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TO EXAMINE THE EFFECTS OF BACK MUDRA AND GADA MUDRA ON ENERGY RESERVES OF SPINAL CORD

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Abstract— The information technology (IT) industry boom in the world, since the last two decades, has led to an increased use of Computer Devices and peripherals. The prevalence of the Work-related Musculoskeletal disorder (WMSD's) is increasing among Computer users throughout the world. Approximately 76% of computer professionals from India reported musculoskeletal discomfort as per various epidemiological studies. WMSD's can be prevented through lifestyle changes. They can also be treated through a variety of alternate medical therapies. Mudra technique has been used by ancient ayurvedic practitioners for treating various diseases.The purpose of study to examine the effects of back mudra and gada mudra on energy reserves of spinal cord. In this study, participants were categorised in two groups named as back mudra group and gada mudra group. Primary hypothesis of the study was that the back mudra group show more energy reserves in organs as compared to gada mudra group. Participants were tested at pre-test, post-test and follow-up, with testing times separated by 4 weeks. Ten participants were randomly assigned to each group. Gas discharge visualization (GDV) device used for measure energy of different regions of spinal cord and analyse effects of mudra on energy reserves in organs of spinal cord for three zones namely cervical, thorax and lumbar zone. This device measure human energy field and give energy parameter of different organs of the body. Two sample t-test was used to compare the back mudra and gada mudra.

Keywords—Spinal cord organs energy, GDV device, Back Mudra, Gada Mudra, Human Energy Field

I. INTRODUCTION

The prevalence of Work-related Musculoskeletal Disorders (WMSD's) is increasing among Computer users throughout the world (Luis et al., 2003; Arun Vijay., 2013). The Information Technology (IT) Industry boom in India, since the last two decades, has led to an increased use of Computer Devices and peripherals. Approximately 76% of Computer professionals from India reported musculoskeletal discomfort in various epidemiological studies. (Talwar et al., 2009; Bhanderi et al., 2007; Sharma et al., 2006 & Bakhtia et al., 2003). There are several risk factors associated with the development of work related Musculoskeletal Disorders among the workers who use computer extensively at their workplace. Manual carrying is a major source of hazards and problems for industrial workers worldwide. Tasks, which are performed manually, constitute a considerable proportion of work done in industries around the globe, especially in developing areas. Manual carrying is defined as the unaided moving of objects, often combined with twisted and awkward postures, contributing to musculoskeletal disorders (MSD's). MSD's may be considered as work-related when pain in, e.g., the neck, shoulders or back, is associated with physical strain in body areas during work when there are no other visible signs of general illness affecting the musculoskeletal system. Labourers performing lifting/lowering, carrying and pushing/pulling heavy materials have increased rates of MSD's. Mudra in Sanskrit represents a hand gesture. They can be used to redistribute energy to various body organs by creating variation in pathways through subtle energy channels. The human body is made up of five elements. There are land, water, fire, air and sky. The four fingers and thumb correspond to the various elements. Mudras can cure numerous deceases through re-distribution of energy to various organs of the body.

II. METHEDOLOGY

Methodology includes Selection of participants, Mudra training and Experimental paradigm.

A) Selection of participants
Twenty participants were selected for the experiment. Participants were categorized in two different group named as back mudra group and gada mudra group. Each group contain ten participants for mudra.

B) Mudra Training
Inhale deeply and hold your breath. Clap the hands together firmly three times, hard enough so that they sting a little bit. Exhale slowly through the mouth and resume natural breathing. Then, rub the hands together vigorously for about one minute or until they feel very warm. Make sure to rub the palms and tops of the hands and fingers, and warming the

hands on all sides, even between the fingers. The Mudras, which are to be performed by the participants for 15 minutes, are as following.

Gada Mudra**:** Hold the hands in front of you with the palms up. Bend and interlace the little and ring fingers at the second knuckle. Touch the tips of the middle fingers and extend them upward. Then, form two interlocking rings by touching tips of the index fingers and thumbs on both hands.

