



## Experiment

# Effect Of Selected Asanas On Back And Hand Strength Of Basketball Players

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## ABSTRACT

**Aim:** This research was carried out with the objective of determining whether there was any possible relationship between the practice of selected asanas and the strength of the back and hands of basketball players at the L.N.I.P.E. Gwalior campus.

**Methods:** 20 men Basketball players of LNIPE were randomly selected as subjects for the study. The age of the subject was 20-30 years. The data were examined by applying paired t-test. The level of significance was 0.05.

**Results:** Results of paired sample t- test in the group showed significant change in back and hand strength ( $P < 0.05$ ) after 6 weeks of yoga intervention. There was a positive effect of Yogasanas on Back and hand strength.

**Conclusions:** Based on the result it can be concluded that certain asanas can significantly increase the strength of the back and hands of basketball players. Yoga practices directly impact on the physical indicators of players and are effective in improving the physical fitness components of basketball players.

## INTRODUCTION

During an actual game of basketball, a player's physical conditioning is focused on improving the aerobic capacity, speed, agility, muscular strength, and power, as well as the ability to change directions unexpectedly during the game. Basketball is a team sport that consists of a lot of high-intensity activities such as jumping, sprinting, shuffling, and changing directions often. (1) The term "back strength" refers to the condition of the muscles in the back and neck which will enable the muscles to better support the spine and withstand potential strains that can cause back and neck pain. (2) Having a strong back is an important part of training. It is the base for maximum progress in training, and it is crucial for a strong back in order to achieve maximum success. Having a strong back will make the training more sustainable, improve the posture and lower the chance of getting injured. (3) It is important to emphasize that the strength of the muscles in the hands and fingers of a

child increases as he or she grows and participates in everyday activities. Activities such as climbing, playing with toys, or even scribbling with crayons are all things that help to develop and strengthen these muscles. In addition, hands and fingers strength is imperative because it is required to conduct many activities every day, such as doing up buttons and zips, climbing monkey bars, or cutting a piece of steak into small pieces at mealtimes. The strength of the hands and fingers also assists in developing the endurance required to carry out activities such as writing a full page. Pinch strength is a term used to refer to the strength of the thumb and index finger (and, if necessary, the middle finger), while grip strength refers to the strength of the entire hand. Grip strength refers to the strength of the whole hand. As a basketball player, you want to dunk the ball, spin the ball on your fingers, and palm the basketball, and these are three things that is needed when it comes to basketball. In order to palm a ball well, a strong grip is required. A stronger

grip helps in the improvement of overall game. As it helps to dribble the ball more efficiently and shoot better with a higher level of “touch”. In basketball, hand grip strength plays an important role in various movements as these movements require continuous flexor muscles in the wrist and digits, as they are continuously used when catching, holding, shooting, and throwing the ball. Therefore, assessing hand grip strength is an effective means of determining the level of proficiency in basketball for prepubertal, adolescent, and adult athletes.(4) Yoga has become an essential component of athletic training. Yoga has an important part in sports, whether you are an athlete, swimmer, tennis player, or ballplayer. If you’re wondering why, come learn about the numerous advantages of yoga for sports.(5) Yoga offers several advantages for athletes, and it is worth a try if you want to improve your strength, flexibility, and balance. It may help you increase your range of motion, mobility, and coordination, which can all help you perform better and avoid injury.(6) It is important to note that yoga is a low-impact exercise that build up muscle strength throughout the body without causing excessive harm to the joints. Yoga is suitable for everyone, including beginners and clients who have difficulty or experience pain while lifting more strenuous weights. Yoga has many benefits for fitness and overall health as well as being a great alternative to weight training.(7) Through hand yoga exercises, muscles around joints are elongated and strengthened, giving a better support for movement on a daily basis. Yoga, in addition to reducing the chances of injury and damage to the hands, wrists and fingers, it will also improve the flexibility of the hands, wrists and fingers as well as their range of motion. According to the following explanation, Yoga increases the blood flow towards the hands allowing them to be able to move with greater ease as well as it reduce the risk of overstretching or straining due to the increased blood flow.(8) Yoga can mobilise joints, stretch tissues and ligaments, tone muscles, increase spine flexibility, and strengthen internal organs. Stretching, relaxation, deep breathing, increased circulation, and focus are the foundations of yoga activities. As a result, yoga is advantageous to a professional athlete because it improves attention, fosters a calm and relaxed mind, and improves the mind / body connection, allowing an athlete to have higher muscular coordination and fluidity of movement. Yoga is also useful to a professional athlete since it improves overall health and vitality, strengthens internal organs such as the heart, lungs, and liver, and aids in the maintenance of fitness and agility. Yoga also aids in stress reduction and self-development.(9)

