



## EFFECT OF SESAME OIL MASSAGE ON MUSCULAR STRENGTH OF BASKETBALL PLAYERS

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### ABSTRACT

Sports have been part of human life since time immemorial. They help in the development of an individual's persona at mental, social, cultural and spiritual levels. According to *Sushrutacharya*, *Vyayam* (Exercise) is defined as work involving exertion of the body. He states that after performing it one should do gentle body massage. Present study was done to study the effect of Sesame Seed Oil Massage on the *Mamsadhatupushti* (**Muscular Strength**) in Basket ball players. Study trials carried out in two groups of 10 players each between age group 20 yr. – 30 yr for eight weeks. Assessment criteria were **Muscle strength**. Tools used for muscle strength was grip Dynamometer and Leg and Back Dynamometer.

#### Result: Group A –

Day 30th - Muscle Strength was increased by approx. 10 – 12 kg

Day 45th - (After giving 15 days gap in **Sesame Seed Oil Massage** Muscle Strength was decreased by approx. by 1-2 kg.

#### Group B-

Day 30th – Muscle Strength was increased by approx. 2-3 kg.

Day 45th - Muscle Strength was increased by approx. by 1-2 kg.

**Conclusion:** Evidence was generated for the concept '*Tiltaila (Sesame Seed Oil)* is useful in *Brihan Karma*' (Growth) & also helps in removal of oil soluble tissue toxins.

**Keywords:** *Abhyanga*, Sport massage, Muscle strength, Basket ball.

**INTRODUCTION:** Ayurveda believes in the concept of prevention is better than cure. Ayurveda is a precise science it cures the diseased body and also explains measures to sustain health in a healthy individual <sup>[1]</sup>. Sports have been part of human life since time immemorial. They help in the development of an individual's persona at mental, social, cultural and spiritual levels. They inculcate in an individual the spirit of friendship, endurance, forgiveness, acceptability and obedience, which is sportsman spirit, along with the mental constitution the physical constitution, plays an important role to form a Sportsperson. According to

*Sushrutacharya*, *Vyayam* (Exercise) is defined as work involving exertion of the body. He states that after performing *Vyayam* one should do gentle body massage <sup>[2]</sup>. It influences the overall personality by causing (stimulating) physical development, eg. Luster, compactness of the body parts, promote strength, growth, stimulation of digestive power, absence of idleness, firmness, lightness, tolerance to fatigue, exhaustion, thirst, heat, cold etc. and provides optimum immunity <sup>[3]</sup>. The greatest importance of *Vyayam* (Exercise) in today's life style lies in fact that it can digest all food types causing

*Doshaprakopa (Vitiation Of Doshas)* e.g., junk food, etc. It ultimately increases the *Agni* [4]. *Abhyanga* (Massage) and *Mardana* (Pressure / Deep Tissue Massage) are both type of massage [5]. *Abhyanga* (Massage) is a gentle massage [6] and *Mardana* (Pressure/Deep Tissue Massage) is massage done with pressure. [7]. Daily oil massage delays ageing, cures tiredness and *Vata Dosha*, improves vision nourishes the body, increases longevity (lifespan), promotes sound sleep, improves skin luster and texture and strengthens the body [8].

**Need of the study maintain:** It is the moral duty of every sport person to maintain good muscle health. Till yesterday steroid were a boon to the competitive world of sports, but its adverse effects in the long run have in no time contradicted this fact. With this changing picture, today *Abhyanga* (Massage) or *Mardana* (Pressure /Deep Tissue Massage) along with all its advantages, easy availability (accessibility) and cost effectiveness are paving a path for good health.

#### AIMS:

- To study the effect of *Tiltaila Abhyanga* (Sesame Seed Oil Massage) on the *Mamsadhatupushti* (Muscular Strength) in Basket ball players

#### OBJECTIVES:

- To measure muscle strength with the help of Dynamometers.