Back Mudra**:** Back Mudra is done with both hands. The thumb, middle finger and little finger of the right hand should touch and the index finger and ring fingers are relaxed and extended. In the left place the thumb joint on the nail of the index finger.

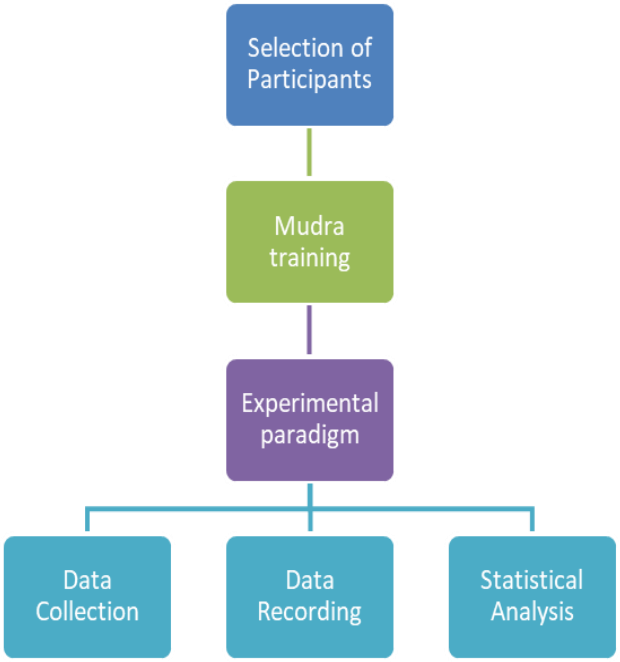

fig. 1 General Flowchart for methodology

C) Data Collection

EPI images of the subjects were taken at least 2 hours after the consumption of large quantity of food, without alcohol or strong medicines. Some medicine will have an effect on the nature of the energy. It was advised to empty the bladder and bowels before image capturing begin. Subjects were asked not to fingers wash or wipe the hands. Hands can be washed 15 minutes before the experiment only if they are very dirty. Before taking EPI images, subject were asked to relax for 15 minutes. Psychologically and physically conditions were provided to the individuals under study. Measurement were taken in same room with constant temperature, humidity and gas composition. Subject's fingers were scanned weekly and data was recorded.

D) Data Recording

Participant's fingers were scanned weekly on the GDV device and the organs energy data report was generated by using Bio- well software.

E) Statistical Analysis

To analyze effect of mudra on energy reserves, GDV data was analyze using two sample t test. GDV of all participants was recorded via scanning of fingers. The organs energy reserve of three systems namely cervical zone energy, thorax zone energy and lumber zone energy were analyzed.

F) Two sample t-test using minitab

Two sample t-test was used to to compare the two groups.

III. EXPERIMENTAL RESULT

GDV is designed for analysis of the functional state of the human body and calculate various parameters of human body for their comparison with reference parameter of a practically healthy person formed according to database. In this study the focus has been given to calculate energy reserves The organs energy reserve of three systems namely cervical zone energy, thorax zone energy and lumber zone energy.

A. Effect of Back Mudra and Gada Mudra on Cervical Zone Energy

TABLE I
TWO SAMPLE T- TEST RESULTS FOR CERVICAL ENERGY ZONE

Week	Mean		Variance		Standard deviation		df	Difference	95%ci for difference	T value	p value
	B	G	B	G	B	G					
0	3.756	3.366	0.535	0.511	0.732	0.715	18	0.390	-0.289 1.069	1.21	0.243
1	4.456	4.617	0.290	0.465	0.538	0.682	18	-0.161	-0.738-0.416	-0.59	0.565
2	3.715	4.382	0.282	0.604	0.531	0.777	18	-0.647	-1.272 -0.022	-2.17	0.043
3	4.614	4.33	0.595	1.36	0.771	1.17	18	0.289	-0.639, 1.217	0.65	0.521
4	4.738	5.082	0.248	0.355	0.498	0.596	18	-0.344	-0.860, 0.172	-1.40	0.178

For week 2, the two sample t-test result indicates that the difference between the sample mean is (-1.272, -0.022) and p-value is less than 0.05 that means back mudra group and gada mudra group are unequal. The estimate of the difference is within 95% confidence interval. This confidence interval provides the range of likely values for the difference between two population means for lumbar energy zone.

