

# Comparative Effect of Electrical Modalities Core Muscles Exercises and Combination of Core Muscles Exercises and Electrical Modalities as a Remedy for Low Back Pain

Dr. Samiksha Nayak

Physiotherapist, School of Phy. Edu. DAVV Indore

**Abstract:** Introduction: Chronic low back pain is a major health problem with enormous economic and social costs. Many condition cause back pain and they can be treated with electrical modalities and core muscle exercises. Objectives: 1) To characterize the level of back pain in male faculty of DAVV Indore before and after the treatment. 2) To find out the significant difference among the adjusted means of three experimental group and control group in relation to low back pain. Method: Forty four male patients (mean age  $35 \pm 4.4$  y) were randomly assigned to a electrical modalities group (EMG=11) or a core muscle exercises group (CMEG=11) or a combination group (EMG & CMEG=11) or a control group (CG=11). The total duration of the treatment was six weeks with respect to exercise and electrical modalities (SWD&IFT). Ronald-Morris Disability Questionnaire (RMDQ) was used to measure back related patient dysfunction and evaluated before and after the training period. Statistical significance was determined using ANCOVA and Descriptive test for characterize the low back pain. Result: The adjusted means of EMG, CMEG, EMG & CMEG and CG were 18.967, 18.144, 15.793 and 19.277 respectively. F value was found 2.985 at 3, 39 df at .05 level of significance. Conclusions: 1) Significant difference was found between the adjusted means of the combination group and electrical modalities, combination group and control group in relation to low back pain. 2) Hence it may be inferred that combination of electrical modalities and core muscle exercise were more effective in comparison to electrical modalities, core muscle exercises and control group.

**Keywords:** Core muscle exercise, Disability, Electrical modalities

## 1. Introduction

Educators have the opportunity to make a huge impact on their students – however, they face many challenges, which may result in low back, neck and shoulder pain; tired feet, aching legs, headaches, insomnia and stress. Often, the number one concern for teachers is back pain when standing. According to a study conducted by Ball State University, nearly 25% of US teachers are so sleep deprived that their teaching skills are significantly impacted. In fact, they also report more mood swings and are at a higher risk for serious personal health problems. The study found that 43% slept an average of six hours or less, due to long workdays. Teachers who are looking for remedies for insomnia may want to try Acupuncture [1]. It is well known anecdotally that both primary and secondary school teachers suffer from a high incidence of low back pain, and Back In Motion Chiropractic & Sports Rehab in Beaverton is proud to help with the rehabilitation of many of our local community's finest educators [2]. A survey showed that two-thirds of workers in primary and early-years classrooms have received treatment for back and joint problems as a result of working in child-sized environments. Some had paid hundreds of pounds from their own pockets to seek treatment from chiropractors and physiotherapists [3].

## 2. Objectives of the Study

- To characterizing the low back pain in male faculty of Devi Ahilaya Vishva Vidyalaya Indore before and after the treatment of electrical modalities, core muscle exercise

and combination of electrical modalities and core muscle exercise.

- To find out the effect of electrical modalities, core muscle exercise and combination of electrical modalities as a remedy for low back pain. (To find out the significant difference among the adjusted means of three experimental group and control group in relation to low back pain)

## 3. Methods and Materials

All teachers of Devi Ahilya Vishva Vidyalaya Indore who were suffering back pain and were took treatment under the supervision of physiotherapist in the physiotherapist department in School of Physical education. Forty four male patients (mean age  $35 \pm 4.4$  y) were randomly selected from 100 patients. They were divided randomly into four groups viz. Three experimental group and one control group, each group was consisting of eleven patients. After discussing with the experts the duration and repetition of each selected core muscles exercises were fixed. Core muscle exercises were done through swiss ball, wobble board and balance disc. The back pain patient did curl ups on swiss ball vs stable bench in slow and controlled pace sustaining constant tension. Short wave diathermy (SWD) and IFT and also combined both were given every day in morning time except Sunday. The total duration of the treatment was six weeks. It can be easily learned by anyone regardless of age, educational background, or culture. The technique is effortless and requires neither belief nor any change in life-style or diet. .

## 4. Design of the Study

A true experimental design was applied in this study:

The design is as follow.

