



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2017; 2(1): 16-20

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www.theyogicjournal.com

Received: 05-11-2016

Accepted: 06-12-2016

Kripesh Karmakar

M. Phil. Scholar of Bharati
Vidyapeeth Deemed University,
College of Physical Education,
Pune, Maharashtra, India

Dr. Gaurav Pant

Assistant Professor of Bharati
Vidyapeeth Deemed University,
College of Physical Education,
Pune, Maharashtra, India

Effect of selected yoga intervention on the tactile sensitivity of elderly clients

Kripesh Karmakar and Dr. Gaurav Pant

Abstract

Background: Tactile Sensitivity is the 'sense of touch' in humans. It occurs in two main sub-modalities coetaneous and kinesthetic. Coetaneous sense receives sensory inputs from the receptors embedded in the skin and kinesthetic sense receives sensory inputs from the receptors within muscles, tendons and joints.

Aims: The main purpose of this study is to find the effect of selected yoga Intervention on Tactile Sensitivity of Elderly Clients.

Setting and Design: Thirty Elderly Clients (30) were taken as the subjects for the study. The age of the subjects ranged from above 60 years. The design used for the study was pre-post design. Stratified sampling technique was used for the subject's selection.

Methods: the current study was performed on the Tactile Sensitivity of Elderly Clients; pre and post data for the study were assessed on the scoring and norms of the tests conducted. Selected Yoga Intervention including Stretching Exercises, OMKAR Chanting, Surya-Namaskar, Yoga Asana, and Relaxation asana were used as components of intervention for a period of 6 Weeks.

Statistical Analysis Used: Dependent *t*-test was used for comparing the means of pre and post data between both the groups.

Results: Though there was no significant difference in the level of Tactile Sensitivity, yet there was a no improvement observed in case of Tactile Sensitivity after the end of Selected Yoga Intervention of 6 week.

Conclusions: The results conclude that the Selected Yoga Intervention for a longer duration may have highly significant level of change in the level of Tactile Sensitivity of Elderly Clients.

Keywords: Tactile sensitivity, elderly clients and selected yoga intervention

Introduction

Many people today claim to practice yoga primarily for its health benefits, without consciously adopting, Hindu religious perspective that under the practice and usually become apparent in more advanced stages of instruction. Elementary courses focus on physical exercises consisting of various postures and breathing techniques. The set of physical exercises taught in these classes is called "hatha yoga."

Yoga is much more than exercise though and with time the deeper aspect of yoga is eventually touch western culture and change it forever as yoga itself will change it forever because of western culture influence. The yoga is the ultimate technique which produces a marvelous change in the life style. The criminal nature of the unsocial elements can be changed by yoga. The sentiment of dissatisfaction egotism, anger, greediness, attachment etc. are the root cause of crime, when a person being aware and conscious by yoga practice recognizes its basic nature and suffering gained by the ill statement then a change appears in his mind and he live a decent social life, Which is full of softness, piusness, friendliness and happiness.

As the modern life is full of stress and tension, people are realizing the need of relaxation and mental calm. From ancient times the sages have developed various systems of yoga which is practiced properly give rest to your mind and body and refresh them. Yoga is universally benefiting all the peoples of all ages. The study is fascinating to those with the philosophical mind as is defined as the silencing of the mind's activities which leads to complete realization of the intrinsic nature of the Supreme Being. The word yoga is derived from 'Yuj' that means union of merger. The merger of soul with God and the experience of oneness with Him are meant by yoga.

Correspondence

Kripesh Karmakar

M. Phil. Scholar of Bharati
Vidyapeeth Deemed University,
College of Physical Education,
Pune, Maharashtra, India

Yoga is popularly understood to be a program of physical exercises (asana) and breathing exercises. In the words of one website, yoga “is a program of physical postures designed to purify the body and provide physical strength and stamina required for long periods of meditation.

