

**COMPARISON BETWEEN THE EFFECTIVENESS OF MCKENZIE EXTENSION EXERCISES AND WILLIAM FLEXION EXERCISES FOR TREATMENT OF NON-SPECIFIC LOW BACK PAIN**

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**ABSTRACT:**

**BACKGROUND:** Nonspecific low back pain (NSLBP) is the most common back pain and involves large population.

**OBJECTIVE:** objective of this study was to find better treatment option between McKenzie exercises and William’s flexion exercises for non-specific low back pain.

**METHODS:** It was a quasi-experimental study. Convenience sampling technique was used. 120 patients of both genders were included in treatment sessions. Patients with NSLBP and with age limit of 18-35 years were included in study. Visual analogue scale and revised Oswestry disability index were used to measure pain and disability. Group 1 performs McKenzie exercises and Group 2 performs William flexion exercises with each treatment session of two sets of 10-15 repetitions per day. Treatment was given on 4 alternate days per week for consecutive 2 weeks.

**RESULTS:** Independent sample t-test was applied to compare the mean VAS score of two treatment groups before treatment and after treatment. P-value for independent sample t-test (0.593) shows that there is a non-significant difference of mean VAS between two treatment groups before treatment. P-value for independent sample t-test (0.010) shows that there is a significant difference of mean VAS between two treatment groups after treatment. P-value for independent sample t-test (0.06) shows that there is a non-significant difference of mean RODI between two treatment groups before treatment. P-value for independent sample t-test (0.000) shows that there is a significant difference of mean RODI between two treatment groups after treatment.

**CONCLUSION:** From the statistics it is clear that mean RODI is lower in McKenzie group as compare to William flexion group. McKenzie exercises greatly reduce pain and disability in patients with NSLBP. William flexion exercises also have effect on pain reduction and disability improvement but less than the effects of McKenzie exercises.

**KEY WORDS:** McKenzie exercises, William flexion exercises, NSLBP

**INTRODUCTION:**

Non-specific low back pain (NSLBP) is defined as the pain without any known pathology<sup>1</sup>. Low back region is considered from lower margin of the 12th rib and gluteal folds inferiorly. Patients with back pain are 90% due to NSLBP. It can be differentiated from specific LBP by the occurrence of specific pathologies. Specific LBP is caused by some specific pathology like tumors, spondylolisthesis, and fractures, ankylosing

spondylitis or any infection but NSLBP does not involve such specific pathologies.<sup>2</sup>

Surgical treatments are avoided and effective treatment options are developed. Treatment of NSLBP with specific exercises helps to avoid surgical treatment options. It is common practice to treat the patients of NSLBP with

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lumbar flexion exercises or with the lumbar extension exercises.<sup>3</sup>

William's Flexion Exercises relieve pressure from posterior part of vertebral column which decreases pain stimulations. William flexion exercises are pelvic tilt, hip flexor muscle stretch, seated trunk flexion, single and double knee to chest, hamstring stretch and partial sit-ups.<sup>4,5</sup> McKenzie exercises are prone lying, prone press up, and extension in standing, prone lying on elbows, flexion of trunk in lying, standing and sitting.<sup>6</sup>

### MATERIAL AND METHODS

**Study Design:** Quasi Experimental study design was used.

**Sample Size:** 120 patients of both genders were included in treatment sessions

**Sampling Technique:** convenient sampling technique was used.

**Study Duration:** Study was completed in 3 months.

**Inclusion Criteria:** Patients with NSLBP and with age limit of 18-35 years were included in study.

**Exclusion Criteria:** Patients with pain history of more than 2 years, accidental history, disc prolapse, Heredity lumbar spine problem and Pregnancy were excluded.

