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Effect of *Anutaila Nasya* on Shoulder and Chest Muscular Strength of Athletes

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ABSTRACT

Physical and mental constitution plays a vital role to form a sportsperson. Sports and Exercise are essential part of human life. It helps in development of an individual at physical, mental, social, cultural and spiritual level. Neck and shoulder joints are primarily used in all activities. Along with the daily exercise, help of Ayurveda in training of sportsmen can give lucrative results. *Nasya* is one of the effective ways to improve the musculature of the neck, shoulder and chest. This study is randomized controlled clinical trial. The study was carried out in 2 groups, of only 100 male regular healthy athletes. **Aim:** To assess the effectiveness of *Anutaila Nasya* on muscular strength of shoulder and chest in Athletes. **Methodology:** Sample size: 100 Athletes were selected. **GROUPING:** 1. **Experimental group:** This Group received *Anutaila Nasya* along with their regular exercise for 3 months daily. 2. **Control group:** This Group was kept only on exercise without *Nasya* for 3 months. **Agegroup:** between 20– 30 year. **Results** Chest and shoulder muscular strength increases by doing *nasya* therapy along with exercise after 90 days.

KEYWORDS

Nasya, Pratimarsha Nasya, Muscular strength, Sports, exercise, Vyayama



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INTRODUCTION

Ayurveda is the science of knowledge of *Ayu*¹. It emphasizes on the importance of maintenance of health of healthy persons and curing the disease of ill^[2]. *Maharshi Sushrut* explains the effect of *Vyayam* on body in detail³. *Vyayam* makes the body stout and strong. It helps in symmetrical growth of limbs and muscles. It improves the complexion, texture of the skin. It stimulates the *Agni* (power of digestion). It keeps the body light and glossy, firm and compact. It enhances the power of endurance against the fatigue and weariness and variations in temperature, when performed correctly⁴.

Physical activity or exercise can improve health and reduce the risk of many life style diseases in this present era. In current years people are facing many health problems to which allopathic medicines cannot be a perfect solution. Sports medicine is a branch of medicine that deals with physical fitness and treatment and prevention of injuries related to sports and exercise. If Ayurvedic medicine is incorporated with sports medicine, it can give a better solution for treatment of athletes.

In Ayurveda many treatments modalities has been mentioned for betterment of health. One of them is *Nasya* procedure. It tones the nerves and muscles of neck,

shoulder and chest and helps in prevention of injuries in these parts⁵.

Athletes consume various health supplements to enhance exercise and athletic performance, which ultimately may show adverse effects on the body in long term. *Nasya* can be used as an adjuvant therapy as a solution in above circumstances.

AIMS AND OBJECTIVES

Aim:

To assess the effectiveness of *Anutaila Nasya* on muscular strength of shoulder and chest in Athletes

Objective:

- To quantify the shoulder muscles and chest muscles strength after *Anutaila Nasya* with the help of 1 RM of Overhead Press and 1 RM of Chest Press, respectively.

Operational Definitions of the Term Used

1. Muscular Strength:

Muscular strength refers to the amount of force **amuscle** can produce with a single maximal effort. The size of your **muscle** fibers and the ability of nerves to activate **muscle** fibers are related to **muscle strength**. It is measured during **muscular** contraction. It is made sure that all repetitions should be performed



in same speed of the movement and same range of motion with the interval of 3-4 minutes in between. The maximum final weight lifted by the volunteer was considered as 1 **repetition max** or absolute 1 RM

2. Athlete: The person who do 3 days cardiovascular training and 3 days weight training alternately are considered as athlete for this particular study

Study Design: An open randomized controlled clinical study.

MATERIALS AND METHODS

Materials:

1. Experimental group:

Equipment needed for measuring strength of shoulder and chest muscles and arm, chest girth are as follows:

- Dumbbells
- Bench
- Mat
- Measuring Tape

Medicines:

- *Anutailamof* AVP- (Arya Vaidya Pharmacy – Coimbatore). Approved by FDA.

2. Control Group:

Equipment need for measuring Strength of Shoulder and Chest muscles and Arm, Chest Girth are as follows:

- Dumbbells

- Bench
- Mat
- Measuring Tape

Medicines: This group did not receive any medicine they were only put on their regular exercise

Methodology:

Sample size: 100 Athletes were selected.

Grouping: Study trial consist of 2 groups of 50 male candidates in each group

1. Experimental group: This group received *AnutailaNasya* along with their regular exercise.

2. Control group: This Group was continued on only Exercise without Nasya

Dosage: 2 drops of *Anutaila* per nostrils daily in the morning.