R:  $O_1 - X_1 - O_2$   
 R:  $O_3 - X_2 - O_4$   
 R:  $O_5 - X_3 - O_6$   
 R:  $O_7 - C - O_8$

Where R is randomization,  $X_1$  is electrical modalities given to one experimental group,  $X_2$  is core muscles exercises is given to another treatment group,  $X_3$  is combination of core muscles exercises and electrical modalities given to third treatment group, C is no treatment given to control group.  $O_1, O_3, O_5, O_7$  are pre test and  $O_2, O_4, O_6, O_8$  are post-test.

### Data Collection Tools

Roland-Morris Disability Questionnaire (RMDQ) [4] was used to measure back – related patient dysfunction. RMQ is self –administered disability measure in which greater levels of disability are reflected by higher numbers on a 24-point scale. The RMQ has been shown to yield reliable measurements, which are valid for inferring the level of disability.

### Analysis and Interpretation of Data

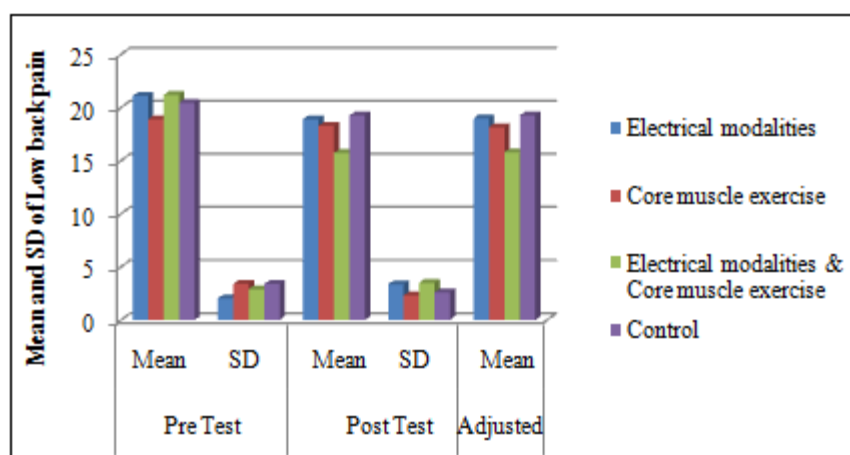
To determine which of the experimental treatment was most effective as remedy for low back pain in male teacher, the pre-test data, post test data were analyzed by descriptive statistics [5] as well as ANCOVA [6].

Descriptive statistics of pre-test data, Post- test data for low back pain of three experimental groups and a control group are presented in table-I

**Table 1:** Descriptive statistics for low Back Pain of three experimental groups and one control group

Groups	Pre Test		Post Test		Adjusted
	Mean	SD	Mean	SD	Mean
Electrical modalities	21.09	2.022	18.90	3.36	18.967
Core muscle exercise	18.90	3.41	18.27	2.32	18.144
Electrical modalities & Core muscle exercise	21.18	2.89	15.72	3.49	15.793
Control	20.45	3.38	19.27	2.61	19.277

Table -1 revealed that pre test mean, pre test SD, Post test mean, Post test SD and adjusted mean of four different groups namely; Three Experimental group and one control group. The pre test mean & SD of electrical modalities group was  $21.09 \pm 2.022$ , pre test mean & SD of Core muscle exercises group was  $18.90 \pm 3.41$ , and pre test mean & SD of Electrical modalities & Core muscle exercise group was  $21.18 \pm 2.89$ . Post test mean & SD of electrical modalities group, Core muscle exercises group, Electrical modalities & Core muscle exercises and control group was  $18.90 \pm 3.36$ ,  $18.27 \pm 2.32$ ,  $15.72 \pm 3.49$  and  $19.27 \pm 2.61$  respectively. The adjusted mean of Electrical modalities group was 18.967; adjusted mean of Core muscle exercises group was 18.144, adjusted mean of Electrical modalities & Core muscle exercise group was 15.793 and adjusted mean of control group was 19.27. This table has shown in fig.1



**Figure 1:** Graphical Representation of pre-test, post test mean and SD and Adjusted post test mean of Electrical modalities, Core muscle exercise, Electrical modalities & Core muscle exercise and Control group

**Table 2:** Analysis of CO-Variance of Low Back Pain of four different groups of male teachers of DAVV Indore

	SS	Df	MSS	F value	Sig. (p-value)
Treatment	81.476	3	27.159	2.985*	.043
Error	354.851	39	9.099		

