

**EFFECTIVENESS OF MCKENZIE HOME INSTRUCTION PROGRAM IN IMPROVING NON-SPECIFIC LOW BACK PAIN AND PERCEIVED HEALTH RELATED QUALITY OF LIFE AMONG THE STUDENTS OF UPH-DJGTMU****Joan Fiona C. Pantoja**UPH-Dr. Jose G. Tamayo Medical  
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noel.sanantonio@uphsl.edu.ph**ABSTRACT**

Low back pain is defined as pain and discomfort located below the costal margin and above the inferior gluteal folds and may be accompanied by leg pain. A common form of low back pain is non-specific low back pain. It is a most common reason why patients visit their clinician, which is why finding proper management and treatment has been an ongoing debate and research priority for many clinicians. The McKenzie Method, an exercise intervention given for low back pain, was shown to be an effective treatment for low back pain, producing greater outcomes than normal rehabilitation and comparable results to other therapeutic approaches. However, there is little to no study that specifically shows the effectiveness of McKenzie exercise as home-based intervention and its influence in the perceived health quality of life of the students, which the researchers wish to fulfill through this quasi-experimental research. This study is conducted to determine the effectiveness of home instruction programs created by researchers as a medium for delivering the McKenzie method; also, the efficacy of the McKenzie method in improving pain, disability and perceived health related quality of life of students who are experiencing non-specific low back pain due to but limited to online classes through the use of Roland Morris Disability Questionnaire and Health Related Quality of Life Scale (HRQoLS) through the use of SF-12v2 with statistical tool of t-test. The research was implemented to the college students of UPH-DJGTMU. After implementation the result indicates that there is no significant difference in the health status of the respondents before and after home instruction exercise. However, there is a significant difference in lower back disability of the respondents before and after home instruction exercise. This means that the disability stayed the same and pain is still present after the home instruction exercise.

**Keywords:** Low back pain, McKenzie, RMDQ, HRQoLS, Online class**INTRODUCTION**

Low back pain is defined as pain and discomfort located below the costal margin and above the inferior gluteal folds and may be accompanied by leg pain. A common form of low back pain is non-specific low back pain. It is defined by Balague et al. (2012) as low back pain not associated or caused by specific pathology such as but not limited to infection, tumor, osteoporosis, lumbar spine fracture, structural deformity, an inflammatory disorder, radicular syndrome, or cauda equina syndrome. It accounts for eighty percent (80%) of clinicians'

diagnosis. It is the fifth most common reason why patients visit their clinician, which is why finding proper management and treatment has been an ongoing debate and research priority over the last decade (Kent,2010). Moreover, it can be caused by either postural or an underlying condition.

The McKenzie Method or exercise was shown to be an effective treatment for low back pain, producing greater outcomes than normal rehabilitation and comparable results to other therapeutic approaches. A thorough understanding of this approach is essential for obtaining high diagnostic effectiveness. The McKenzie Method in conjunction with other types of therapy had the best outcomes in terms of improving spine mobility and overall quality of life, as well as lowering impairment levels. (Czajka, Truszczynska-Baszak, & Kowalczyk, 2018). The research study was designed to determine the effectiveness of home instruction programs created by researchers as a medium for delivering the McKenzie method; also, the efficacy of the McKenzie method in improving pain, disability and perceived health related quality of life of students who are experiencing non-specific low back pain due to but limited to online classes. From the studies stated above, it has been noted that all of which stated the degree of effectiveness of the Mckenzie method.

## LITERATURE REVIEW

### McKenzie Exercise versus Other Interventions

The purpose of Namnaqani, Mashabi, Yaseen, and Alshehri's (2019) study was to compare the McKenzie technique to manual therapy in the management of individuals with chronic low back pain (CLBP). MEDLINE, CINAHL, the Cochrane Library, and PEDro were searched for randomized controlled studies comparing the McKenzie technique to manual therapy (MT) in treating CLBP in adults. Pain and impairment were the major outcomes. Five trials met the criteria for inclusion in the evaluation, with the majority scoring an 8 out of 11 on the PEDro scale. At 2-3 months, all trials found that the McKenzie group had improved significantly, and the MT group had improved even more. Two trials revealed substantial improvements in the McKenzie group's disability index compared to the MT group at 6 months. There were no significant changes in measurements of LBP after a year, however three investigations found that the McKenzie technique group had a lower degree of impairment than the MT group. Many pain measurements indicated that the McKenzie technique is a good treatment for reducing pain in the short term. However, disability measures also showed that the McKenzie approach is superior at increasing function in the long run in patients with CLBP. (Namnaqani, Mashabi, Yaseen, & Alshehri, 2019).