Follow – up: Day 0- Visit 1

Day 30= Visit 2 =1st Follow up after 1st Month,

Day 60= visit 3 = Second Follow up after 2nd month

Day 90 = visit 4 = Third Follow up after 3rd Month.

Total duration of study: 3 months.

Ethics committee approval: Study trial was started after Institutional Ethics Committee approved and informed consent of all the subjects was obtained and documented.

Selection criteria

Inclusion criteria:



- Male athletes between age gr. 20 yr. – 30 yr.
- Athletes working out in the gym at least for 6 months for minimum 1 hr. 6 days per week.
- Athletes with no health complaints and having no systemic diseases.
- Athletes those who are willing to give informed consent and ready to abide with the trial procedures.

Exclusion criteria:

- All athletes who are contraindicated for *Nasya*
- The athletes who are not willing to give consent.
- Muscle related pathology.
- Neurological problems.
- Those who were taking Nutritional Supplements.

Dropouts:

- Athletes who have not taken *Nasya* continuously for more than a week were excluded from the Study.
- Athletes those who have not continued their regular work- out more than a week were excluded from the Study.

Analysis methods⁶:

- Muscular Strength of the Shoulders and Chest.

Muscular Strength: It is defined as the capacity to use muscle activity to develop

internal tension and exert resistance against external force.

Traditionally, the one repetition maximum (1 RM) is the greatest resistance that can be moved through the full range of motion in a controlled manner with good posture, has been the standard for dynamic strength assessment.

The following represents the basic steps in 1 RM

- Patients were explained the procedure thoroughly and they were asked about their usual weight training.
- Patients were made to stand in erect posture.
- They were asked to lift one of the dumbbells of small capacity that they generally lift in correct form.
- They were asked to increase the weight by 2.5 to 20 kg until the volunteer can't complete the selected repetition.
- It is made sure that all repetitions should be performed in same speed of the movement and same range of motion with the interval of 3-4 minutes in between.
- The maximum final weight lifted by the volunteer was considered as 1 repetition max or absolute 1 RM.
- Determine the 1 RM within 4 trial

OBSERVATION

Statistical Analysis



After collecting data, it was analysed by employing appropriate statistics to derive conclusions regarding effectiveness of *Nasya* treatment to the regular athletes. There were different variables measured before and after the study, purpose of the

study was to find the effectiveness of *Anutaila Nasya* on Strength of Chest, Neck and Shoulder Muscles. Each variable was separately analyzed and presented in this chapter.

Table 1.1 Descriptive Statistics for Overhead Press Pre Test and Post Test of Control and Experimental Groups

| | EXPERIMENTAL | | CONTROL | |
|----------------|-------------------------|--------------------------|-------------------------|--------------------------|
| | Overhead press Pre test | Overhead press Post test | Overhead press Pre test | Overhead press Post test |
| Mean | 35.51 | 39.18 | 33.39 | 37.62 |
| Median | 33.50 | 37.50 | 30.00 | 35.00 |
| Std. Deviation | 14.91 | 14.38 | 6.38 | 7.07 |
| Minimum | 10.00 | 14.00 | 10.00 | 15.00 |
| Maximum | 80.00 | 82.00 | 50.00 | 55.00 |



Figure 1 The Shoulder Muscular Strength measured by Overhead press 1 RM

1.1 Shoulder Muscular Strength by Overhead Press:

The Shoulder muscles strength was measured by overhead press (fig 1) is shown in Table No. 1.1. The results

obtained from table no.1.1 revealed that the mean at Pre - test of Experimental group score was 35.51 (SD=14.91) while that of control group was found 33.39 (SD=6.38). From the table no 1.1 the minimum score of experimental group in Pre-test was 10 and that of Post- Test was 14. Maximum score Pre-test was 80 and that of post-test was 82. For Control group the minimum score for pre-test was 10 and that of Post test was 15. Maximum score Pre-test was 50 and that of Post-test was 55.

From the above values of minimum and maximum scores of Pre-test and Post-tests of Experimental and Control group, it is interpreted that there is an improvement in both groups.

To compare the difference between the means t test technique was applied and the results are given in table no 1.2



Table 1.2 Summary of Group Statistics of Difference between Overhead Press Pretest & Post test

| | Mean | SD | T | Df | Sig. (2-tailed) | Decision |
|--------------|--------|-------|--------|----|-----------------|-----------------------------|
| Experimental | -0.224 | 1.445 | -1.699 | 98 | 0.092 | Null Hypothesis is retained |
| Control | 0.224 | 1.180 | | | | |

1.2 Description of t Test for comparing the difference between the means

After collecting data t test was applied to compare the shoulder muscle pre-test and post test

Strength between experimental and control

group, from table no. 1.2 it is clear that t value is 0.092 which is >0.05 . It interprets that there is no significant difference in shoulder muscles strength in Experimental as well as Control group.

