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## The impact of Surya Namaskar exercise on agility performance among residential junior football players

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### Abstract

This study aimed to examine the effect of Surya Namaskar exercise on the agility performance of junior football players in the Sport to Football Academy in Wayanad, Kerala. A total of 20 players between the ages of 14 and 17 were chosen to participate in the study. The researchers focused on two main factors: the Surya Namaskar training (which was the independent variable) and agility (which was the dependent variable). Data was collected through tests conducted before and after a 6-week period of Surya Namaskar training. The participants underwent both the initial test and the final test.

The researchers used descriptive analysis and paired t-tests to compare the average agility scores before and after the training. They set a significance level of 0.05 to determine if any differences observed were statistically significant. The results of the statistical analysis showed that the calculated t-value (6.339) exceeded the tabulated t-value (2.024), and the p-value (0.000) was less than 0.05. This indicates that there is a significant difference between the scores obtained in the pre-test and post-test agility evaluations. In simpler terms, the study's findings clearly show a noticeable improvement in agility after the participants underwent the Surya Namaskar training.

**Keywords:** Surya Namaskar training, football players, residential junior, including coordination

### Introduction

Agility is the ability of the body or parts of the body to change directions rapidly and accurately (Barrow and Rojemary Megee 1973) <sup>[15]</sup>.

Agility is a crucial attribute in football that plays a significant role in a player's overall performance. It refers to the ability to change direction quickly and efficiently while maintaining balance and control. A footballer's agility enables them to navigate through tight spaces, evade opponents, and execute swift changes in direction during matches.

Agility in football relies on various factors, including coordination, balance, reaction time, speed, and flexibility. By improving these aspects, players can enhance their agility and gain a competitive edge on the field. One essential element of agility is coordination. Footballers need to synchronize their movements effectively to change direction rapidly. This involves proper communication between the brain and muscles, allowing players to execute quick turns, cuts, and pivots.

Balance is another crucial aspect of agility in football. Players must maintain stability while making rapid changes in direction or engaging in quick movements. Good balance enables footballers to stay on their feet and retain control over their bodies, even in challenging situations.

To maximize agility performance in football, a well-rounded training program is essential. It should include a combination of coordination exercises, balance drills, reaction time training, speed work, and flexibility exercises. By consistently focusing on these aspects and incorporating them into their training routine, footballers can improve their overall agility, enabling them to excel in their positions and contribute effectively to their team's success.

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.

Surya Namaskar, also known as Sun Salutation, is a dynamic sequence of yoga postures that combines movement, breath control, and mindfulness. It is a popular practice in the ancient Indian discipline of yoga and offers numerous physical benefits.

One of the primary advantages of Surya Namaskar is its ability to improve flexibility. The sequence involves a series of forward and backward bends, which gently stretch and lengthen the muscles of the body. Regular practice can gradually increase the flexibility of the spine, shoulders, hamstrings, hip joints, and other major muscle groups. Enhanced flexibility promotes better posture, reduces the risk of injuries, and increases overall mobility.

Surya Namaskar also acts as a complete body workout, engaging various muscle groups simultaneously. The continuous flow of postures stimulates the muscles and builds strength. It targets the arms, chest, abdomen, glutes, and legs, thereby toning and sculpting the entire body. Regular practice can help develop lean muscle mass and increase muscular endurance.

The twelve asanas within the practice of Surya Namaskar are specifically curated to invigorate and stimulate various muscle groups, joints, and organs throughout the body. Surya Namaskar, also known as Sun Salutation, encompasses a comprehensive meditative technique incorporating a sequence of asanas such as Pranamasan (Prayer Pose), Hasta Utthanasan (Raised Arm Pose), Padahastasan (Forward Bend Pose), Ashwasanchalanasan (Equestrian Pose), Ashtanaga Namaskar (Eight-Limbed Pose), Bhujangasan (Cobra Pose), and Parvatasana (Mountain Pose). Each of these asanas serves a distinct purpose in activating different parts of the body, fostering a harmonious connection between the physical and meditative aspects of the practice.

**Objective of the study:** To identify the significant difference between pre-test and post-test scores in agility.

### Methodology

A group of 20 young football players, who are enrolled in the Sport to football academy in Wayanad, Kerala, were chosen as junior residential players. These players fall within the age range of 14 to 17 years. To assess their agility performance, the participants underwent a pre and post-test using the 4x10 shuttle run. The objective was to measure the time taken to complete the shuttle run.