### MATERIALS AND METHODS

#### Research design:

- Comparative clinical trial

#### Selection criteria:

##### 1. Inclusion criteria

1. Players between age group 20 yr. – 30 yr.
2. Players playing Basketball regularly minimum for 1 yr.
3. Players participating in competitions
4. No health complaints according to Ayurveda

#### Muscle strength:

- Forearm muscle strength were measured by Grip Dynamometer

#### 2. Exclusion criteria

1. *Nawajwara* ( Acute Fever )
2. *Ajirna* (Indigestion)
3. *Samata*
4. Players newly joined

#### Grouping:

Study trials carried out in two groups of ten players each.

Group A: Ten players with *Tiltailabhyanga* (Sesame seed Oil Massage) (5 Females, 5 Males)

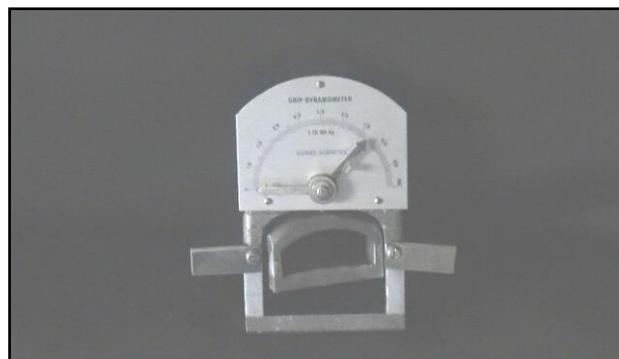
Group B: Ten players without *Tiltailabhyanga* (Sesame seed Oil Massage) (5 Females, 5 Males in each game)

**Sample size:** Total sample size was 20 complete units, Total of Ten individual in each group were included.

**Time and duration of the study:** Clinical study of eight weeks, *Tiltailabhyanga* (Sesame seed Oil Massage) is performed on group 'A' for approx. 45 -60 min. on the whole body after their regular practice in the evening between 5 pm - 6 pm, over the period of one month, At the same time group 'B' was also under observation . After one month of *Tiltailabhyanga* (Sesame seed Oil Massage) the players from group 'A' received Fifteen days gap and again on day 45<sup>th</sup> the Tests were performed in both groups.

- 1<sup>st</sup> reading - on 0<sup>th</sup> day
- 2<sup>nd</sup> reading - on 30<sup>th</sup> day
- 3<sup>rd</sup> reading - on 45<sup>th</sup> day (After giving 15 days gap in Group A )

**Research techniques:** Muscle strength is the main assessment criteria, The muscle fiber never contracts together which makes it impossible to measure the total muscular strength of the body by a single test hence, the measurement of the muscular strength is based on the measurement of strength of various groups of muscles which act together for causing a particular joint movement or for preventing a particular movement [9, 10].



Grip Dynamometer

- Leg and Back muscle strength were measured by Leg and Back Dynamometer



Leg and Back Dynamometer

#### Tools for study:

**Drug:** *Tiltaila* (Sesame seed Oil) is applied on the whole body of players in group 'A'

#### Analysis method:

Paired T – test, Single tailed was used for analysis. A comparison was done in between the scores of follow – ups using paired single tailed, T – test in each group. The comparison was done in following pattern

- 1<sup>st</sup> Comparison - D0 – D30
- 2<sup>nd</sup> Comparison - D30 - D45

#### OBSERVATIONS & RESULTS

##### Test Used for analysis.

To test:

$H_0$ : There is no significant difference between the observed values in pre and post test.

$H_1$ : There is significant increase in the observed values in pre and post test.

**Group A** – Day 30th - Muscle Strength was increased by approx. 10 – 12 kg.

Day 45th - (After giving 15 days gap in *Taila Abhyanga* ) Muscle Strength was decreased by approx. by 1-2 kg.

**Group B-**

Day 30th – Muscle Strength was increased by approx. 2-3 kg.

Day 45th - Muscle Strength was increased by approx. by 1-2 kg.