\*Significant,  $F_{.05}(2, 39) = 2.84$

Above table, revealed that **Low Back Pain** of four different groups i.e Electrical modalities, Core muscle exercise, Electrical modalities & Core muscle exercise and Control group was significant because obtained F value (2.985) was greater than the required tabulated value (2.84) needed at .05 level of significance. Sig P value (.043) was also less than

the .05. Least significant difference (LSD) post hoc test was also employed to find out if any significant difference existed among four groups. The mean difference obtained between different group is presented below:-

**Table 3:** Pair Wise Mean Comparison Of Back Pain Four Different Groups of Male Teachers of Davv Indore

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Sig. <sup>a</sup>
Electrical modalities	core muscle exercise	.823	.540
	combination	3.174*	.018
	control	-.309	.812

core muscle exercise	Electrical modalities	-.823	.540
	combination	2.351	.086
	control	-1.132	.393
Electrical modalities & core muscle exercise	Electrical modalities	-3.174*	.018
	core muscle exercise	-2.351	.086
	control	-3.483*	.010

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant difference (equivalent to no adjustments).

\* The mean difference was significant at the .05 level

Above table showed significant difference was found between Control Group and combined treatment group (electrical modalities and core muscle exercise), electrical modalities and combined treatment group (electrical modalities and core muscle exercise). And also insignificant difference was obtained between electrical modalities and core muscle exercise group, electrical modalities and control group, core muscle exercise group and control group.

## 5. Discussion of Findings

On the basis of results it was concluded that combination of both treatment (electrical modalities & core muscles exercise) were more effective as remedy for back pain in male teachers of Devi Ahilya Vishv Vidyalyay Indore in comparison to electrical modalities, core muscles exercise and control group this might be due to that core muscle exercises support spine and abdomen and maintain posture, exercise of these muscles strengthen trunk area and minimise pain and discomfort along with SWD and IFT promote healing and provide muscle relaxation so patient can easily got relief from pain. Patience N Erickcorresponding and Derek R Smith (2014) conducted study on Low back pain among school teachers in Botswana, prevalence and risk factors and concluded that The prevalence of LBP appears to be high among school teachers in Botswana. A wide variety of LBP risk factors were identified in this study. Female gender and previous injury were both associated with LBP presence and disability. The complex nature of LBP risk factors found in this study suggests than no single specific preventative or intervention strategy will help in reducing these conditions. As such, to help reduce the prevalence, progression and burden of LBP among Botswana teachers, a greater emphasis should now be placed on ergonomics education, regular physical exercise and occupational stress, the present study was not supported by the study conducted by N Erickcorresponding and Derek R Smith (2014)[7].

## 6. Conclusions

- Significant difference was found between the adjusted means of the combination group (core muscle exercise & electrical modalities) and electrical modalities, combination group (core muscle exercise & electrical modalities) and control group in relation to low back pain.
- Hence it may be inferred that combination of electrical modalities and core muscle exercises were more effective

in comparison to only electrical modalities, only core muscle exercises and control group.

## References

- [1] [www.aimsclinic.com/teacher-pain-relief](http://www.aimsclinic.com/teacher-pain-relief)
- [2] Back In Motion Chiropractic & Sports Rehab (Dec 2014) - Serving the Beaverton & Portland Area - "Moving Toward Your Finish Line"
- [3] [www.chiropracticdubai.com/chiropractic-info/back-pain-a-real-pain-in-the-classroom-for-teachers](http://www.chiropracticdubai.com/chiropractic-info/back-pain-a-real-pain-in-the-classroom-for-teachers)
- [4] Roland MO, Morris RW(1983). A study of the natural history of back pain. Development of a reliable and sensitive measure of disability in low back pain. Spine; 8: 141-144
- [5] Clark, H. H., & Clark, D. H. (1975). *Research process in physical education*. Englewood cliffs, New Jersey: Prentice Hall, Inc.
- [6] Garrett, H.E. (1981). *Statistics in psychology and education*. New York: Vakils Feffer and Simon Ltd.
- [7] N Erickcorresponding and Derek R Smith (2014). Low back pain among school teachers in Botswana, prevalence and risk factors; BMC Musculoskeletal Disord. 15: 359.