Practiced for more than 5000 years, yoga is one of the oldest forms of healing therapy. The amazing results of yoga are now being studied by scientists all over the world. Teams of doctors at the various yogic health centers in India, keep detailed records of patients treated with yoga for diabetes, respiratory ailments, digestive complaints and obesity. Now it is studied and accepted across the globe for its many healing and relaxation effects. Yoga works on the mind and the body at the same time, as well as exploiting their interdependence. No other system does this. Western psychology studies the mind, western exercise physiology studies the effect of exercise on the body, but there is no emphasis on the interrelationship of the mind and the body.

Today yoga is being applied in various fields of human interest i.e. health, cure and prevention of injuries, sports performance, body relaxation and above all the development of physical fitness, which is the key pre-requisite factor needed for sports performance in different sports activities.

Sensory integration is a concept that has been in existence in the field of occupational therapy since the 1960's but has only recently pervaded the educational setting. Dr. Jane Ayres was the first to coin the term sensory integration, and called it "the neurological process that organizes sensation from one's own body and from the environment and makes it possible to use the body effectively within the environment.

The tactile system is our sense of touch through different sensory receptors in our skin. It is through the tactile system that we first receive information about the world when we come out from the womb environment. The ability to process tactile information effectively allows us to feel safe and form bonding with those who love us. It contributes to our social and emotional development. One important role of our tactile system is its protective function that alerts us when something is unpleasant or dangerous. For some children, this function of the tactile system is not working normally. They may perceive most touch sensations to be uncomfortable or scary and react with a flight-or-flight response.

Touch is our first language. Long before we can see an image, smell an odor, taste a flavor, or hear a sound, we experience others and ourselves through touch, our only reciprocal sense. Touch another without being touched us, and it is in this sense that there is great positive potential in forming a strong therapeutic bond and a vehicle for healing injuries created by early touch violations or lack of necessary touch. Touch is extremely important for health, healthy development and healing. The medicinal aspect of touch has been known and used since earliest recorded medical history, 25 centuries ago. Touch triggers a cascade of healing chemical responses including a decrease in stress hormones and an increase in serotonin and dopamine levels.

Tactile sense (skin sensitivity) consists mostly of the entire body among membranes that wrap our bodies. Tactile sense is unique organ which can't close among the sense consist our membrane. We can cover our ears, close our eyes, hold our nose, and close our mouth but not close tactile sense. The important of this tactile sense has become recognized and the research of tactile sense has been conducted in various areas. Tactile sense has been an interesting subject for basic science such as psychology, psychophysics, and cognitive sciences and so on.

Hypothesis

There may be a significance change in the level of Tactile Sensitivity of Elderly Clients after giving 6 week of selected yoga intervention.

Methodology

Subjects and Sampling: Thirty (30) elderly clients were selected (15 Experimental and 15 Control Group) from Mauli Old Age Home and Seva Sushruksha Kendra, Kundan Nagar, Dhankawadi, Pune, behind Gaurav Medical Hall (Maharashtra state). The age group of the subjects ranged from above 60 years.

Stratified sampling technique was used for the selection of the subjects.

Research Design

Experimental Group and Control Group were used for conducting the present study.

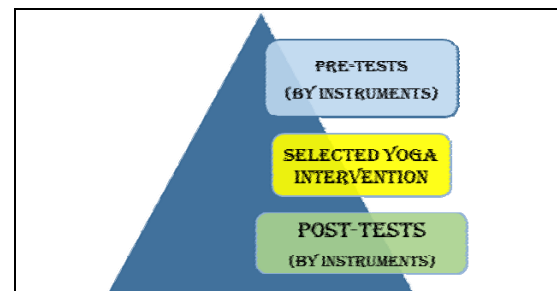


Fig 1

Tools Used

As it was an Experimental study researcher used tools for obtaining the data from the elderly clients of Pune city in relation to tactile sensitivity of elderly clients. The following tools were used for this study:

- **Tactile Sensitivity:** ‘Aesthesiometer Calliper’ (Vernier Type) Two points with Manual (It is a Calliper formed of two pieces sliding across one another. One having a graduated scale and the other sliding part with one window also having scale on its sides. Two pointed projections; one each to each piece is attached.)

