ability to focus, self-confidence, and helps to develop self-discipline. We therefore conclude that suryanamaskar should be practised by children every day to get these beneficial effects.

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