



EFFICACY OF THE CORE STRENGTHENING AMONG THE VOLLEYBALL SPIKERS BY USING ISHA'S HATHA YOGA

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ABSTRACT

Background and Purpose: - Spiking is the central element to score a point which need maximum force to hit the ball. Where as the power transfer from the core muscles of the body. The purpose of the study is to evaluate the effect of yoga (Angamardhana) on core strength among volleyball spikers.

Materials and Methods: - Thirty subjects participated in the study. These subjects conveniently allocated in two groups. Group A (controlled group, n=15) and Group B (experimental group, n=15). Controlled group received conventional core exercises and experimental group recieves Angamardhana (Isha Hatha Yoga).

Results: - There is statistically significant difference in between the Group A and Group B after the post readings of 8-weeks training.

Conclusion: - This study concluded that angamardhana (Isha's Hatha Yoga) is effective in improving the spiker's performance by strengthening the core muscles.

Keywords: - Volleyball, Spiking, Angamardhana (Isha's Hatha Yoga), Core muscles.

INTRODUCTION

Volleyball was invented in 1895 by William J. Morgan in the Philippines. During 1964 volleyball was first time recognized as summer Olympic sport. It is a non contact sport, which have 6 players in each team, two teams face each other in different terrain like beach, grass and indoor. In the '80s and early '90s, it becomes very popular throughout the world. Federation international volleyball (FIVB), started in April 1947. Its headquarters is at Lausanne, Switzerland¹⁹.

The core is also known as "power region" or "powerhouse". Where the body's center of gravity present in this region and most importantly all movements start⁶. The muscular control that is required in this region to maintain the functional stability of the lumbar spine is known as core power¹². Core strength leads to better balance and stability, that important for most sports and other physical activities depend on stable core muscles, leads to better balance and stability. Core strengthening increases the performance of spiker by transferring the power from the lower body to the upper body¹⁶, whereas these abdominal and pelvic muscles are acts as a fulcrum, where the upper and lower body acts a movable lever^{5,11,16}. In volleyball, vertical jump is a critical aspect for a spiker¹³. Core strengthening exercises increase vertical jump parameters¹⁸. Volleyball players are trained to jump more than athletes of any other sports¹. The word "yoga" comes from a Sanskrit, which means union or yoke or to join. Yoga is a combination of exercise, breathing, and meditation²⁰. Practicing yoga helps in establishing functional balance and stability⁷. Isha Hatha yoga is referred to as the practice of physical yoga postures. Three qualities of universal energy are present in every physical, Sattva (purity); Rajas (activity, passion, the

process of change); and Tamas (darkness, inertia)⁸. Hatha yoga can be translated into the yoga of activity and yoga of balance where “ha” is “sun” and “tha” is known as “moon”. Isha Hatha Yoga is a technique for these elements (body, mind, consciousness). Angamardana, a fitness system rooted in yoga, gave a good opportunity for everyone to reach a peak in physical and mental health. Yoga increases strength, endurance, flexibility, and self-control^{10,15}, the hatha yoga increases the vital capacity of the players³. Sports may include yoga exercises that have an effect on core strength¹⁴.

METHODOLOGY

STUDY DESIGN: - This study is designed as experimental study, pre and posttest values are taken in this study.

STUDY SETTING: - This study was taken in GEMS college playground and ARTS college ground in Srikakulam.

POPULATION AND SAMPLING: -

In this experimental study the number of samples taken are (n=30), on convenient method. In this study we take 30 volleyball players after screening inclusion and exclusion criteria (only males, with age between 16 to 21, district and college level players), After obtaining consent form 30 subjects, they were allocated into 2 groups. Experimental group and control group.

CONTROL GROUP: - Conventional core exercises

EXPERIMENTAL GROUP:-Isha's hatha yoga angamardhana

Table- **Population and sampling:** -

GROUP	NO. OF SUBJECTS	TYPE OF TRAINING
GROUP-A	15	CONVENTIONAL CORE EXERCISES
GROUP-B	15	ANGAMARDHANA (ISHA'S HATHA YOGA)

INCLUSIVE CRITERIA: -

- Age group - 16-21
- Gender - Males
- Good physical condition
- No injuries at the time of the study