### Effect of Home Exercise Training in Patients with Nonspecific Low-Back Pain

According to the systematic-review and meta-analysis conducted by Quentin et al. (2021) with 33 studies and 9588 participants, they researched the effectiveness of home training exercises where pain intensity is measured before and after the home-based exercise treatment for pain and functional limitation in low back pain. In their study, the pain intensity of the participants decreased with the home-based exercise group, and this group is just partially supervised (home visits by the therapist and occasional group-based sessions at center) whereas both at home and the other group with different settings was the exercise conducted. Although different exercises and stretching were used, such as yoga (4 studies), Thai self-massage (1 study), postural stretching exercise (8 studies), relaxation (8 studies), spinal manipulative therapy (1 study), strength-based exercise combined with other exercises (26 studies), the data shows improvement and decrease in pain intensity. Supervised training

was the most effective method to improve pain intensity. However, home-based training can also be successful if the community is part of the training. Although the supervised training was effective, there is no sufficient data available to draw robust conclusions about the duration and frequency of the session. Lastly, further research about what type and characteristics of home-based exercise are needed in certain pain as the studies included are integrated with strength and aerobic exercises.

## **METHODOLOGY**

### **Research Design**

This research employed a quasi-experimental research to investigate the effect of McKenzie exercise as a home exercise in terms of improving non-specific low back pain and perceived health related quality among students who are currently enrolled in UPH-DJGTMU. Quantitative method was used as it emphasizes using objective measurement and statistical data, numerical analysis and data collection through survey which was used to withdraw the information needed for the study.

### **Population and Sampling Technique**

The respondents consist of 100 students of UPH-DJGTMU as the target population. While the sample size of the study is determined using a non-probability sampling technique. The actual sample of the study is chosen through criterion sampling method as it can help to identify the right participants for the study.

### **Inclusion Criteria**

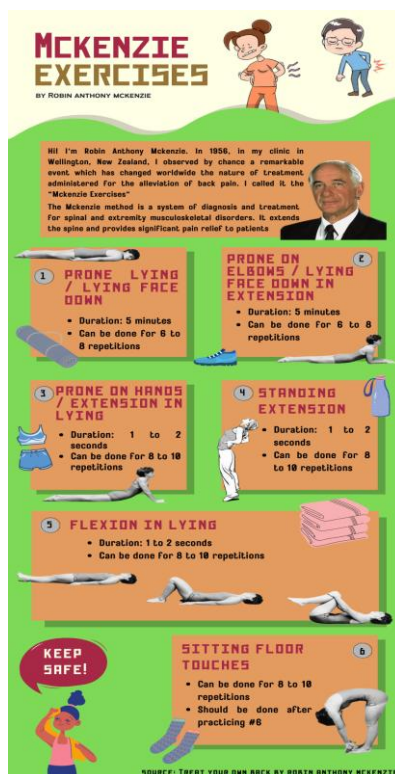
The inclusion criteria include the following: 1) Experiencing low back pain; 2) Experienced prolonged sitting due to Online classes; 3) Agreed to do McKenzie exercise; 4) Agreed and filled up the consent form.

### **Exclusion Criteria**

The exclusion criteria are as follows: 1) There is a pain radiating in legs; 2) less than 5 weeks of pain; 3) Severe low back pain; 4) Students who experience low back pain because of trauma or accident.

### **Instrumentation**

The study made use of McKenzie exercise program (figure 1) which contains six parts in total; three exercises in prone, one in standing, one in sitting and one in lying. For prone exercises: prone lying lasts for five minutes, prone in elbow five minutes as well and for prone on hands one to two seconds for eight to ten repetitions. For standing exercises: standing extension one to two seconds for eight to ten repetitions. For supine lying: one to two seconds for eight to ten repetitions. Lastly, for sitting exercise: flexion in sitting for fifteen to twenty repetitions, sitting floor touches eight to ten repetitions. The span of exercise per day depends on the execution of the patient as each exercise differs in repetitions needed per day, approximately 7 days a week for 3 weeks.



