



“EFFECTIVENESS OF BACK SCHOOL METHOD AMONG COLLEGE STUDENTS WITH NON SPECIFIC LOW BACK PAIN: A RANDOMIZED CONTROL TRIAL”.

Physiotherapy

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ABSTRACT

BACKGROUND: Lower back pain (LBP) is very common among general population, those who engage in physical activity, students and geriatric population. The most common type of low back pain is non specific and has no clear diagnostic, prognostic or treatment protocols. Back- school program is used for the prevention and treatment of patients with low back pain.

AIM: To find out the effectiveness of back school method on college students with non specific low back pain.

OBJECTIVES: To find out the effect of back school method on college students with non specific low back pain and to compare the experimental group to the control group.

METHOD: 30 participants were select based on selection criteria for the study. All the subjects were divided into two groups (Group A and B) using Lottery method. Group A was receiving back school exercise and Group B was the control group. The program is composed of four sessions almost 45 minutes in every session. Before and after the treatment, the NPRS, Roland-Morris Disability Questionnaire [RMDQ], and lumbar spine range of motion has been assessed.

RESULTS: Data were statistical analysis using SPSS version 22.0. parametric test was used within the group analysis. The test result showed improvement in group A compared to the control group.

CONCLUSIONS: Back school method is more effective in reducing non-specific low back pain; improve posture and improving the quality of life of the participants.

KEYWORDS

Non-specific low back pain, Back school method, pain, college students, lumbar spine range of motion.

1. INTRODUCTION

Lower back pain (LBP) is most common among general population, those who involved in physical activity, students and geriatric population as well; often it is very disabling depending upon the aggressiveness of condition which varies people to people.^[1] LBP is the most impotent cause of disability and failure to work, and anticipated that would effective in to 90% of persons earlier as well as future in their lives. Lower back pain problem develop in any person, it may be due to the a sort of lumbar spine sicknesses and it is a continuous multi etiological disorder.^[1]

The most common type of low back pain is non specific and has no clear diagnostic, prognostic or treatment protocols.^[2] Most cases (90%) are nonspecific and it will be seen in all age groups.^[3] Despite the lack of structural change in nonspecific low back pain; it can limit activities of daily living and cause temporary or permanent inability to work, being one of the main causes of absence at work in the world.^[3] The prevalence of nonspecific LBP is higher in workers subjected to heavy physical exertion, such as weight lifting, repetitive movements, and frequent static posture.^{[4][5]}

People with LBP have reduced lumbar ROM and move more slowly compared to people without LBP.^[6]

Students mainly seated during lectures and other lab work for a considerable time period. The main cause of backache which includes various type of chair being used, duration of sitting and body posture that lead to musculoskeletal loads and strains resulting in the decline of health and reduced productivity of students.^[7]

LBP is associated with multiple risk factors, including individual (e.g., gender, age, lifestyle, physical capacity, and body weight), psychosocial (e.g., anxiety, depression, social support, and job satisfaction), and physical factors (e.g., hard manual work, heavy weight lifting, bending or twisting, etc).^[8]

The back school method was developed in 1969 in Sweden by Marianezachrisson Forsell, with the aim of treating the patient's current periods and avoiding recurrent periods of LBP. The program is composed of four sessions almost 45 minutes in every session.^{[9][10]}

Back school is defined as a postural education program used for the prevention and treatment of patients with low back pain, which includes therapeutic exercises and theoretical and practical lessons given to a group of participants, supervised by a physical therapist.^[4]

Need Of Study

According to previous researches the study done on school teachers, lower limb amputees, and elderly patients. There is no study done on college students. So, need of the study is to assess the effectiveness of back school method on college students with non specific low back pain.

2. AIM AND OBJECTIVE

AIM:

- To find out the effectiveness of back school method on college students with non specific low back pain.

OBJECTIVE:

- To find out the effect of back school method on college students with non specific low back pain.
- To compare the experimental group to the control group.

3. HYPOTHESIS

Experimental Hypothesis

There is a significant effect of back school method on college students with non specific low back pain.

Null Hypothesis

There is no significant effect of back school method in college students with non specific low back pain.

4. METHODOLOGY

4.1 METHOD

Study design: Randomized control trial

Study setting: OPD- 5 Sports Department, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar.

Sampling Technique: simple random sampling (Lottery method)

Study Population: 18-25 years. {Female & Male}

Study Sample: 30

Treatment Duration: 4 weeks

4.2 Criteria For Selection

Inclusion Criteria:

Subjects with sub-acute non specific low back pain with age 18-25 both included male and female.