EXCLUSIVE CRITERIA: -

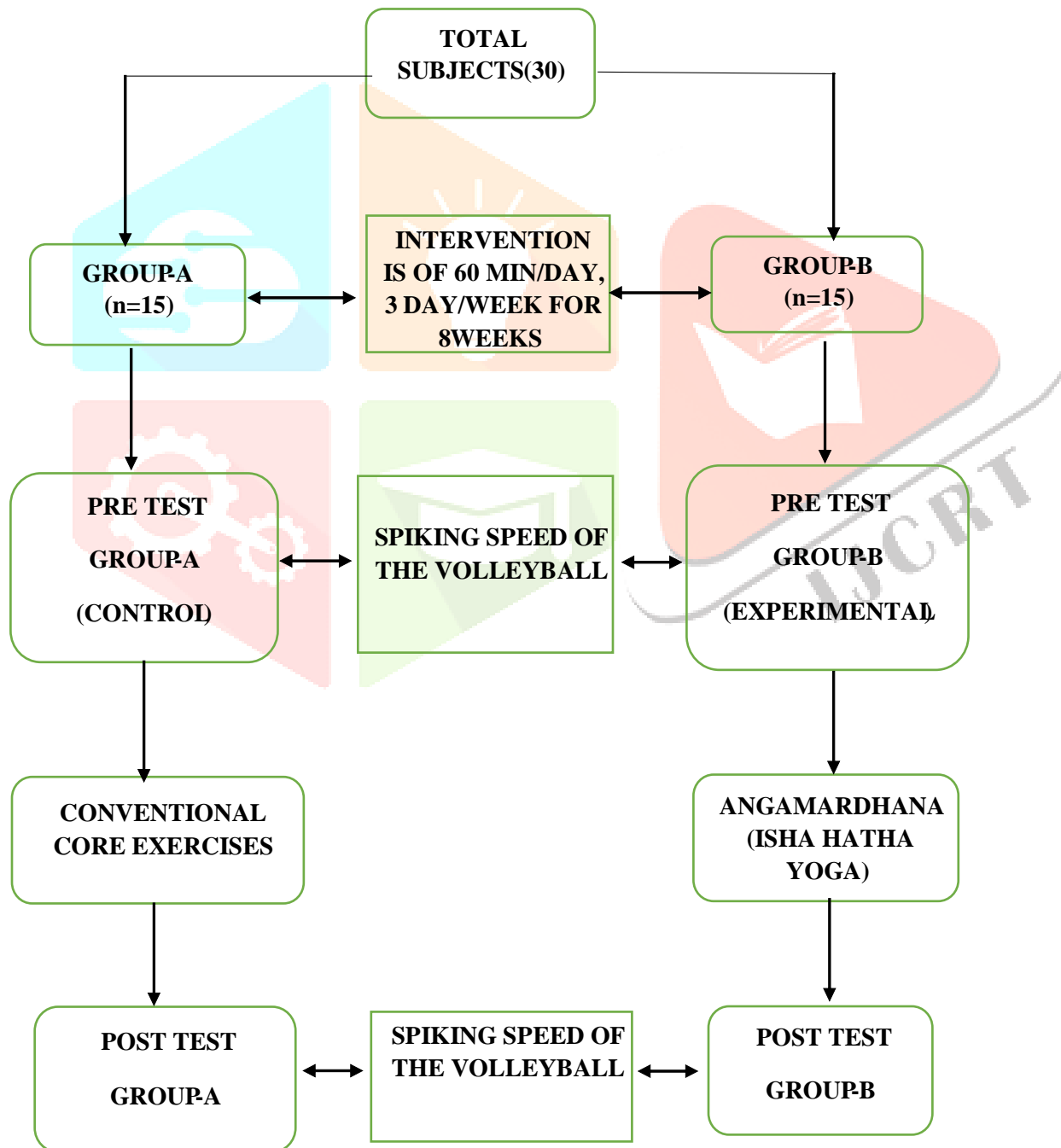
- Those who are having musculoskeletal, cardiopulmonary, neurological disorders.
- Those who have history of surgery before 12 months, also exclude the samples with injuries at the time of the study.

OUTCOME MEASURES: - Speed of volleyball when spiking

INTERVENTIONS

GROUP-A: - In this control group, the sample will follow the described procedure twice a day, 3 times a week on alternate days. This control group followed an 8week regular exercise program that involves planks, side planks, supine bridge⁹, crunches², flutter kicks, hill climb exercises. Before these exercises are started, mild warm-up and stretching are done. This group had performed planks for 30 seconds, crunches for 30 seconds, flutter kicks for 30 seconds, side planks for 30 seconds, cross arm crunches for 15 repetition maximum (RM), hill climb exercises are done 15 repetition maximum (RM), rest for 30 seconds in between each exercise, two sets are performed by each player. These are exercises done by the control group, twice a day on alternate days before players start the game (volleyball).