**Figure 1** McKenzie exercise

The research made use of a standard outcome measuring method to collect the desired pretest and posttest scores of the students pertaining to non-specific low back pain and perceived health quality of the students. The instrument is divided into two parts. Part (i) covers the perceived quality of life of the students; HRQoL using SF12v2 and Part (ii) is used to determine the functional disability through the use of Roland-Morris Disability Questionnaire it is used for the pre-test and post-test in determining the functional disability of the students is the Roland-Morris Disability Questionnaire. Whereas the Health-Related Quality of Life Scale shall be used to determine the perceived quality of life of the students. Roland-Morris Disability Questionnaire (figure 2) is a self-rated questionnaire which is designed to assess the physical disability caused by low back pain. It is short and simple and only requires the patients to check the box/s of the statement that they think is applicable to their current condition. It is known as one of the most common outcome measures questionnaires use for low back pain or spinal disorder. (Roland, M., Fairbank, J., 2000) The questionnaire is composed of 24 total statements/questions that focuses on limited physical disability, which includes walking, bending over, sitting, lying down, dressing, sleeping, self-care, and daily activities. It does affect the strength and weakness of the questionnaire, however, combining it to other outcome measures can provide its weakness. (Roland, M., Fairbank, J., 2000).

**Roland-Morris Low Back Pain and Disability Questionnaire (RMQ)****Instructions**

Patient name: \_\_\_\_\_ File #: \_\_\_\_\_ Date: \_\_\_\_\_

Please read instructions: When your back hurts, you may find it difficult to do some of the things you normally do. Mark only the sentences that describe you today.

- I stay at home most of the time because of my back.
- I change position frequently to try to get my back comfortable.
- I walk more slowly than usual because of my back.
- Because of my back, I am not doing any jobs that I usually do around the house.
- Because of my back, I use a handrail to get upstairs.
- Because of my back, I lie down to rest more often.
- Because of my back, I have to hold on to something to get out of an easy chair.
- Because of my back, I try to get other people to do things for me.
- I get dressed more slowly than usual because of my back.
- I only stand up for short periods of time because of my back.
- Because of my back, I try not to bend or kneel down.
- I find it difficult to get out of a chair because of my back.
- My back is painful almost all of the time.
- I find it difficult to turn over in bed because of my back.
- My appetite is not very good because of my back.
- I have trouble putting on my socks (or stockings) because of the pain in my back.
- I can only walk short distances because of my back pain.
- I sleep less well because of my back.
- Because of my back pain, I get dressed with the help of someone else.
- I sit down for most of the day because of my back.
- I avoid heavy jobs around the house because of my back.
- Because of back pain, I am more irritable and bad tempered with people than usual.
- Because of my back, I go upstairs more slowly than usual.
- I stay in bed most of the time because of my back.

**Figure 2** Roland-Morris Low Back Pain and Disability Questionnaire

The SF-12 is a widely used instrument for assessing self-reported HRQOL. The SF-12v2 (figure 3), which was derived from the Medical Outcomes Study (MOS) 36-item Short-Form Health Survey SF-36 covers the same eight health domains as the SF-36 but with fewer total questions, making it a more practical research tool, particularly among populations with limited attention spans or mental health problems. (Huo, T., 2018) It measures eight health domains to assess physical and mental health.

**Instructions:** This form should be completed during the clinic visit. Please read each question carefully.

The first question is about your health now. Please try to answer as accurately as you can.

- 1) In general, would you say your health is...
- Excellent<sub>1</sub>
  - Very good<sub>2</sub>
  - Good<sub>3</sub>
  - Fair<sub>4</sub>
  - Poor<sub>5</sub>

Now, please think about the activities that you might do during a typical day. As you read each item, please select whether your health now limits you a lot, limits you a little, or does not limit you at all when doing these activities.