## **METHOLOGY**

20 men Basketball players of LNIPE were randomly selected as subject for the study. The age of subject was 20-30 years. The requirement of the study was explained to all the subjects. All the subjects were readily agreed to undergo the testing and training programs. The subjects were thoroughly acquainted with the testing procedure as well as exercise schedule so that there was no ambiguity regarding the effort that was required on their part and hardships they might endure. A 6 weeks yoga intervention was given in which the subjects participated in yoga program of four days per week for 35-40 minutes along with their regular education program. In accordance with the available literature, the findings of the related research studies, and keeping in mind the specific purpose of the study, the following variables were selected for the study based on the results of the literature review and results of the research studies. Physical Variables- Hand Strength, Back Strength. Hand strength was measured by hand dynamometer and the score was recorded to nearest kilogram. Back strength was measured by back dynamometer and the score was recorded to nearest kilogram. Statistical technique to determine the significant differences in mean in score of hand strength and back strength for men Basketball players, paired t-test was used. The level of significance was set at 0.05. The software which is used for the data calculation was SPSS 26.

Training program is shown in table1.1

| Weekly program           | Asana   | TIMING (min) |
|--------------------------|---|--------------|
|                          | Warm up/ loosening exercise   | 5-10         |
| Frist week               | Padahastasana, Ardh chakrasana, Chaturangasana, Side ward chaturangasana (left, right), Parvatasana, Bhujangasana   | 15-20        |
| Second week              | Padahastasana, Ardh chakrasana, Chaturangasana, Side ward chaturangasana (left, right), Parvatasana, Bhujangasana, Paschimottanasana  | 15-20        |
| Third week               | Padahastasana, Ardh chakrasana, Chaturangasana, Side ward chaturangasana (left, right), Parvatasana, Bhujangasana, Paschimottanasana, Adhomukhsavasana, Setubandhasana  | 15-20        |
| Four, five and six weeks | Chaturangasana, Side ward chaturangasana (left, right), Parvatasana, Bhujangasana, Paschimottanasana, Ardhomukhsavasana, Setubandhasana, Vashisthasana, Setubandasana, Kashypasana, Dhanurasana, Padam myurasana, Vakasana, Bhujagasana, Hansasana, | 20-25        |
|                          | Shavasana   | 2            |

## RESULT

The statistical analysis of the data of selected strength parameters of Hand and back was collected from 20 male Basketball player (student) at Lakshmibai National institute of physical education, Gwalior. One experimental group (20 subject) was to check the effect of selected asana on Basketball player on hand and back strength. The data was examined by applying paired t-test. The level of significance was 0.05.

**Table 1.2**  
Paired Samples Statistics for back strength and hand strength

|        |                    | Mean     | N  | Std. deviation | Std. error mean |
|--------|--------------------|----------|----|----------------|-----------------|
| Pair 1 | Pre back strength  | 115.7600 | 20 | 17.93284       | 4.00990         |
|        | Post back strength | 118.5800 | 20 | 17.60519       | 3.93664         |
| Pair 2 | Pre hand strength  | 41.5850  | 20 | 3.29070        | .73582          |
|        | Pre hand strength  | 43.7150  | 20 | 3.30124        | .73818          |