Procedure

Pre-Intervention test: Pre-intervention test was conducted on the variable before starting the selected yoga intervention and the test was conducted through the instruments on both groups.

Selected Yoga Intervention: The selected yoga intervention was of six weeks with six days a week except Sunday. The subjects were divided into two groups i.e. Control Group (N=15) and Experimental Group (N=15). And the detailed information's about intervention schedule written below. The asana were included are: Trikonasana, Kati Chakrasana, Bandha- Konasana, Shavasana, Padmasana, Vajrasana, Vakrasana, Makarasana, Surya Namaskar, Ardha-Pavana-Muktasana, Supta-Baddha-Konasana, Bhujhangasana, Shavasana, Stretching Exercises, Bidalasan, Urdhva-Mukha-Svanasana, Omkar Chanting, Shalavasana, Tarasana, Uttanasana, Janu-Shirasana.

Note: Timing of selected Yoga Asana Intervention starts from 8:00 AM and ends after relaxing them by meditation, Shavasana or makarasana. The total duration of each session

Post-Training test: After six weeks of selected yoga intervention the post training test was conducted. And the test was conducted through instruments on both groups.

Analysis and Interpretation of Data

The data collected on 30 subjects before and after six week Selected Yoga Intervention on Tactile Sensitivity of elderly clients was analyzed by comparing the means of Pre and Post Tests of Control group and Experimental group and was again statistically analyzed by applying the Dependent-‘t’ test to

check the difference among groups and also to check the level of significance. Therefore separate tables and graphs have been drawn for each item as follows:

Section 1

This section of the chapter deal with the description statistical analysis and Dependent-‘t’ test applied on data collected from selected subjects during Pre-Test of tactile sensitivity of elderly clients of experimental groups and control group.

Table 1: Tactile Sensitivity of Elderly Clients during Pre-Test of Experimental And Control Group, Age above 60 years

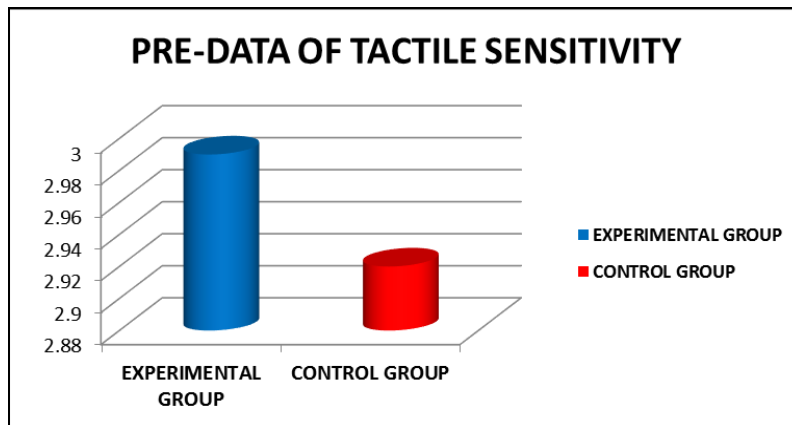
Descriptive Statistics							
Tactile Sensitivity	N	Mean	SD	SEM	DF	MD	Cal. t.
Experimental Group	15	2.99	0.73	0.19	28	0.07	0.39
Control Group	15	2.92	0.71	0.18			

Tabulated-‘t’ value required to be significant at 0.05 level of confidence with 28 degree of freedom was 1.701, Level of Significance = 0.05, Tabulated-‘t’ 0.05(28) = 1.701

Table No.1 reveals that there is no significant difference between means of Pre-tests between the tactile sensitivity of experimental and control group. Because means of Pre-test of tactile sensitivity of experimental group is 2.99 is slightly lower than means of Pre-test of tactile sensitivity of control group is 2.92 and the mean difference is 0.07. To check significant difference between means of Pre-test of tactile sensitivity of experimental and control group, the data was again analyzed by applying dependent-‘t’ test. Therefore, after applying dependent-‘t’ test it was found that there was

no significant difference between Pre-test on tactile sensitivity of Experimental and Control Group because value of calculated-‘t’ is 0.39 which is less than value of tabulated-‘t’ is 1.701 at 0.05 level of confidence.