- 2a) ...moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf. Does your health now limit you a lot, limit you a little, or not limit you at all?
- Yes, Limited a lot<sub>1</sub>
  - Yes, Limited a little<sub>2</sub>
  - No, Not at all limited<sub>3</sub>
- 2b) ...climbing several flights of stairs. Does your health now limit you a lot, limit you a little, or not limit you at all?
- Yes, Limited a lot<sub>1</sub>
  - Yes, Limited a little<sub>2</sub>
  - No, Not at all limited<sub>3</sub>

The following two questions ask you about your physical health and your daily activities.

- 3a) During the past four weeks, how much of the time have you accomplished less than you would like as a result of your physical health?
- All of the time<sub>1</sub>
  - Most of the time<sub>2</sub>
  - Some of the time<sub>3</sub>
  - A little of the time<sub>4</sub>
  - None of the time<sub>5</sub>

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SF12 Health Survey\_SF12

Page 1 of 3

- 3b) During the past four weeks, how much of the time were you limited in the kind of work or other regular daily activities you do as a result of your physical health?
- All of the time<sub>1</sub>
  - Most of the time<sub>2</sub>
  - Some of the time<sub>3</sub>
  - A little of the time<sub>4</sub>
  - None of the time<sub>5</sub>

The following two questions ask you about your emotions and your daily activities.

- 4a) During the past four weeks, how much of the time have you accomplished less than you would like as a result of any emotional problems, such as feeling depressed or anxious?
- All of the time<sub>1</sub>
  - Most of the time<sub>2</sub>
  - Some of the time<sub>3</sub>
  - A little of the time<sub>4</sub>
  - None of the time<sub>5</sub>
- 4b) During the past four weeks, how much of the time were you limited in the kind of work or other regular daily activities you do as a result of any emotional problems, such as feeling depressed or anxious?
- All of the time<sub>1</sub>
  - Most of the time<sub>2</sub>
  - Some of the time<sub>3</sub>
  - A little of the time<sub>4</sub>
  - None of the time<sub>5</sub>
- 5) During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
- Not at all<sub>1</sub>
  - A little bit<sub>2</sub>
  - Moderately<sub>3</sub>
  - Quite a bit<sub>4</sub>
  - Extremely<sub>5</sub>

The next four questions are about how you feel and how things have been with you during the past 4 weeks. As you read each statement, please select the one answer that comes closest to the way you have been feeling; is it all of the time, most of the time, some of the time, a little of the time, or none of the time?

- 6a) How much of the time during the past 4 weeks...have you felt calm and peaceful?
- All of the time<sub>1</sub>
  - Most of the time<sub>2</sub>
  - Some of the time<sub>3</sub>
  - A little of the time<sub>4</sub>
  - None of the time<sub>5</sub>



- 6b) How much of the time during the past 4 weeks...did you have a lot of energy?
- All of the time<sub>1</sub>
- Most of the time<sub>2</sub>
- Some of the time<sub>3</sub>
- A little of the time<sub>4</sub>
- None of the time<sub>5</sub>
- 6c) How much of the time during the past 4 weeks...have you felt downhearted and depressed?
- All of the time<sub>1</sub>
- Most of the time<sub>2</sub>
- Some of the time<sub>3</sub>
- A little of the time<sub>4</sub>
- None of the time<sub>5</sub>
- 7) How much of the time during the past 4 weeks...has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?
- All of the time<sub>1</sub>
- Most of the time<sub>2</sub>
- Some of the time<sub>3</sub>
- A little of the time<sub>4</sub>
- None of the time<sub>5</sub>

Figure 3 SF-12v2

## RESULTS

The study determines the effectiveness of home instruction programs created by researchers as a medium for delivering the McKenzie method; also, the efficacy of the McKenzie method in improving pain, disability and perceived health related quality of life of students who are experiencing non-specific low back pain due to but limited to online classes. The participants of this study were students of UPH-DJGTMU both male and female.

**Table 1**  
**Respondents' Level of Pain, Disability and Perceived Quality of Life Before Home Instruction Exercise**

	<b>No. of cases</b>	17
SFH 12 Health Survey	<b>Minimum Observed Score</b>	21
	<b>Maximum Observed Score</b>	41
	<b>Mean</b>	33.76
	<b>Std. Deviation</b>	5.9322
		<b>No. of cases</b>
Roland Morris Questionnaire (RMQ)	<b>Minimum Declared Back Pain</b>	1
	<b>Maximum Declared Back Pain</b>	10
	<b>Mean</b>	2.24
	<b>Std. Deviation</b>	2.1946

Table 1 shows the scores of the respondents before home instruction exercise. Within the data presented, it is found that the SFH 12 Health Survey minimum observed score before the home instruction is 21 and the maximum observed score is 41 and the mean is 33.76 with a standard deviation of ( $SD = \pm 5.93$ ). However, the Roland Morris Questionnaire shows minimum declared back pain is 1 and maximum declared back pain is 10 and the mean is 2.24 with a standard deviation of ( $SD = \pm 2.24$ ).

