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Effect of *TilaTail* Massage Therapy on Handball Players

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ABSTRACT

All sporting activities involve muscle activity as a primary motive force, and many sports injuries affect muscles directly. Massage is the best form of treatment of muscle tension. It can be used for the general relaxation of musculo-skeletal system.

Present study was done to study the effect of *Tiltaila Abhyanga* (**Sesame Seed Oil Massage**) on the *Mamsadhatupushti* (**Muscular Endurance**) in handball players. Study trials carried out in two groups of 10 players each between age group 20-30yrs for eight weeks. Assessment criteria were **Muscle endurance**. Muscle endurance was measured by **Sit – ups** and **Push – ups** and modified Push – ups for females.

Result: Group A –

Day 30th - Muscle endurance measured by **sit-ups, push-ups** count were increased by approx. 8–10 in no.

Day 45th - (After giving 15 days gap in *TailaAbhyanga*) (**Sesame Seed Oil Massage**) muscle endurance measured by **sit-ups, push-ups** count were decreased by approx. 2-3 in no.

Group B-

Day 30th – Sit-ups, Push-ups count were increased by approx. 2-3 in no.

Day 45th - Sit-ups, Push-ups count were increased by approx. 1-2 in no.

Conclusion: The concept '*Tiltailais* useful in *Brihan Karma*' (Growth)

KEYWORDS

Abhyanga, Sport massage, Muscle endurance, Hand ball



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INTRODUCTION

Massage has been utilized in the treatment of illness and injury for thousands of years by health care practitioners. Sports massage has been suggested as a means to help prepare an athlete for competition, as a tool to enhance athletic performance, as a treatment approach to help the athlete recover after exercise or competition, and as a manual therapy intervention for sports-related musculoskeletal injuries¹.

Ayurveda is the science of knowledge of *Ayu*². It emphasizes on the importance of maintenance of health of healthy persons and curing the disease of ill³. 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 massages⁴. 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 immunity⁵.

Abhyanga (Massage) and *Mardana* (Pressure / Deep Tissue Massage) are both type of massage⁶. *Abhyanga* (Massage) is a gentle massage⁷ and *Mardana* (Pressure / Deep

Tissue Massage) is massage done with pressure⁸. Daily oil massage delays ageing, cures tiredness and *VataDosha*, improves vision, nourishes the body, increases longevity (lifespan), promotes sound sleep, improves skin luster and texture and strengthens the body⁹.

To measure the effect of *Abhyanga* on handball player muscle endurance has been used as a criteria for assessment. Muscle endurance has been measured with the help of sits up and pushes up.

Need of the study

All sporting activities involve muscle activity as a primary motive force, and many sports injuries are directly muscle injuries. Massage is the best form of treatment of muscle tension. It can be used for the general relaxation of musculo-skeletal system.

AIM

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

OBJECTIVES:

- To measure muscle endurance with the help of Sit-ups & Push-ups.



MATERIALS AND METHODS

Research design:

- Clinical research

Selection criteria:

1. Inclusion criteria

1. Players between age group 20 yr. – 30 yr.
2. Players participating in competitions
3. Players playing Handball regularly minimum for 1 yr.

2. Exclusion criteria

1. *Nawajwara*(Acute Fever)
2. *Ajirna*(Indigestion)
3. *Samata*

Grouping:

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

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

Group B: Ten Handball 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 45th the tests were performed in both groups.

- 1st reading - on 0th day
- 2nd reading - on 30th day
- 3rd reading - on 45th day (After giving 15 days gap in gr.A).

Research techniques:

Muscle endurance is the main assessment criteria,

Muscular Endurance

It is usually defined as the ability or capacity of a muscle group to perform repeated contractions against a load or sustain a contraction for an extended period of time.

- Muscle endurance was measured by **Sit – ups** and **Push – ups**
- Modified Push – ups for Females.

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

- 1st Comparison - D0 – D30
- 2nd Comparison - D30 - D45

To test:

H_1 (Alternative hypothesis): There is significant increase in the observed values in pre and post test.

H_0 (Null hypothesis): There is no significant difference between the observed values in pre and post test.

OBSERVATION & RESULTS

Test Used for analysis.