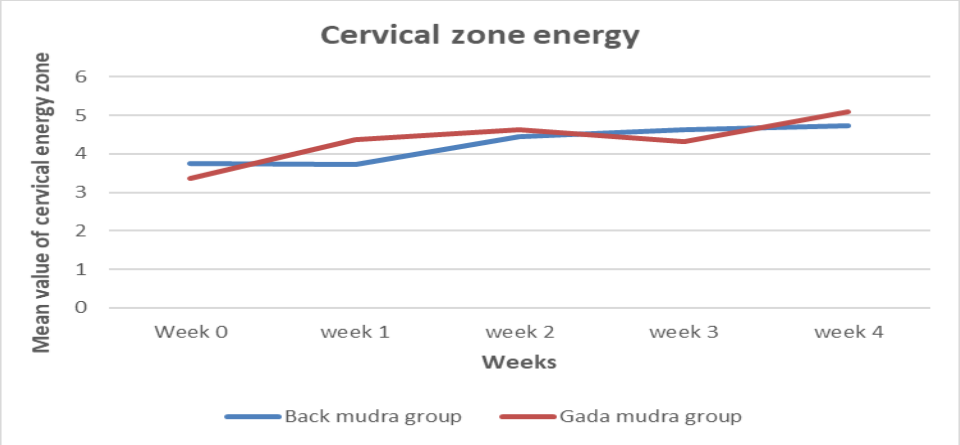

fig. 2 Comparison of cervical energy zone for back mudra group and gada mudra grou

B. Effect of Back Mudra and Gada Mudra on Thorax Zone Energy

TABLE 2
TWO SAMPLE T- TEST RESULTS FOR THORAX ENERGY ZONE

week	mean		variance		standard deviation		df	Difference	95% ci for difference	T value	p value
	B	G	B	G	B	G					
0	3.533	3.81	0.839	1.88	0.916	1.37	18	-0.255	-1.350,0.840	-0.49	0.631
1	3.099	3.514	0.399	0.782	0.632	0.884	18	-0.415	-1.137,0.307	-1.21	0.243
2	3.8	3.58	1.51	1.85	1.23	1.36	18	0.219	-0.998,1.436	0.38	0.71
3	3.196	2.629	0.610	0.545	0.781	0.738	18	0.567	-0.147,1.281	1.67	0.113
4	4.2	3.54	0.683	1.27	0.827	1.13	18	0.663	-0.587,0.887	1.5	0.151

For all the weeks, it is seen that p value is more than the significance level of 0.05. In that case null hypothesis is accepted. The two sample t-test indicates that there is no significant difference in two groups for thorax energy zone.