**Table 1: Muscle Strength of Female Players with and without *Til Tailabhyanga* (Sesame seed Oil Massage) Day 0**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	2	2.8	2.04939	2.712932	0.692129	0.248844	ACCEPT H0
LF.	1.1	1.2	1.445683	0.979796	0.174342	0.431771	ACCEPT H0
LEG	13.5	11.1	5.904447	4.988988	0.918157	0.185338	ACCEPT H0
BACK	17.2	12.3	5.758472	5.330103	1.636154	0.059586	ACCEPT H0

**Table 2: Muscle Strength of Female Players with and without *Til Tailabhyanga* (Sesame seed Oil Massage) Day 30**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	11.2	6.8	2.712932	4.354308	2.204413	0.020374	REJECT H0
LF.	11.2	3.9	1.6	0.830662	10.75158	1.45E-09	REJECT H0
LEG	23.5	12.2	4.91935	4.853864	4.649773	9.96E-05	REJECT H0
BACK	28.05	13.2	5.58771	5.325411	5.138977	3.4E-05	REJECT H0

**Table 3: Muscle Strength of Female Players with and without *Til tailabhyanga* (Sesame seed Oil Massage) Day 45**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	10.7	7.1	2.685144	2.507987	2.435994	0.012735	REJECT H0
LF.	10.9	5.4	1.577973	1.019804	8.065591	1.09E-07	REJECT H0
LEG	23.2	12.3	4.975942	4.838388	4.491648	0.000141	REJECT H0
BACK	27.4	13.6	5.607138	5.083306	4.911063	5.63E-05	REJECT H0

**Table 4: Muscle Strength of Male Players with And without *Til Tailabhyanga* (Sesame seed Oil Massage) Day 0**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	10.1	15.3	4.805206	6.181424	2.234416	0.019188	REJECT H0

LF.	10.8	13.4	6.177378	6.74092	0.780953	0.22249	ACCEPT H0
LEG	20.5	25.15	3.5	8.396577	1.533873	0.071225	ACCEPT H0
BACK	24.05	29.2	4.595922	8.034924	1.785414	0.045527	ACCEPT H0

**Table 5: Muscle Strength of Male Players with and without *Til tailabhyanga* (Sesame seed Oil Massage) Day 30**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	23.45	17.6	4.338491	6.179806	2.456715	0.012201	REJECT H0
LF.	23.7	15.7	5.622277	6.80147	2.524149	0.010607	REJECT H0
LEG	31.75	27.4	3.75	8.357033	1.411308	0.087603	ACCEPT H0
BACK	34.7	31	5.496362	8.20975	2.252906	0.013136	REJECT H0

**Table 6: Muscle Strength of Male Players with and without *Til taila abhyanga* (Sesame seed Oil Massage) D45**

Muscle Strength	Mean		S.D.		T Cal	P Val	Significance
<b>FOREARM</b>	<b>X1</b>	<b>X2</b>	<b>X1</b>	<b>X2</b>			
RT.	22.6	18.6	4.176123	6.636264	1.669568	0.056152	ACCEPT H0
LF.	23.3	16.75	5.780138	6.690478	2.10067	0.025012	REJECT H0
LEG	31.1	27.9	3.884585	8.043009	1.091445	0.144736	ACCEPT H0
BACK	32.9	32.5	5.752391	9.63587	0.115451	0.454683	ACCEPT H0

## DISCUSSION

- On Day 30<sup>th</sup> the Group A & Group B showed increased in there Muscle Strength but at the rate Group A responded to *Abhyanga* (Massage) is noteworthy that is the effect of *Tiltaila Abhyanga* (Sesame Seed Oil Massage).
- On Day 45<sup>th</sup> Muscle Strength Group A decreased, while Group. B showed improvement in there Muscle strength.
- Though Group A Showed decreased in there Muscle strength on Day 45, but it was still on higher side than Day 0. On Day 30 in Group A muscle strength was increased approx. by 10-15 kg. While in gr. B Muscle strength was increased approx. by 2-3 kg. in no. Although the diet, exercise, daily routine were same in both groups. The extra 8-10 kg. improvement in strength in Group A is the effect of *Tiltaila Abhyanga*. (Sesame Seed Oil Massage )
- After giving 15 days gap of *Abhyanga* (Massage) in Group A , the strength which was achieved till day 30 could not sustained
- As stated in *Charak Samhita* axle of the chariot and leather bottle become durable by oiling same the body become strong after *Taila Abhyanga*. (Sesame Seed Oil Massage )<sup>[11]</sup>. As

stated in *Sushrut Samhita* when *Abhyanga* (Massage) is done for <sup>[12]</sup> 300 *matras* (approx 5 min.) It penetrates through Skin.