Table 2.1 Descriptive Statistics for Chest Press Pre Test and Post Test of Control and Experimental Groups

| | EXPERIMENTAL | | | | CONTROL | | | |
|----------------|----------------------|-----------------------|-------|------|----------------------|-----------------------|-------|------|
| | Chest Press Pre Test | Chest Press Post test | Press | Post | Chest Press Pre test | Chest Press Post test | Press | Post |
| Mean | 44.40 | 48.14 | | | 37.50 | 41.66 | | |
| Median | 40.00 | 45.00 | | | 35.00 | 40.00 | | |
| Std. Deviation | 22.44 | 29.95 | | | 7.58 | 7.54 | | |
| Minimum | 12.00 | 12.00 | | | 15.00 | 20.00 | | |
| Maximum | 120.00 | 122.00 | | | 60.00 | 65.00 | | |

The Chest muscles strength was measured by Chest press (fig. 2) is shown in Table No. 2.1.



Figure 2.2 The Chest Muscular Strength was measured by Chest Press 1RM

The result obtained from table no. 2.1 revealed that the mean at Pre - test of Experimental group score was 44.40 (SD=22.44) while that of control group was found 37.50 (SD=7.58) and the Post-test mean of Experimental group was 48.14

(SD=29.95) and that of control group was 41.66 (SD=7.54)

From the table no 2.1 the minimum score of Experimental group in Pre-test was 12 and that of Post- Test was 12. Maximum score Pre-test was 120 and that of post test was 122.

For Control group the minimum score for pre-test was 15 and that of Post test was 20. Maximum score Pre-test was 60 and that of Post-test was 65.

From the above values of minimum and maximum scores of Pre-test and Post-tests of Experimental and Control group, it is interpreted that there is an improvement in both groups.



To compare the difference between the means t test technique was applied and the

results are given in table no 2.2

Table 2.2 Summary of Group Statistics of Difference between Chest Press Pre Pre test & Post test

| | Mean | SD | T | Df | Sig. (2-tailed) | Decision |
|--------------|--------|---------|-------|----|-----------------|-----------------------------|
| Experimental | -.0816 | 1.00044 | -.897 | 98 | 0.372 | Null Hypothesis is retained |
| Control | .0816 | .80806 | | | | |

2.2 Description of t Test for comparing the difference between the means

After collecting data 't' test was applied to compare the Chest muscle pre-test and post test. Strength between experimental and control group, from table no. 2.2 it is clear that t value is 0.372 which is >0.05 . It interprets that there is no significant difference in Chest muscles strength in Experimental as well as Control group.

RESULTS

1. Experimental group shows improvement in shoulder muscle strength after doing nasya karma for 90 days (Table 1.1 & 1.2)
2. Experimental group shows improvement in Chest muscle strength after doing nasya karma for 90 days (Table 2.1 & 2.2)
3. However in comparison with experimental and control group the result is not significant i. e. the muscular strength increases in the group treated with Anu Tail Nasya along with exercise as well as exercise without nasya.

DISCUSSION

Acharya Vagbhat has explained the *Matra* of *Pratimarsha Nasya* as 2 Bindu (2 drops)

which is very less i.e. *Shamana Matra*⁷. Thus the procedure of *PratimarshaNasya* can be performed for longer duration on regular basis. It does not cause any side effect or adverse effect if used daily. When this procedure performed for longer duration, it will show effect like *Marsha Nasya*. There is no need of any special precaution to be taken while practicing this procedure. Hence we have chosen this procedure. The time of administration is *Pratahkaala* as it is described as *Dardhyakruta* in *Samhitas*. In some diseases like *Manyasthambha*, *Hanugraha*, *Grivaroga*, *Skandharoga*, *Ansashool Nasya* is recommended. In sports, chest, shoulder muscles are very important and neck is connected to these part of the body. So ultimately *Nasya* helps to improve health of these parts of the body⁸.

Dinacharya is considered as an important foundation for maintaining good health. *Vyayam* is the most important concept explained in *Samhitas* If *vyayama* is practiced in proper way it will act as *balavardhaka*, *Kantivardhaka* and



agnivardhaka⁹. Vyayama should be performed by a person as per his Bala i. e. half of its total strength otherwise it harm¹⁰. Now- a- days the athletes do not follow this rule and do their work out around 1 hr. daily. As per Acharya Sushruta, the amount of exercise which makes the *Prana Vayu* come out through the mouth i.e. as soon as hard breathing would set in is known as *balardha*. The location of *Pranavayu* is *Murdha* and *Nasya karma* act on *Murdha*. Hence *Nasya* pacifies *prakupit pranavayu* and helps to prevent the adverse effects of excessive exercise.

