



A COMPARATIVE STUDY TO SEE EFFECTIVENESS OF MCKENZIE EXERCISES VERSUS WII-FIT YOGA ON PAIN AND DISABILITY IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN

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ABSTRACT

INTRODUCTION- Chronic Non-specific Low Back Pain (CNSLBP) is one of the common health conditions. Both male and female populations are affected. Exercises play an important part in the management of patients with Low Back Pain **OBJECTIVE-** To compare effectiveness of McKenzie exercises versus Wii-Fit Yoga on pain and disability in patients with Chronic Non-specific Low Back Pain **METHODS-** 45 subjects with Chronic Non-specific Low Back Pain, 20-50 years of age were randomly allocated in 3 groups. Data was collected on 1st (pre-treatment), 7th (post-treatment) and 15th (post-treatment) session. **RESULTS:** The result showed significant improvement within the three groups. Between groups analysis showed that there is statistically non-significant difference. Hence, this study supports the null hypothesis. **CONCLUSION:** McKenzie exercises and Wii-Fit Yoga are equally effective in the treatment of chronic non-specific low back pain.

KEYWORDS

McKenzie exercises; Wii-Fit Yoga, Pain, Disability.

INTRODUCTION

Low Back Pain (LBP) is one of the most prevalent health conditions. 1 According to the World Health Organization; low back pain is a leading cause of disability. It occurs in similar proportion in all cultures, interferes with quality of life and work performance and is the most common cause of medical consultations.²

METHODOLOGY

Inclusion Criteria: Both males and females between 20-50 years with chronic non-specific low back pain.

Exclusion Criteria: History of spinal surgery, impaired balance, spinal pathologies, neurological and musculoskeletal disorders, pregnancy and uncooperative subjects.

A written consent was obtained from 45 subjects who met the inclusion criteria. Subjects were conveniently allocated to 3 groups i.e. Control group- A and Experimental groups- B and C. Total 15 treatment sessions for 3 weeks (5 sessions per week) were given. Data was collected on 1st (pre-treatment) session, 7th and 15th (post-treatment) session.

PROCEDURE:

INTERVENTION FOR GROUP A:

SWD for 15 minutes at lumbopelvic region, 3,4 TENS for 15 minutes with frequency of 5Hz and pulse width of 150 μ s. A comfortable intensity was adjusted according to each patient's sensitivity.^{5, 6, 7}

INTERVENTION FOR GROUP B (McKenzie exercise group)

SWD and TENS as Group A. McKenzie exercises for 30 minutes including resting period, 8, 9, 10

INTERVENTION FOR GROUP C (Wii-Fit Yoga group)

SWD and TENS after patient performed the Wii-fit Yoga. 30-minute virtual reality-based Yoga program using Wii Fit activities was performed. Four minutes of exercises were performed followed by one minute of rest. A longer resting period was also provided where desired.¹¹

INTERPRETATION

Data was analyzed by using SPSS software version 16.0

Table 1

Table 1: There was statistical non- significant difference in age between all 3 groups.

GROUPS	MEAN \pm SD	F-value	p-value	SIGNIFICANCE
A	34.20 \pm 10.394	1.330	>0.05	NS
B	32.13 \pm 9.628			
C	28.60 \pm 8.399			

Table 2

Table 2: There was non-significant difference of the variable NPRS between all 3 groups: group A, B and C at day 1 and statistically significant difference between control group (group A) and experimental groups (B and C) at day 7 and day 15.

DAYS	GROUP A MEAN \pm SD	GROUP B MEAN \pm SD	GROUP C MEAN \pm SD	F-value	p-value	SIGNIFICANCE
DAY 1	5.40 \pm 0.737	5.33 \pm 0.724	5.07 \pm 0.884	0.758	>0.05	NS
DAY 7	4.60 \pm 0.737	2.93 \pm 1.033	2.47 \pm 0.915	23.125	<0.05	S
DAY 15	3.87 \pm 0.834	1.33 \pm 1.047	0.60 \pm 0.737	56.657	<0.05	S

Table 3

Table 3: There was statistical significant difference ($p < 0.05$) between control group- group A (3.87 \pm 0.834) and experimental groups- B (1.33 \pm 1.047) and C (0.60 \pm 0.737) at day 15 in case of NPRS. There was statistical non-significant difference ($p > 0.05$) between both experimental groups- B (1.33 \pm 1.047) and C (0.60 \pm 0.737) at day 15 which showed that both the groups (B and C) are equally effective in reduction of pain in patients with chronic non-specific low back pain.

GROUPS	DAY 15 MEAN \pm SD	p-value	SIGNIFICANCE
GROUP A Vs GROUP B	3.87 \pm 0.834 1.33 \pm 1.047	<0.05	S
GROUP B Vs GROUP C	1.33 \pm 1.047 0.60 \pm 0.737	>0.05	NS

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GROUP A Vs GROUP C	3.87 ± 0.834 0.60 ± 0.737	<0.05	S
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Table 4

Table 4: There was non-significant difference of the variable ODI between all the 3 groups at day 1 and statistically significant difference between control group (group A) and experimental groups (B and C) at day 7 and day 15.