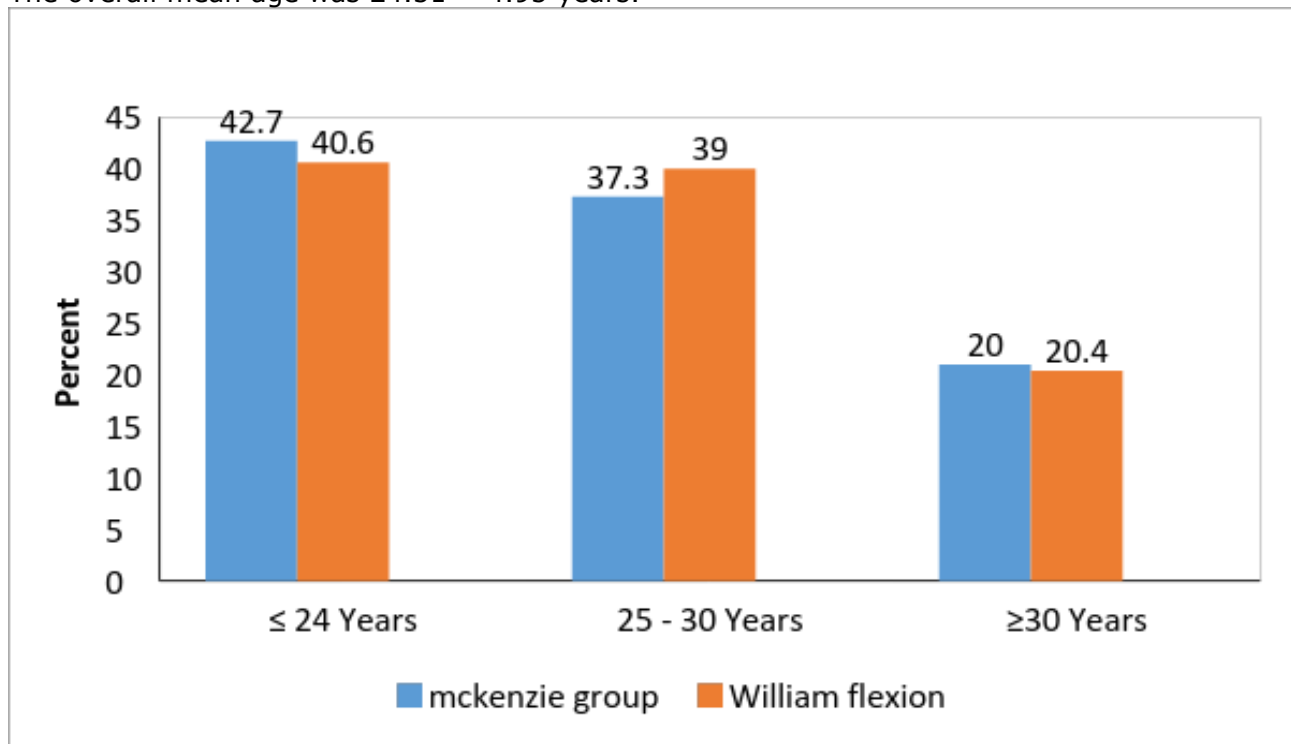
**Outcome Measures:** Visual analogue scale and revised Oswestry disability index were used to measure pain and disability. Group 1 performs McKenzie exercises and Group 2 performs William flexion exercises with each treatment session of two sets of 10-15 repetitions per day. Treatment was given on 4 alternate days per week for consecutive 2 weeks. Pain intensity and disability rates were measured before the treatment, on 4th treatment session and on 8th treatment session by VAS scale.

**Study Variables:**

**Data Analysis:**

Data entry and analysis was done by using SPSS 19.

The overall mean age was  $24.51 \pm 4.95$  years.



**RESULTS:**

Independent sample t-test was applied to compare the mean VAS score of two treatment groups before treatment. Mean VAS for William flexion group was  $5.8 \pm 1.09$  while for McKenzie group was  $5.5 \pm 0.50$ . P-value for independent sample t-test (0.593) shows that there is a non-significant difference of mean VAS between two treatment groups before treatment.

	Treatment group	N	Mean	Std. Deviation	Std. Error Mean
VAS pre treatment	William flexion	60	5.8000	1.09545	.48990
	McKenzie	60	5.5000	.50000	.22361

Another Independent sample t-test was applied to compare the mean VAS score of two treatment groups after treatment. Mean VAS for William flexion group was  $3.50 \pm 1.00$  while for McKenzie group was  $1.70 \pm 0.67$ . P-value for independent sample t-test (0.010) shows that there is a significant difference of mean VAS between two treatment groups after treatment.

	Treatment group	N	Mean	Std. Deviation	Std. Error Mean
VAS post treatment	William flexion group	56	3.5000	1.00000	.44721
	McKenzie group	58	1.7000	.67082	.30000

From the statistics it is clear that mean VAS is lower in McKenzie group as compare to William flexion group, thus proving McKenzie exercises more effective mean for reducing NSLBP.