Observations

Table 1(a) Muscle Endurance of Female players with TiltailabhyangaD0 – D30

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	27.4	39.4	5.642694	5.695612	20	4.82E-14	REJECT H0
PUSH – UPS	52.4	68.5	7.863841	7.81345	6.151943	4.13E-06	REJECT H0

(MODIFIED)

Table 1(b) Muscle Endurance of Male players with TiltailabhyangaD0 – D30

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31	43.9	4.878524	4.08534	21.8362	1.05E-14	REJECT H0
PUSH – UPS	28.2	39.3	8.304216	7.912648	16.56532	1.21E-12	REJECT H0

Table 2(a) Muscle Endurance Of Female Players With TiltailabhyangaD30 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	39.4	37.6	5.695612	5.351635	4.065786	0.000363	REJECT H0
PUSH – UPS	68.5	67.6	7.81345	7.914544	2.505807	0.01102	REJECT H0

(MODIFIED)

Table 2 (b) Muscle Endurance Of Male Players With Tiltailabhyanga D30 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	43.9	40.6	4.08534	4.498889	6.014932	5.47E-06	REJECT H0
PUSH – UPS	39.3	37.6	7.912648	8.138796	5.349193	2.19E-05	REJECT H0

Table 3 (a) Muscle Endurance Of Female Players With Tiltailabhyanga D0 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	27.4	37.6	5.642694	5.351635	14.48303	1.16E-11	REJECT H0
PUSH – UPS	52.4	67.6	7.863841	7.914544	6.029088	5.31E-06	REJECT H0

(MODIFIED)

Table 3(b) Muscle Endurance Of Male Players With Tiltailabhyanga D0 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31	40.6	4.878524	4.498889	13.2619	4.96E-11	REJECT H0
PUSH – UPS	28.2	37.6	8.304216	8.138796	14.43594	1.22E-11	REJECT H0

**Table 4(a)** Muscle Endurance Of Female Players Without Tiltailabhyanga D0 – D30

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	28.9	31.3	8.560958	7.694803	5.595029	1.3E-05	REJECT H0
PUSH – UPS (MODIFIED)	45.9	47.7	10.90367	10.80787	5.809475	8.34E-06	REJECT H0

Table 4 (b) Muscle Endurance Of Male Players Without Tiltailabhyanga D0 – D30

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31.5	33.8	13.07096	12.67123	6.125172	4.37E-06	REJECT H0
PUSH – UPS	29.9	31.8	7.381734	7.249828	7.233176	4.99E-07	REJECT H0

Table 5 (a) Muscle Endurance Of Female Players Without Tiltailabhyanga D30 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31.3	31.9	7.694803	7.930322	2.371708	0.014532	REJECT H0
PUSH – UPS (MODIFIED)	47.7	48.5	10.80787	10.9476	3.380617	0.001666	REJECT H0

Table 5(b) Muscle Endurance Of Male Players Without Tiltailabhyanga D30 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	33.8	34.7	12.67123	12.53036	3.016807	0.003705	REJECT H0
PUSH – UPS	31.8	32.4	7.249828	7.144228	2.860388	0.005198	REJECT H0

Table 6 (a) Muscle Endurance Of Female Players Without Tiltailabhyanga D0 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	28.9	31.9	8.560958	7.930322	5.144958	3.4E-05	REJECT H0
PUSH – UPS (MODIFIED)	45.9	48.5	10.90367	10.9476	7.383504	3.77E-07	REJECT H0

Table 6 (b) Muscle Endurance Of Male Players Without Tiltailabhyanga D0 – D45

MUSCLE	Mean		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31.5	34.8	13.07096	12.43222	7.019688	7.48E-07	REJECT H0
PUSH – UPS	29.9	32.4	7.381734	7.144228	5.521576	1.52E-05	REJECT H0

Table 7(a): Muscle Endurance of Female Players with (X1) and without (X2) TilTailabhyanga (Sesame seed Oil Massage) Day 0

MUSCLE	MEAN		SD		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	27.4	28.9	5.642694	8.560958	0.455068	0.327251	ACCEPT H0
PUSH – UPS (MODIFIED)	52.4	45.9	7.863841	10.90367	1.525931	0.072203	ACCEPT H0

Table 7(b) Muscle Endurance of Male Players with And without TilTailabhyanga (Sesame seed Oil Massage) Day 0

MUSCLE	MEAN		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
ENDURANE							
SIT – UPS	31	31.5	4.878524	13.07096	0.114452	0.45073	ACCEPT H0



PUSH – UPS	28.2	29.9	8.304216	7.381734	0.397168	0.347957	ACCEPT H0
Table 8(a): Muscle Endurance of Female Players with and without Tiltailabhyanga (Sesame seed Oil Massage) Day 30							
MUSCLE ENDURANE	MEAN		SD		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
SIT – UPS	39.4	31.3	5.695612	7.694803	2.557739	0.009889	REJECT H0
PUSH – UPS (MODIFIED)	68.5	47.7	7.81345	10.80787	4.204294	0.000267	REJECT H0

Table 8(b): Muscle Endurance of Male Players with and without Tiltailabhyanga(Sesame seed Oil Massage) Day 30							
MUSCLE ENDURANE	MEAN		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
SIT – UPS	43.9	34.3	4.08534	12.72831	2.119045	0.024126	REJECT H0
PUSH – UPS	39.3	31.8	7.912648	7.249828	1.942653	0.033935	REJECT H0