Anutaila is one of the best medicines described for *Nasya Karma*. It contains more than 25 herbs from which decoction are made. This decoction is then infused with til oil for a long period. This process is repeated 10 times for desired potentiation. In this way its properties are enhanced. *Ajaksheer* (Goat Milk) is also used in the last cycle as it is indicated in disorders like *Shwas*, *Kasa*, and *Rajayakshma*. Goat's milk has the ability to reduce inflammation improve bio availability of nutrients (Sukshama srotogami) strengthens bones increase immunity improves metabolism and prevents toxins accumulation in the body. Hence it is said that *Anutaila* is having property of *Mahagunama, sarvottam gunam*¹¹.

This study is randomized controlled clinical trial. The study was carried out in 2 groups, of only 50 male in each group regular healthy athletes, because strength of male athletes are more than females and male athletes are very regular in their exercise schedule than females. To avoid drop outs we decided to work on only male candidates. We selected the age group between 20–30 year because this age is *Tarunyavastha* (Completely grown Adult) and maximum youngsters of this age group hit the gym regularly. These athletes were working out in the gym 1hr daily for 6 days a week at least for 6 months and having no systemic diseases. Group A volunteers received *Anutaila Nasyam* for 3 months, 2 drops in each Nostril daily in the morning. We used *Anutaila* of AVP, (*AryaVaidya Pharmacy – Coimbatore*). It is a well-known GMP recognized, FDA approved pharmacy. This AVP Pharmacy's *Anutaila* is already standardized. Group B did not receive any treatment but it was kept under observation and the follow-up was taken at a month interval.

The **Shoulder Muscular Strength** was measured by 1 RM max of Overhead Press (fig. 1), **Chest Muscular Strength** was measured by 1RM max of Chest Press (fig. 2). After 3 months both the groups were compared for evaluation of effect of *Nasya*. As explained in *Charak Samhita*



‘*BalamVyayamshaktya Parikshet*’. Hence we took help of 1 RM of Overhead press, 1RM of Chest Press for Strength. The synonym of *Pushti* is *Upachay, Vruddhi*. The synonym of *bala* is *dehopachaya*. Hence we can conclude that *Pushti* is *Bala*. By considering above, *Mamsadhatu* is responsible for *sharirpushti*. *Bala* can be correlated to muscular Strength.

After a treatment of *Nasya* for 3 months strength of muscles increased significantly. Hence it is clear that regular practice of *Anutaila Nasya* strengthens the muscles of neck, Shoulders and Chest.

However the group which was not treated with *Nasya*, also showed improvement in strength of muscles significantly after 3 months. This could be because of regular exercise as quoted by *Sushrut*. So the study should be carried out in the same person with *Nasya* and without *Nasya* because the strength depends on his *Prakruti*. There was no statistically significant difference found in the action of *Nasya* in regular athletes and the group of athletes without *Nasya*. All the volunteers took their *Nasya*, according to schedule and prescribed doses without fail. None of the volunteers showed any of the side effects with *nasya* treatment. This proves safety of the *Nasya* treatment.

There were no side effects observed during and after study. Most of the volunteers were Non-Vegetarian.

Mode of Action

Nose is the entrance of cranial cavity according to Ayurveda. When the nasal medicine is administered into nasal cavity it enters into the Shringataka Marma and then spreads all over the cranial cavities. After that it nourishes the upper part of the body like head, neck, shoulders, chest, etc. by pacifying the aggravated Doshas. Athletes do their regular exercise, but they generally do not follow the rules of *Ardhyashaktya Vyayama*, hence the *vata* gets aggravated and *snayu* loses its *Dhrudhata*. By the use of *Nasya* on regular basis this aggravated *Dosaha* can be pacified and the injuries and pain can be prevented.

Limitation and Scope of Study:

In this study *Patrimarha nasya* has been administered with *matra 2 Bindu*. The large *matra* (Dose) would have been given desired result in the form of muscle strength. *Anutail* is told to be used in *pratimarsha matra* as a practice of *Dincharya*. So this topic can be evaluated with *Mash taila, Bala taila, Mansarasa* in larger doses with a group of non regular athletes treated with *Nasya*.

If we had chosen older age group, then the result would have been different. We might get positive result in this age group as in *vrudhavastha, vatadhikya* is more in the body and *Nasya* pacifies *vata*.



If we had done this study in *Shishir* or *Hemant Ritu*, we might get some improvement in strength, endurance and girth.

CONCLUSION

- Muscular Strength was increased in the group treated with *Nasya*.
- Muscular Strength was increased in the group not treated with *Nasya* hence the effect offered by *Nasya* treatment was similar to the effect offered by regular untreated exercising group.



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