Table -1.3

| Paired Samples Test |                    |                    |                |                 |   |         |        |    |                    |
|---------------------|--------------------|--------------------|----------------|-----------------|---|---------|--------|----|--------------------|
|                     |                    | Paired Differences |                |                 |   |         | T      | Df | Sig.<br>(2-tailed) |
|                     |                    | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |         |        |    |                    |
|                     |                    |                    |                |                 | Lower                                     | Upper   |        |    |                    |
| Pair 1              | Pre back strength  | -                  | 1.042          | .23313          | -   | -       | -      | 19 | .000               |
|                     | Post back strength | 2.82000            | 57             |                 | 3.30794                                   | 2.33206 | 12.097 |    |                    |
| Pair 2              | post hand strength | -                  | .7477          | .16719          | -   | -       | -      | 19 | .000               |
|                     | post hand strength | 2.13000            | 0              |                 | 2.47993                                   | 1.78007 | 12.740 |    |                    |

shows value of t-statistics is 12.097 for Back strength. This t- value is significant as the p-value is 0.000 which is less than 0.05. it may be concluded that the Basketball Players Pre & Post testing Back strength program is not same. Here SPSS provide the significance value for two tailed testing and no more conclusions regarding the effectiveness of the program. Therefore, to check the effectiveness of the program one-tailed test should be used. For one Tailed test, the value of tabulated t, at 0.05 level of significant (N-1= 19) df can be seen from table 1.3, which is equal to 2.093. Since and 19 calculated value of t (=12.097) is greater than tabulated  $t^{0.05}(19=1.729)$  concluded that the Yoga training program is effective for the Back Strength. The value of t-statistics is 12.740 for Hand strength. This t- value is significant as the P-value is 0.000, which is less than 0.05, concluded that the Basketball Player's Pre & Post testing Hand strength program are not same. Here SPSS provides the significance value for two tailed testing and no more conclusions regarding the effectiveness of the program. Therefore, to check the effectiveness of the program one-tailed test should be used. For one Tailed test, the value of tabulated t at 0.05 level of significant (N-1= 19) df can be seen from table which is equal to 2.093. and 19 Since calculated value of t (=12.740) is greater than tabulated  $t^{0.05}(19=1.729)$  concluded that the Yoga training program is effective for the Hand Strength.

## DISCUSSION

The purpose of the present study was to find out the effect of yogasanas on Hand and Back strength of Male Basketball players. Data were collected under the Researcher's observation, 20 Male Basketball players (student) of LNIPE were selected as a subject for checking Hand and Back strength. The pre data and post data of Hand and Back strength were examined prior to and after the 6 weeks of a training period. The data collected from the single group before and after the experimental period was statistically examined to find out the significant improvement using the analysis of paired t-test. In all cases, the criteria for statistically significance were set at 0.05 level of confidence ( $P<0.05$ ). To give credibility to our research we found that many research discussed our variable as we can see As an immediate consequence, high-frequency yoga breathing may have a role in enhancing hand grip strength.(10) Yoga outperformed a self-care book in terms of increasing function and lowering persistent low back pain, and the advantages lasted at least several months.(11) After 12 weeks of yoga practice, there was a large reduction in visual and auditory RTs and a considerable rise in respiratory pressures, breath holding durations, BP and HGS.(12),(13) The ashtanga yoga group exhibited lower diastolic blood pressure and felt stress, as well as higher upper and trunk dynamic muscle strength and endurance, flexibility, and health perception. Only trunk dynamic muscle strength and endurance, as

well as flexibility, improved in the hatha yoga group. According to the research, the fitness advantages of yoga practice vary depending on the style.(14) One research reveals that 6 months of yoga instruction increases lung function, inspiratory and expiratory muscular strength, and skeletal muscle strength and endurance. Yoga should be taught in schools in order to improve students' physiological functioning, general health, and performance.(15) Yoga asanas directly effect on player's preparedness such as vertical jump, speed endurance, quickness, ability to maintain balance in free throw with the movement, three-pointers, tactical application etc.(16) Six weeks of yoga training help beginner and children to develop their physical fitness levels and basketball-related skills.(17),(18),(19)

## CONCLUSION

From the result of the study, it can be concluded that yogic training program can improve the back and hand strength. 6 weeks of systematic and well-planned yoga training program significantly improves the muscular strength of the back and hand of basketball players which can directly improve their performance in the actual game.

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