Exclusion Criteria:

Subjects with any previous or recent spinal injuries, Spinal deformities, any surgery and Spinal malignancy as well as infections.

4.3 Materials Required:

Pen
Paper
Consent form
Laptop
Towel
Chair/Stool
Pillow
Measure tape
Plinth

4.4 Procedures of Data Collection

After taking ethical clearance and CTRI number (CTRI/2021/11/ 038 167), 30 college students were select based on inclusion criteria for the study.

Firstly all participants were educated about the study processes and the participants were asked to give their written consent and permit participation in this study.

All the subjects were divided into two groups (Group A and B) using Lottery method.

Before starting the treatment, the NPRS to assess pain, Roland-Morris Disability Questionnaire [RMDQ] to assess disability, and lumbar spine range of motion has been assessed.

Group A was receiving back school exercise and Group B was the control group.

The back school exercise program is composed of 4 sessions lasting approximately 45 minutes.

The first session of back school program, give the presentation of the method; including history and general information about back school method, individual were informed about anatomy and biomechanics of spine and epidemiology of low back pain.

In the second session give the guidance on position when seated or standing, instruction on breathing exercises, kinesthetic training, stretching of the lower back, quadriceps, hamstring muscles.

In third session there is instructions on exercise for abdominal muscle strength, guidance on how to perform the exercise at home once a day.

In the fourth session there is practical application of all of the exercise and learned techniques.

This treatment was for four weeks, three days a week.

After 4 weeks of the treatment we were rechecking of outcome measures.

4.5 Intervention**Group-A**

Group A will be treated with Back school method.4 sessions 3 day/week for 4 weeks.

Group-B

No treatment was given in this group



Figure: 4.5.1 Theoretical Sessions



Figure: 4.5.1 Theoretical Sessions

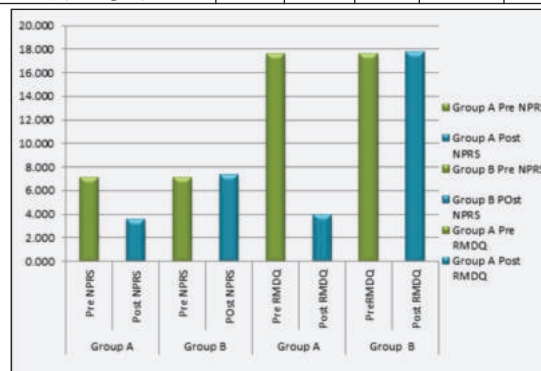
5. RESULT

Table 5.1: Age Between Group A & B

Demographic Details		Group A	Group B
Age	Mean	20.4	20.467
	SD	± 1.52	± 1.4573

Table 5.2: Intragroup Comparison Of Pre And Post Treatment NPRS & RMDQ Score For Group-A And Group B

Outcome	Pre-Treatment		Post-Treatment		p value
	Mean	SD	Mean	SD	
NPRS Score (Group A)	7.13	± .7432	3.600	± .6325	0.00
NPRS Score (Group B)	7.133	±.7432	7.33	± .8165	0.082
RMDQ (Group A)	17.600	±.9856	3.933	± .7988	0.00
RMDQ (Group B)	17.600	±.9856	17.800	± 1.0142	0.082

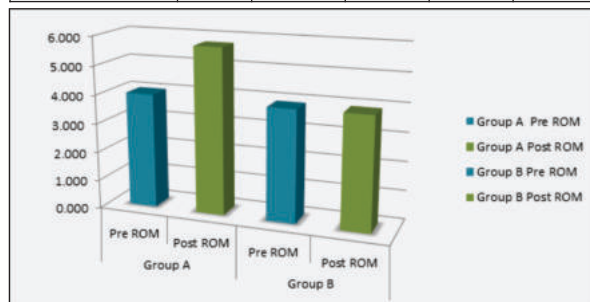


Graph 5.1: Intragroup Comparison Of Pre And Post Treatment Of NPRS And RMDQ Score For Group-A And Group-B

Table 5.2 and Graph 5.1 shows intra group comparison of pre and post NPRS and RMDQ in Group-A and Group-B. The p-value of Group-A is 0.00 and in Group-B the p-value is 0.082. A statistically significant difference was found between the pre and post treatment of NPRS and RMDQ score in Group-A.