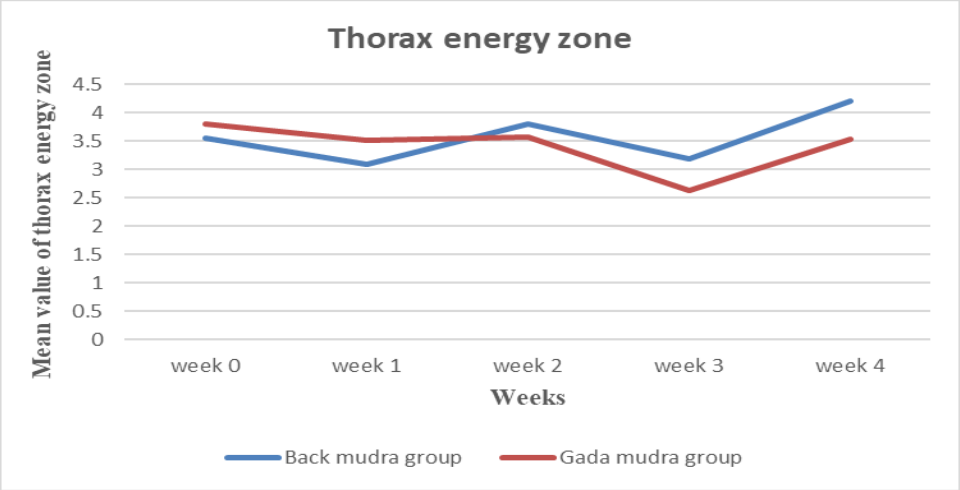

fig. 3 Comparison of thorax energy zone for back mudra and gada mudra group

C. Effect of Back Mudra and Gada Mudra on Lumbar Zone Energy

TABLE 3
TWO SAMPLE T-TEST RESULTS FOR LUMBAR ENERGY ZONE

week	Mean		variance		standard deviation		df	Difference	95% ci for difference	T value	p value
	B	G	B	G	B	G					
0	4.358	4.208	0.486	0.744	0.697	0.862	18	0.15	-0.587,0.887	0.43	0.674
1	3.583	3.785	0.191	0.386	0.437	0.622	18	-0.202	-0.707,0.303	-0.84	0.411
2	4.412	4.092	0.436	0.968	0.66	0.984	18	0.32	-0.467,1.107	0.85	0.404
3	3.657	2.742	0.533	0.799	0.73	0.894	18	0.915	0.148,1.682	2.51	0.022
4	4.561	3.53	0.726	1.15	0.852	1.12	18	1.03	0.097,1.963	2.32	0.032

For week 3and 4, the two sample t-test result indicates that the difference between the sample mean is 0.915 and 1.03 and p-value is less than 0.05, that means back mudra group and gada mudra group are unequal. The estimate of the difference is within 95% confidence interval. This confidence interval provides the range of likely values for the difference between two population means.

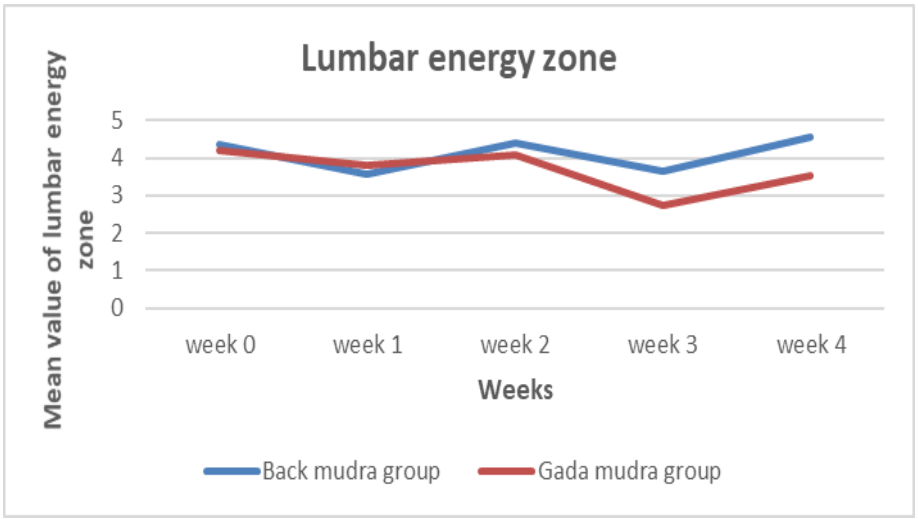

fig. 4 Comparison of Lumbar energy zone for back mudra and gada mudra group

IV. CONCLUSIONS

The purpose of this study was to examine the effects of mudras on energy reserves of spinal cord. Back mudra group shows more positive trend than gada mudra organs energy. Organs energy reserve was maximum in back mudra group. Cervical, thorax and lumbar zone energy data of back mudra group participants obviously increased in this study. In evaluation, gada mudra group demonstrate less positive trend. After the study and observations of the exposures, the following conclusions are shown from this study:

1) Significant increase in lumbar zone energy and cervical zone energy was found with regular practice of back mudra.
2) No significant increase was found in thorax zone energy.

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