Independent sample t-test was applied to compare the mean RODI score of two treatment groups before treatment. Mean RODI for William flexion group was  $41.5 \pm 5.350$  while for McKenzie group was  $43.30 \pm 5.930$ . P-value for independent sample t-test (0.06) shows that there is a non-significant difference of mean RODI between two treatment groups before treatment.

	Treatment group	N	Mean	Std. Deviation	Std. Error Mean
<b>RODI1</b>	William flexion	60	41.5000	5.350	.00000
	McKenzie	60	43.3000	5.930	.00000

Another Independent sample t-test was applied to compare the mean RODI score of two treatment groups after treatment. Mean RODI for William flexion group was  $24.6 \pm 4.87$  while for McKenzie group was  $13.5 \pm 1.27$ . P-value for independent sample t-test (0.000) shows that there is a significant difference of mean RODI between two treatment groups after treatment. From the statistics it is clear that mean RODI is lower in McKenzie group as compare to William flexion group.

	Treatment group	N	Mean	Std. Deviation	Std. Error Mean
RODI2	William flexion	56	24.6000	4.87178	.38987
	McKenzie	58	13.5000	1.27475	.57009

## DISCUSSION:

Results of review illustrate that McKenzie extension exercises were greatly associated with reduction in pain and disability in patients of NSLBP in short-term follow up. In this study mean RODI for McKenzie group after treatment was much lower than the mean RODI for William group. So McKenzie method decreases disability in patients with NSLBP. But these results are less significant with respect to McKenzie group.<sup>1</sup>

A study concluded that William flexion exercises reduce pain intensity from severe LBP to mild pain. A sample size of 250 patients was taken by using non-probability convenient sampling technique. The age limit of patients was 18-90 years with having lumbar pain for more than three months. Visual analogue scale was the pain measuring scale. In this study there was a significant difference of mean VAS between before and after treatment in William flexion group. But these results are less efficient as compare to MEE group.<sup>8</sup>

An randomized control study revealed that patients treated with McKenzie exercises give good response towards extension ex therapy. There was significant decrease in pain and disability in McKenzie group. This study compares the effects of McKenzie exercises with placebo therapy. 148 patients were equally assigned to both groups and treatment was given for five weeks. Pain was measured on numeric pain scale. In this study there was a significant difference of mean VAS between before and after treatment in McKenzie group.<sup>9</sup> A study excluded the subjects with recent history of surgery, pregnancy, spondylolistheis, systemic disease associated with LBP, bowel or bladder diseases and chronic pain of more than 2 years duration. In this study following conditions are also excluded.<sup>10</sup>

From the statistics it is clear that mean VAS is lower in McKenzie group as compare to William flexion group, thus proving McKenzie exercises more effective mean for reducing NSLBP. A systematic review based on trials which compare McKenzie ex with lumbar strengthening exercises shows good results in McKenzie group to see the role of lumbar strengthening exercises in treatment of NSCLBP. Trails comparing the intensive training and McKenzie extension exercises favors the McKenzie extension exercises in decreasing level of pain (short-term and long-term) and disability. In this study mean RODI score for McKenzie group was much less than before the treatment.<sup>11</sup>

A study mentioned that percentage of return to work was greatly higher in exercise group. ODI was also better in exercise group.<sup>12</sup>

Researchers suggested that McKenzie exercises are effectively reduce pain and disability. It also improves functional ability of subject to carry out daily activities without pain complaint. They included the patients of LBP with age limit of 20-40 years.<sup>13</sup> In this research patients with age limit of 19-35 were included. So that more sever conditions can be avoided like degenerative diseases of spine or systemic diseases. A systematic review also evaluated that McKenzie ex has short term reduction of pain but long term effects are non-significant. McKenzie provides short term pain relief after treatment. In this study McKenzie also provide pain relief in patients with NSLBP.

## CONCLUSION:

According to the results of this research, McKenzie exercises greatly reduce pain and disability in patients with NSLBP. William flexion exercises also have effect on pain reduction and disability improvement but less than the effects of McKenzie exercises.

McKenzie exercises have preference over the William exercises due to their efficacy in results.

McKenzie method improves lifting ability, walking ability, sitting duration and travelling ability more significantly.

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