**Graphical Representation of Tactile Sensitivity of Elderly Clients during Pre-Test of Experimental Control Group, Age above 60 Years
Tactile Sensitivity- (Pre-Test)**



Graph 1: Mean of Experimental Group: 2.99 and Control Group: 2.92
Graph- 1, Section-2

This section of the chapter deal with the description statistical analysis and Dependent-‘t’ test applied on data collected from

selected subjects during Post-Test of tactile sensitivity of elderly clients of experimental and control groups.

Table 2: Tactile Sensitivity and Visual Perception of Elderly Clients during Post-Test of Experimental Group, Age above 60 years Descriptive Statistics

Tactile Sensitivity	N	Mean	SD	SEM	DF	MD	Cal. T.
Experimental Group	15	3.3	0.82	0.21	28	0.4	0.09
Control Group	15	2.9	0.72	0.17			

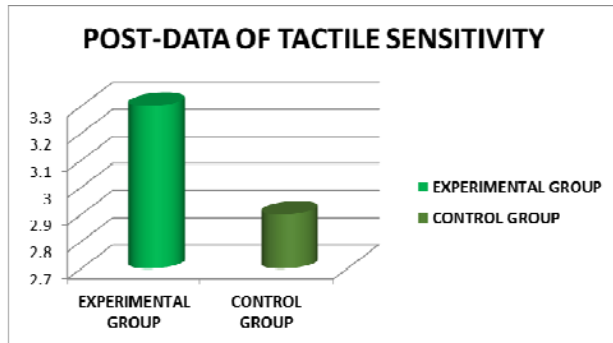
Tabulated-‘t’ value required to be significant at 0.05 level of confidence with 28 degree of freedom was 1.701, Level of Significance = 0.05, Tabulated-‘t’ 0.05(28) = 1.701

Table No. 2 reveals that there is no significant difference between means of Post-test between the tactile sensitivity of experimental and control group. Because mean of Post-test of tactile sensitivity of experimental group is 3.3 is higher than mean of Post-test of tactile sensitivity of control group 2.9 and then mean difference is 0.4. To check significant

difference between means of Post-test of tactile sensitivity of experimental and control group, the data was again analyzed by applying- dependent-‘t’ test. Therefore after applying- dependent-‘t’ test it was found that is no improvement observed because value of calculated-‘t’ is 0.09 which is less than tabulated-‘t’ is 1.701 at 0.05 level of confidence, which

shows that there is no improvement observed on Experimental Group and Control Group after six weeks Selected Yoga Intervention.

Graphical Representation of Tactile Sensitivity of Elderly Clients during Post-Test of Experimental and Control Group, Age above 60 Years Tactile Sensitivity and Visual Perception- (Post-Test)



Graph 2: Mean of Experimental Group: 3.3 and Control Group: 2.9

Discussion and Conclusion

The results of the study indicate that statistically there was no significant difference in the level of tactile sensitivity after a six weeks Selected Yoga Intervention at 0.05 level of confidence, yet no improvement occurs in case of tactile sensitivity to draw an assertive conclusion because the improvement was not there and this happens due to the short term duration of period. The results conclude that if the Selected Yoga Intervention continuous for long term duration of period (such as- 3months, 6 months, 9 months etc.) then there may be a significant change in the level of tactile sensitivity of Elderly Clients. M M Wickremaratchi and JG Llewelyn (2006) [20]

Were conducted to evaluate the decline in the main sensory modalities is well reported to occur with ageing. This article outlines the normal pathways involved in touch sensation and includes a review of available evidence relating to the study of ageing and touch. The authors try to use what is known about the neuroanatomy and neurophysiology of ageing to explain the impact on some broad functional deficits seen in the elderly population. The importance of understanding how the normal ageing process affects touch sensation is emphasized.