DAYS	GROUP A MEAN ± SD	GROUP B MEAN ± SD	GROUP C MEAN ± SD	F-value	p-value	SIGNIFI- CANCE
DAY 1	30.84 ± 7.487	28.89 ± 7.134	28.11 ± 6.507	0.596	>0.05	NS
DAY 7	27.49 ± 6.856	17.54 ± 6.079	12.61 ± 5.078	23.560	<0.05	S
DAY 15	23.00 ± 7.292	6.93 ± 5.167	3.39 ± 3.840	51.967	<0.05	S

Table 5

Table 5: There was statistical significant difference ($p < 0.05$) between control group- group A (23.00 ± 7.292) and experimental groups- B (6.93 ± 5.167) and C (3.39 ± 3.840) at day 15 in case of ODI. There was statistical non-significant difference ($p > 0.05$) between both experimental groups- B (6.93 ± 5.167) and C (3.39 ± 3.840) at day 15 which showed that both groups (B and C) are equally effective in reduction of disability in patients with chronic non-specific low back pain.

GROUPS	DAY 15 MEAN ± SD	p-value	SIGNIFICAN CE
GROUP A Vs GROUP B	23.00 ± 7.292 6.93 ± 5.167	<0.05	S
GROUP B Vs GROUP C	6.93 ± 5.167 3.39 ± 3.840	>0.05	NS
GROUP A Vs GROUP C	23.00 ± 7.292 3.39 ± 3.840	<0.05	S

DISCUSSION

The study was aimed to find and compare the effectiveness of McKenzie exercises and Wii-Fit Yoga on pain and disability in patients with Chronic Non-specific Low Back Pain. In group A i.e. control group, within group analysis of variables NPRS and ODI showed significant improvement. From this study, it is noticed that SWD and TENS are effective to decrease pain and disability in chronic non-specific low back pain.

According to Khan et al (2013) and Ahmed et al (2009), shortwave diathermy is a deep heating modality. It has significant effect on pain and increased temperature in the tissues due to heat causes increased arterioles and capillary dilatation followed by increased blood flow to the area. The increase in temperature alter the physical properties of fibrous tissue as found in the tendons, joint capsules, scars and tissues yield more readily to stretch when heated. According to Debsarma (1999), deep heating modality is more effective than superficial heat in pain management in chronic low back pain patients. 3,4 Therefore, it has been concluded that application of SWD is effective in chronic low back pain.

The reduction of pain in all the 3 groups can also be due to application of Transcutaneous Electrical Nerve Stimulation (TENS). The development of pain relief with application of TENS was based on the Gate control theory conceptualized by Melzack and Wall. 5,6,12

In group B (i.e. experimental group), within group analysis for variables NPRS and ODI have shown significant improvement. From this analysis, it is noted that SWD, McKenzie exercises and TENS are effective to decrease pain and disability in chronic non-specific low back pain.

The McKenzie method utilizes an assessment process which aims to identify patients within the non-specific spinal pain population whose

symptoms behave in a similar way when subjected to mechanical forces. During the exercise program, postural correction is needed as well as observation of all changing in pain intensity and location. McKenzie program can start in acute pain and performed in all pain stages. 13,14

Brian et al, concluded that the McKenzie method is a highly effective program for reducing the pain in the spine. 1

In group C (i.e. experimental group), within group analysis of variables NPRS and ODI have shown significant improvement. From this analysis, it is noticed that Wii-Fit Yoga is an effective technique in reducing pain and disability in patients with chronic non-specific low back pain.

Unique positions of Wii-Fit Yoga are reported to increase activities of the parasympathetic system, which in turn increase the levels of thalamic GABA and it also increases the level of peripheral nerve activity. Wii-Fit Yoga promotes strengthening and relaxing of muscles and ligaments and the right alignment of the body can be sustained.

Carpenter (1999) reported that in patients with chronic LBP, a decrease in physical activity would lead to a decrease in lumbar muscle size and power, thus causing a repeated increase in LBP and stress, eventually resulting in a vicious circle. For this reason, he suggested that strengthening major weakened muscles such as the lumbar extension muscles could be a method for prevention of such repeating cycles. In addition, feedback provided from the virtual reality program would have increased the participant's motivation and concentration. 15

LIMITATIONS OF THE STUDY:

- The sample size was small.
- Home exercise program was not advised.
- External factors affecting the progress could not be controlled.
- The study was limited to 15 intervention sessions only.

CONCLUSION

The study concluded that both McKenzie exercises and Wii-Fit Yoga are equally effective in reducing pain and disability associated with Chronic Non-specific Low Back Pain.

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