

# Surya Namaskaar for Holistic Well Being: A Comprehensive Review of Surya Namaskaar

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## DESCRIPTION

The surya namaskar or sun salutation yoga asana is one of the oldest yoga exercises known to man. The exercise has been practiced for centuries and is one of the most popular and well acclaimed yoga postures. The exercise consists of 10 sequences, with each posture counteracting the preceding one, producing a balance between flexion and extension, performed with synchronized breathing and aerobic activity. A number of yoga researchers have analyzed the various benefits of the exercise but there is a need to emphasize on the rightful way the exercise is intended to be executed. The exercise is combined with a proper breathing sequence and the execution of this exercise is essentially a slow synchrony with breath. The execution must be rhythmic in nature, with each posture and its transition being executed in smooth cadence and the postures must be performed with minimal jerks or ungainly movements. It is therefore imperative that the exercise be performed with grace and consistency. In this context grace indicates to a smooth flow of the exercise without any jerks or ungainly movements during the exercise and during the transition of postures. Consistency is the ability to perform a number of cycles of the exercise, such that, each cycle is identical to another in execution. Such an execution requires immense focus and concentration, which benefits both mind and body. So, how does one verify if the exercise is being performed correctly? The answer lies with motion analysis with body mounted inertial sensors. Body mounted Inertial Measurement Units (IMU) have been popularly used in biomechanical analysis and motion analysis. These devices are a combination of accelerometers, gyroscopes and magnetometers. A study conducted by the yoga and biomechanics laboratory has focused on the analysis of the grace and consistency of the sun salutation exercise. By making use of the IMU combined with specific post-processing techniques commonly used in biomechanical signal processing,

such as the Hilbert Huang transform and Wavelet transform, the grace with which the exercise is executed and the consistency with which it is repeated, can be determined. A study conducted by also focused on the transition phases of the sun salutation exercise with the objective to determine the grace of execution. By making use of IMU's and processing the data to isolate the kinematic component of acceleration, the transition phases in the exercise with high kinematic accelerations were identified and termed as "rough transitions". The analysis helps point out those transition phases in the exercise, where there is need to improve upon the grace of execution. A study conducted by aimed at comparing the slow and fast version of the exercise. The study revealed that there was a significant decrease in the diastolic blood pressure whereas the fast version of the exercise caused increase in the systolic blood pressure. It can be gleaned from the study that the exercise, being a combination of synchronous breathing and physical postures, serves as a form of meditation as well as an exercise, which thereby helps maintain lower levels of diastolic blood pressures during the exercise. The exercise, although slow in execution does not lag behind in calorie count. The Mody, study concluded that regular practice of sun salutation may help maintain or improve cardiorespiratory fitness, as well as promote weight management. Also, the joints were subjected to sub maximal loadings thus ensuring that none of the joints were overstressed.

## CONCLUSION

To conclude, I would like to say that although the world of yoga research is aware of the numerous benefits of the sun salutation exercise, little has been done to dwell deep into the finer nuances of this ancient yoga exercise, such as the method of performing the exercise. Much of the research is focused on the benefits of the exercise but little has been done to ensure that the exercise is performed in the way it is intended to be practiced, that is with graceful movements and consistent repetitions.

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