Decorps J *et al.* (2014) [6] Evaluated that with advancing age, a decline in the main sensory modalities including touch sensation and perception is well reported to occur. This review mainly outlines the peripheral components of touch perception highlighting ageing influences on morphological and functional features of coetaneous mechanical transducers and mechanic sensitive ion channels, sensory innervations, neurotransmitters and even vascular system required to ensure efferent function of the afferent nerve fibers in the skin. This, in conjunction with effect of ageing on the skin per se and central nervous system, could explain the tactile deficit seen among the ageing population. We also discuss appropriate tools and experimental models available to study the age-related tactile decline.

Jun Murata *et al.* (2010) Investigated aging affects the human hand function. For example, a decline in manual dexterity often accompanies old age. This decline corresponds to age-related changes in muscle and/or tactile functions. This study investigated whether age-related changes in muscular strength

and tactile sensibility are related to the hand function. The subjects consisted of 64 older adult females. The hand function was assessed using Perdue pegboard test. The handgrip strength was measured using a handgrip dynamometer. Tactile-pressure threshold was evaluated using Semmes-Weinstein monofilaments. These tests were performed on the dominant hand. All data items were compared among the four age groups (65–69 years, $n = 17$; 70–74 years, $n = 16$; 75–79 years, $n = 15$; 80–85 years, $n = 16$). The scores on Perdue pegboard test showed significant differences among the four age groups, and they decreased with age. The tactile-pressure threshold was augmented with increasing age, whereas handgrip strength did not differ among the four age groups. A significant relationship was observed between the Perdue pegboard test score and tactile-pressure threshold ($r = -0.61$), but not the handgrip strength ($r = 0.18$). These results suggested that the manual dexterity in the hand function was attenuated with increasing age. We considered that this attenuating effect was associated with a decline in tactile sensibility rather than a change in the muscular strength of the hand.

Joanne E Heming and Lenora N Brown (2005) [10] Were conducted to examine the tactile and visual temporal processing in adults with early loss of hearing. The tactile task consisted of punctuate stimulations that were delivered to one or both hands by a mechanical tactile stimulator. Pairs of light emitting diodes were presented on a display for visual stimulation. Responses consisted of YES or NO judgments as to whether the onset of the pairs of stimuli was perceived simultaneously or non-simultaneously. Tactile and visual temporal thresholds were significantly higher for the deaf group when compared to controls. In contrast to controls, tactile and visual temporal thresholds for the deaf group did not differ when presentation locations were examined. Overall findings of this study support the notion that temporal processing is compromised following early deafness regardless of the spatial location in which the stimuli are presented.

Stevens J C *et al.* (2003) [17] were conducted on the tactile acuity of 60 older subjects ($> \text{ or } = 65$ years) and 19 younger subjects (18-28 years) was assessed by two-point gap thresholds at the upper and lower surfaces of the forefinger, at the upper and lower surfaces of the feet, and at the velar surface of the forearm. The older subjects were assigned to one of four groups of 15 subjects each, depending on reported lifetime habits of physical activity and smoking: [1] active smokers, [2] active nonsmokers, [3] inactive smokers, and [4] inactive nonsmokers. Peripheral blood flow was assessed at the forefinger, foot, and forearm by means of laser-Doppler imaging and skin temperature recordings, under resting conditions and during and after a 5-min exposure to mild cooling [28] degrees C). Consistent with previous studies, tactile acuity thresholds in the foot and finger averaged about 80% higher in the older subjects than in the younger subjects, but only about 22% higher in the forearm. Although the upper surface of the fingertip was more sensitive than the lower surface in both younger and older subjects, the age-related decline in tactile acuity was nearly identical on both sides of the finger and foot. The latter finding refutes the hypothesis that the larger effect of aging in the extremities results from greater physical wear and tear on the contact surfaces of the hands and feet. Self-reported lifetime histories of physical activity and smoking were not significantly associated with measures of coetaneous blood flow or tactile thresholds. Possible reasons for this lack of association are discussed,

including the inherent limitations of testing only healthy older subjects, and the concept of “successful aging”.

Thus, the current research concludes that there was no improvement observed but the continuous practice or long term duration of Selected Yoga Intervention may have significant change in the level of Tactile Sensitivity of Elderly Clients.

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