Table 5.3: Intragroup Comparison Of Pre And Post Treatment Lumbar ROM Score For Group A And Group B

Outcome	Pre-Treatment		Post-Treatment		p value
	Mean	SD	Mean	SD	
ROM (Group A)	3.993	±.5161	5.740	±.3961	0.00
ROM (Group B)	3.893	± .4061	3.913	± .4138	.189



Graph 5.2: Intragroup Comparison Of Pre And Post Treatment Of ROM score For Group-A And Group-B

Table 5.3 and Graph 5.2 show Intra group comparison of pre and post ROM in Group-A and Group-B. The p-value of Group-A is 0.00 and in Group-B the p-value is 0.189. A statistically significant difference was found between the pre and post treatment of ROM score in Group-A.

All statistical analysis was done using SPSS 22.0 software for windows. Descriptive analysis was obtained by mean & standard deviation.

Intergroup comparison of pre & post treatment scores of NPRS, RMDQ, and ROM was done using unpaired t-test.

Intra group comparison of pre & post treatment scores of NPRS, RMDQ, and ROM was done using paired t-test. It showed that there is a significant difference between back school and control group.

So here the present study showed that group A is more effective compared to other group. On its basis there is a decrease in the intensity of pain and disability in group A than in group B.

6. DISCUSSION

The purpose of the study was to find out the effectiveness of Back

school method on college students with non specific low back pain to improve the pain intensity, quality of life and range of motion.

30 college students were selected as per the inclusion and exclusion criteria and divided into 2 groups. After that demographic data patient's examination and investigation, patients were assessed. Group A (the experimental group) received the treatment back school method for 4 weeks, 3 days/week and Group B (the control group) didn't received treatment by us.

Intergroup comparison of pre & post treatment scores of NPRS, RMDQ, and ROM was done using unpaired t-test.

The present study showed that the intra group comparison of all the outcomes was done using the paired t test which has shown statistical significant difference between both the groups ($p=0.00$). However the control group did not show any improvement after 4 week of study.

So here the present study showed that group A is more effective compared to group B. On its basis there is decrease in the intensity of pain, disability and improve lumbar ROM in group A than the group B.

Thus, the experimental hypothesis is failed to reject.

According to the author A.N. Garcia et al stated that The McKenzie method was slightly more effective than the back school method for reducing the disability.^[10]

Back school is effective for chronic low back pain, although the quality of evidence is mostly very low, the result showed no difference or a trivial effect in favor of back school, stated by – Patricia Parreira et al.^[11] But according to the author Sethi Dhiraj R et al stated that back school exercise are effective in nonspecific low back pain and the back school intervention can also improve work ability of patient.^[4]

Students remain sited in the classroom for long period of time. Recent studies has proved that sitting for extending period in static, stooped or otherwise awkward posture in classroom increases stress to spinal structure and increase in cervical and upper back pain as well lower back pain (LBP) among teenagers.^[7]

The reason behind is that reduction in pain improve flexibility and strength to apply back school exercise program to educate the students for ideal posture of sitting to relieve their pain and to elongate its effect on muscle to improve flexibility and strength and ultimate improve in the range of motion of the spine is observed.

This study suggests that the back school exercise is more effective in reducing non-specific low back pain and improving the quality of life of the participants.

7. CONCLUSION

Back school exercise is more effective in reducing non-specific low back pain, improve posture and improving the quality of life of the participants.

Limitations of the study:

- Small sample size
- It was not possible to monitor the home exercise program

Future recommendations of the study:

- Long duration study should be conducted with the same regime like by increasing the number of weeks. E.g.: six weeks, eight weeks, etc.
- Study can be done in different occupations.

Acknowledgement

First and foremost I would like to thank my parents Mrs. Sheetal Barot and Mr. Manish Barot for their valuable support and confidence throughout my study.

I would like to thank my mentor and guide Dr. Roshani Patel (M.P.T. Musculoskeletal and Sports Science), Assistant Professor, and Nootan College of Physiotherapy for the valuable guidance and advice whenever I needed.

I would also like to thank my patients for their participation, support and understanding without them it was not easy to carry out the whole research.

List of Abbreviations

LBP - Lower Back Pain

RMDQ - Roland – Morris Disability Questionnaire.

NPRS - Numerical Pain Rating Scale.

ROM - Range of motion.

SPSS - Statistical Package of Social Science.