**Experiment Design:** The study utilized a single-group design, where the participants' agility was assessed before and after a six-week training program involving Surya Namaskar exercises. The pre-test was conducted prior to the start of the training, while the post-test was administered after six weeks of Surya Namaskar practice.

During the training program, the participants engaged in Surya Namaskar sessions six days a week, from Monday to Saturday. Each session lasted for 20 minutes and included a combination of slow and fast-paced Surya Namaskar exercises.

The purpose of this design was to evaluate any changes or improvements in the participants' agility after undergoing the Surya Namaskar training. By comparing the pre-test and post-test scores, the study aimed to determine the effectiveness of the six-week training program in enhancing the participants' physical performance.

**Statistical Procedure:** The data were examined using descriptive statistics and a paired t-test. A significance level of 0.05 was chosen.

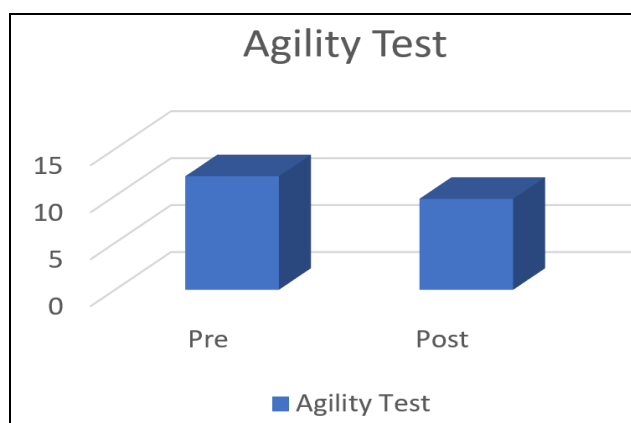
**Table 1:** Comparative and descriptive statistics of pre and post-test of agility

Variable	Test	N	Mean	Std. Deviation	Std. Error Mean	T-Value	P-Value
Agility	Pre	20	12.098	1.618	0.361	6.339	.000
	Post		9.697	0.501	0.112		

\*Significant at 0.05

### Result and Findings of the study

Above table reveals that the calculated t-value (6.339) was greater than the tabulated t-value (2.024), and the p-value (0.000) is less than 0.05, there is significant difference between pre-test and post-test scores of agility test.



**Fig 1:** Graphical representation of mean score of pre and post agility test

As Shown in fig.1 the mean Score of pre agility test is (12.098) was less than mean score of post agility test (9.697).

### Discussions

The primary objective of this six-week single group design study was to investigate the impact of Surya Namaskar exercise on the agility performance of football players. The study aimed to determine whether engaging in Surya Namaskar exercises would lead to improvements in agility performance among the participants. The research findings revealed a statistically significant difference in the post-agility test scores of the football players.

The results indicate that Surya Namaskar exercises have the potential to enhance the agility performance of football players. One noticeable improvement observed in the post-test scores was the increased speed of the players. This improvement in speed could potentially be attributed to the enhanced flexibility, strength, balance, and coordination that the players acquired through engaging in Surya Namaskar exercises.

Considering the positive outcomes observed in this study, it is highly recommended that football players incorporate Surya Namaskar exercises into their training regimen. The exercises have been shown to have a substantial impact on performance and their inclusion can potentially contribute to further improvements in agility and overall athletic ability.

The findings from this six-week single group design study indicate a significant improvement in the agility performance

of football players following the implementation of Surya Namaskar exercises. The observed enhancements in speed can likely be attributed to improved flexibility, strength, balance, and coordination. Based on these results, it is strongly advised that football players consider integrating Surya Namaskar exercises into their training routine to optimize their performance on the field.

### Conclusions

Based on the analysis of the data, the calculated t-value (6.339) was found to be higher than the tabulated t-value (2.024). Additionally, the obtained p-value (0.000) is less than the commonly used significance level of 0.05. These findings indicate a significant difference between the scores of the agility test before and after the intervention.

The results of this study, which employed a single group design over a six-week period, suggest a meaningful improvement in the agility performance of football players following the incorporation of Surya Namaskar exercises. The observed enhancements in speed can likely be attributed to the positive effects of these exercises on factors such as flexibility, strength, balance, and coordination. Therefore, based on these outcomes, it is strongly recommended that football players consider integrating Surya Namaskar exercises into their regular training routine to optimize their performance on the field.

The study findings clearly demonstrate a notable distinction between the pre-test and post-test results when evaluating the participants' agility.

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