GROUP-B: - In this experimental group, the sample will follow the described procedure twice a day, 3 times a week on alternate days. This group followed an 8-week Angamardhana (isha's hatha yoga) program. Before started Angamardhana mild warm-up and stretching are done. For the first two weeks Angamardhana was carried slowly for 60 minutes, and then on progression time for Angamardhana was reduced by fast movements, before players start the game (volleyball).

FLOW CHART

STATISTICS

The mean and standard deviation of Pre and Post variables of speed gun app within the Group A was 85.133 ± 10.921 and 99.066 ± 11.756 respectively. Paired t-test was done within the Group A for the variables of speed gun app measured when spiking the ball is to check the changes within the group. The paired t-test value was 16.222 ($p < 0.05$). The result for the variable was significant which showed that there were significant changes in the group.

The mean and standard deviation of Pre and Post variables of speed gun app within the Group B was 89.133 ± 11.019 and 108.666 ± 12.263 respectively. Paired t-test was done within the Group B for the variables of speed gun app measured when spiking the volleyball is to check the changes within the group. The paired t-test value was 21.727 ($p < 0.05$). The result for the variable was significant which showed that there were significant changes in the group.

Table: Mean and S.D of spiking performance at Pre and Post interval for the subjects of Group A and Group B

Spiking Performance	GROUP A		GROUP B	
	MEAN	S.D	MEAN	S.D
PRE	85.133	10.921	89.133	11.019
POST	99.066	11.756	108.666	12.263
MD	13.933	0.835	19.533	1.244

DISCUSSION

As the most of the studies conducted on volleyball spikers, our study was to evaluate that angamardhana (Isha's Hatha Yoga) is effective than conventional exercises on core strengthening (Sendhil kumar et al, 2016). Subjects in experimental group performed

Angamardhana (Isha's Hatha Yoga), and the controled group performed conventional core exercise both groups got mastery over the movements and performed with speed and rhythmically (Sendhil kumar et al, 2016).

The core is known as power house of the body, where as the skilled movements are performed by the extrimities by tranfering power from core to the extrimities. Core strengthening increases the performance of spiker by transferring the power from the lower body to the upper body (Kibler et al. (2006); Grif Fig 2005; Saeterbakken AH et al, 2011). In this study by strengthening core muscles there was a significant result in spiking performance as the above study stated. We observed that core strengthening exercises increase, dynamic balance and performance in volleyball players, (Sharma A, et al. J Sports Med Phys Fitness. 2012).

Core strengthening increase the spiking speed of a spiker, by generating power in rotation between hip and shoulder, due to the diagonal nature of core muscles, they work together as a unit that generates power most effectively known as "Serape Effect" (Grif Fig 2005). The movements of the trunk over the pelvis control and transfer force to terminal segments in integrated athletic activities. Core training has been widely used by trainers recently to develop the game performance of volleyball, basketball, soccer, swimming players. Recent studies showed significant effects of core strengthening on the performance of athletes.

Both angamardhana (Isha's Hatha Yoga) and conventional exercises showed good results. But compared to conventional exercises angamardhana showed better results in volleyball spikers. There is rhythm and speed in performing Isha's Hatha Yoga (Angamardhana). On 21 days training of Angamardhana show good results on mastery over the body (Senthilkumar et.al,2016). Conventional core exercises and increase the strength of involved muscles, but results in frequent recurrence rates because of their effectiveness for short period only. The conventional back exercises strengthen the involved muscles like abdominals, which are ineffective after 45 degrees of trunk curls (Dr. Venkata Naga Prahalada Karnati et al; 2015). In our study, we found that there is improvement in spiker speed in both control and experimental group, as we observed that experimental group showed $P > 0.05$, where as the control group showed $P < 0.05$. This shows that, there is significant difference between the control and experimental groups.

The purpose of this study is to investigate the efficacy of core strengthening among the volleyball spikers by using yoga. There is no significant difference found in any variables of the pre-test values of the groups. There was a statistically significant difference between the pre and post-test values of the experimental group, which shows there is an increase in spiking performance. The statistically significant difference seen in pre and post-test values of the control group also. We found there is a significant difference between the post and post-test values of experimental and control groups. This investigates that both groups get improved in their spiking performance, but compared to the control group the experimental group shows more significant difference in spiking performance. This might be because of morphological and muscular development nerve connection and signal pathways.

CONCLUSION

This study concluded that angamardhana (Isha's Hatha Yoga) is effective in improving the spiker's performance by strengthening the core muscles.

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