Table 9(a): Muscle Endurance of Female Players with and without Tiltailabhyanga(Sesame seed Oil Massage)Day 45							
MUSCLE ENDURANE	MEAN		SD		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
SIT – UPS	37.6	31.9	5.351635	7.930322	2.961905	0.032713	REJECT H0
PUSH – UPS (MODIFIED)	67.6	48.5	7.914544	10.9476	3.901292	0.000523	REJECT H0

Table 9(b): Muscle Endurance of Male Players with and without Tiltailaabyanga(Sesame seed Oil Massage) Day 45							
MUSCLE ENDURANE	MEAN		S.D.		T CAL	P VAL	SIGNIFICANCE
	X1	X2	X1	X2			
SIT – UPS	40.6	34.8	4.498889	12.43222	1.310889	0.103187	REJECT H0
PUSH – UPS	37.6	32.4	8.138796	7.144228	1.321825	0.10139	REJECT H0

Results

Group A –Day 30th - Sit-ups, Push-ups were increased by approx.8– 10 in No. i.e. null hypothesis is rejected.

Day 45th - (After giving 15 days gap in *TailaAbhyanga*) Sit-ups, Push-ups were decreased by approx.2-3 in No.

Group B-

Day 30th –Sit-ups, Push-ups were increased by approx.2-3 in No. i.e. null hypothesis is rejected.

Day 45th - Sit-ups, Push-ups were increased by approx.1-2 in No.i.e.null hypothesis is rejected.

DISCUSSION

- On Day 30ththe Group A &Group B showed increased in the no. of sits up and pushes up but at the rate Group A responded to *Abhyanga*(Massage) is noteworthy. This is due to the effect of *TiltailaAbhyanga* (Sesame Seed Oil Massage).

- On Day 45thno. of sits up and pushes up in Group A decreased, while Group. B showed improvement.

- Though Group A showed decreased in theirno. of sits up and pushes up on day 45, but it was still on higher side than Day 0.



• On Day 30 in Group A, no. of sits up and pushes up were increased approx. by 10-12 in no. While in Group B there was increased in approx. by 1-2 in no. Although the diet, exercise, daily routine were same in both group. The extra 10-12 no. improvement in sits up and pushes up in Group A is the effect of *Tiltaila Abhyanga*. (Sesame Seed Oil Massage). So there is significant improvement in muscle endurance in Group A due to massage.

After giving 15 days gap of *Abhyanga* (Massage) in Group A, the endurance 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)¹⁰.

Dalhana the commentator of Susruta has described the effect of *Abhyanga* according to the duration of it is done^[11]. When *Abhyanga* (Massage) is done for;

1. 300 matras: It reaches to root of hair follicles of the skin (roma)(65 sec)
2. 400 matras: It reaches to Skin (Twaka)(133 sec)
3. 500 matras: It reaches to Blood (Rakta)(160 sec)

4. 600 matras: It reaches to Muscle tissue (Mansa)(190 sec)

5. 700 matras: It reaches to Fat (Meda) (228 sec)

6. 800 matras: It reaches to Bone (Asthi)(240 sec)

7. 900 matras:

7. It reaches to Bone marrow (majja)(285 sec)
1 matra = $19/60$ sec = 95 sec

Hence, *Abhyanga* must be done minimum 5 min to each part of body. According to Vaidya Kastureji approximately 30-40 min of to the whole body and 15 min to a part is required to achieve benefit of *Abhyanga*.

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. It improves the removal of muscle waste like Lactic acid which builds up in the muscles during and immediately after exercise, Lactic acid is main factor which affects the muscle endurance¹².

Fatigue is defined 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.



In one study it is found that deep-tissue massage increased the size and number of new mitochondria more than exercising without massage. Increasing mitochondria can improve endurance performance by increasing the rate that muscles utilize oxygen¹³.

Tilataila(Sesame Seed Oil) is *Tikshna, Ushana, Vyavayi* and is quickly absorbed by the skin and it is the best *Taila* for *Brihan*¹⁴. Research shows that on the skin, oil soluble toxins are attracted to sesame seed oil molecules which can be washed away with hot water¹⁵.

CONCLUSION

- Muscle Endurance was increased by *Abhyang*.
- After giving 15 days gap of *Abhyangain gr. A*, the muscle endurance decreased hence “*Abhyangam Acharet Nityam*” is proved.
- The significance of *abhyangaduration* specified in *Sushrut* i.e. *abhyangais* performed for 600 *matras* approx. (10 min.) on each part of the body it reaches to *Mamsdhatu* (muscles) & *Brihan karma* (growth) takes place. It also helps to remove tissue toxins is validated

- ‘*Tilataila*(Sesame Seed Oil) is useful in *Brihan Karma* (Growth)& also helps in removal of oil soluble tissue toxins.



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