REFERENCES

1. Sherazi, S. M. A. (2017). Association of non – specific lower back pain with level of disability among medical students of lahore. Pakistan Journal of Medical and Health Sciences, 11, 253–255. <https://www.researchgate.net/publication/316999807>.
2. Moffett, J., & McLean, S. (2005). The role of physiotherapy in the management of non-specific back pain and neck pain. Rheumatology, 45(4), 371–378. <https://doi.org/10.1093/rheumatology/kei242>.
3. Krismer, M., van Tulder, M., & Low Back Pain Group of the Bone and Joint Health Strategies for Europe Project (2007). Strategies for prevention and management of musculoskeletal conditions. Low back pain (non-specific). Best practice & research. Clinical rheumatology, 21(1), 77–91. <https://doi.org/10.1016/j.berh.2006.08.004>.
4. Shete, D. (2016). EFFECTIVENESS OF BACK SCHOOL EXERCISES IN NON SPECIFIC LOW BACK PAIN. International Journal of Clinical and Biomedical Research, 3, 5–7. <https://www.academia.edu/27342564>.
5. Dagenais, S., Caro, J., & Haldeman, S. (2008). A systematic review of low back pain cost of illness studies in the United States and internationally. The Spine Journal, 8(1), 8–20. <https://doi.org/10.1016/j.spinee.2007.10.005>.
6. Laird, R. A., Gilbert, J., Kent, P., & Keating, J. L. (2014). Comparing lumbo-pelvic kinematics in people with and without back pain: a systematic review and meta-analysis. BMC musculoskeletal disorders, 15, 229. <https://doi.org/10.1186/1471-2474-15-229>.
7. Mughal, S., Anwar, S., Abdulhafeez, A., & Parveen, W. (2020). FREQUENCY OF NON-SPECIFIC LOWER BACK PAIN IN FEMALE UNIVERSITY STUDENTS DUE TO CONVENTIONAL CLASSROOM SEATS. Journal of Riphah College of Rehabilitation Sciences, 8(0), 1. <https://doi.org/10.5455/jrers.jrers.202008si01>.
8. Sribastav, S. S., Long, J., He, P., He, W., Ye, F., Li, Z., Wang, J., Liu, H., Wang, H., & Zheng, Z. (2018). Risk Factors Associated with Pain Severity in Patients with Non-specific Low Back Pain in Southern China. Asian Spine Journal, 12(3), 533–543. <https://doi.org/10.4184/asj.2018.12.3.533>.
9. Dhrrangu, S. (2019b). EFFECTIVENESS OF BACK SCHOOL EXERCISE VERSUS YOGASANA AMONG SCHOOL TEACHERS WITH CHRONIC LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL. International Journal of Advanced Research, 7(7), 848–854. <https://doi.org/10.21474/ijar01/9432>.
10. Garcia, A. N., Costa, L. D. C. M., da Silva, T. M., Gondo, F. L. B., Cyrillo, F. N., Costa, R. A., & Costa, L. O. P. (2013). Effectiveness of Back School Versus McKenzie Exercises in Patients With Chronic Nonspecific Low Back Pain: A Randomized Controlled Trial. Physical Therapy, 93(6), 729–747. <https://doi.org/10.2522/ptj.20120414>.
11. Parreira, P., Heymans, M. W., van Tulder, M. W., Esmail, R., Koes, B. W., Poquet, N., Lin, C. W. C., & Maher, C. G. (2017). Back Schools for chronic non-specific low back pain. Cochrane Database of Systematic Reviews, 2017(8). <https://doi.org/10.1002/14651858.cd011674.pub2>.
12. Childs, J. D., Piva, S. R., & Fritz, J. M. (2005). Responsiveness of the Numeric Pain Rating Scale in Patients with Low Back Pain. Spine, 30(11), 1331–1334. <https://doi.org/10.1097/01.brs.0000164099.92112.29>.
13. Payares, K., Lugo, L. H., & Restrepo, A. (2015). Validation of the Roland Morris Questionnaire in Colombia to Evaluate Disability in Low Back Pain. Spine, 40(14), 1108–1114. <https://doi.org/10.1097/brs.0000000000000963>.
14. Williams, R., Binkley, J., Bloch, R., Goldsmith, C. H., & Minuk, T. (1993). Reliability of the Modified-Modified Schöber and Double Inclinator Methods for Measuring Lumbar Flexion and Extension. Physical Therapy, 73(1), 26–37. <https://doi.org/10.1093/ptj/73.1.26>.