(1 *matra* = 1 *unmeshas nimesha* = approx.1 sec.)

400 *matras* (approx 6.6 min.) It reaches *Rasadhatu*

500 *matras* (approx 8.3 min.) It reaches *Raktadhatu*

600 *matras* (approx 10 min.) It reaches *Mamsadhatu*

700 *matras* (approx 11.6 min.) It reaches *Medadhatu*

800 *matras* (approx 13.3 min.) It reaches *Asthidhatu*.

According to latest study deep stroking massage techniques create a localized increased in pressure which causes the pores in tissue membranes to open, facilitating the exchange of fluids. <sup>[13, 14]</sup>

**Fatigue** – It is define as the inability to maintain a given exercise intensity.

Tissue Toxins were assumed to be the main cause of Fatigue. Tissue toxins hamper the muscle endurance which causes fatigue & *Tiltaila Abhyanga* (Sesame Seed Oil Massage) helps in removal of tissue toxins.

*Tilataila* (Sesame Seed Oil) is *Tikshna, Ushana, Vyavayi* and is quickly absorbed by the skin and it is the best *Taila* for *Brihan* <sup>[15]</sup>. Research shows that on the skin, oil soluble toxins are attracted to sesame seed oil molecules which can be washed away with hot water <sup>[16]</sup>.

**Muscle Strength depends on the following Factors –**

**Hypertrophy of Muscle Fibers:** Growth in diameter of Muscle fibers. [*Brihan karma*]

**Intra Muscle co-ordination:** Capacity to apply motor units simultaneously. [*Vatakarma*]

**Inter - Muscle co-ordination:** Interplay between the muscles that generate movement through contraction. [*Vatakarma*]

The muscle strength depends on hypertrophy of muscle fibers, inter muscle

co-ordination, and intra muscle co-ordination, according to *Charkacharya* co-ordination is a *Prakrit karma* of *Vata* <sup>[17]</sup> and *Tiltaila* (Sesame seed Oil) enhances the capacity of *Vata* to perform its *Prakrit karma* (Normal Function) as well as *Brihan*.

After doing *Vyayam* (Exercise) *Vata prakopa* (Vitiation Of *Vata*) in the body takes place, and *Tiltaila Abhyanga* (sesame Seed Oil Massage) is the best Remedy for *Vataprakopa*.(Vitiation Of *Vata*)

## CONCLUSION

- Muscle Strength was increased by *Abhyang* (Massage).
- After giving 15 days gap of *Abhyanga* (Massage) in Groupr A, the Muscle strength decreased hence “*Abhyangam Acharet Nityam..*” is proved.
- The significance of *Abhyanga* (Massage) duration specified in *Sushrut* i.e. *Abhyanga* is performed for 600 *matras* approx.(10 min.) on each part of the body it reaches to *Mamsdhatu* (Muscles) & *Brihan karma* (Growth) takes place. Also helps to remove tissue toxins is validated
- Evidence is generated for the concept ‘*Tiltaila* (Sesame Seed Oil) is useful in *Brihan Karma*’ (Growth) & also helps in removal of oil soluble tissue toxins.

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Source of support: Nil

Conflict of interest: None

Declared

**Cite this Article as :** [*Dalvi Prachi D et al : Effect of Sesame Oil Massage on Muscular Strength of Basketball Players*] [www.ijaar.in](http://www.ijaar.in) : IJAAR VOLUME III ISSUE IV SEP-OCT 2017 Page No:832-838