**Table 2**  
**Respondents' Level of Pain, Disability and Perceived Quality of Life After Home Instruction Exercise**

	<b>No. of cases</b>	17
SFH 12 Health Survey	<b>Minimum Observed Score</b>	24
	<b>Maximum Observed Score</b>	42
	<b>Mean</b>	34.53
	<b>Std. Deviation</b>	4.9638
	<b>No. of cases</b>	17
Roland Morris Questionnaire (RMQ)	<b>Minimum Declared Back pain</b>	1
	<b>Maximum Declared Back pain</b>	7
	<b>Mean</b>	3.8235
	<b>Std. Deviation</b>	1.9117

Table 2 shows the scores of the respondents after home instruction exercise. In the data presented the number of cases is still 17. For the SFH 12 Health Survey the minimum observed score is 24, maximum observed score is from 42, the mean is 34.53 with a standard deviation of 4.96 ( $SD = \pm 4.96$ ). For the Roland Morris Questionnaire (RMQ) the minimum declared back pain is 1, the maximum declared back pain is 7, the mean is 3.82 with a standard deviation of 1.91 ( $SD = \pm 1.91$ ).

**Table 3**  
**Difference on Respondents' Level of Pain, Disability and Perceived Quality of Life Before and After Home Instruction Exercise**

<b>Profile</b>	<b>Statistical Test</b>	<b>Mean</b>	<b>Test Statistics</b>	<b>Sig</b>	<b>Interpretation</b>
<b>SFH 12 Health Survey</b>					
Before Treatment	<i>Paired Sample</i>	33.76	$t = -0.577$	0.572	<i>Not Significant</i>
After treatment	<i>T-test</i>	34.53			
<b>Roland Morris Questionnaire (RMQ)</b>					
Before Treatment	<i>Paired Sample</i>	2.24	$t = -3.323^{**}$	0.004	<i>Significant</i>
After treatment	<i>T-test</i>	3.82			

Table 3 shows the comparison of the pre and post-test scores of the respondents' SFH 12 Health Survey and Roland Morris Questionnaire (RMQ) score, the respondents' mean SFH 12 Health Survey score before the exercise program is 33.76 and their mean SFH 12 Health Survey score after the exercise program is 34.53, having a computed t-value of -0.577 and a level of significance of 0.572. Indicating that there is no significant difference on the health status of the respondents before and after home instruction exercise, thus null hypothesis is



accepted. This means that after the treatment, there are no changes in the health status (Physical and Mental Component) of the respondents. On the other hand, the respondents' mean RMQ score before the exercise program is 2.24 and their RMQ score after the exercise program is 3.82, having a computed t-value of -3.323 and a level of significance of 0.004. Indicating that there is a significant difference in lower back disability of the respondents before and after home instruction exercise, thus null hypothesis is rejected. This means that the disability and pain felt by the participant was the same before and after the home instruction exercise.

This result can be attributed to a sudden shift to face-to-face classes, which demands more physical activities, taking care of the requirements needed for the face-to-face classes, and studying for a face-to-face examination that was held at the same time of the implementation phase which affects the mental health of the participants than the anticipated postural problems associated with online classes. Also, the large number of dropouts affects the data which results in limited sample size and data that affects the final result of the study.

## DISCUSSION

This study was conducted to assess the effectiveness of McKenzie exercise through home-based instruction program and its effectiveness in improving non-specific low back pain and perceived health related quality of life of students enrolled in UPH-DJGTMU. Specifically, it endeavor to answer the following questions: (1) What is the level of pain, disability and perceived quality of life of patients before home instruction exercise? (2) What is the level of pain, disability and perceived quality of life of patients after home instruction exercise after ongoing the McKenzie exercise? (3) Is there significant difference between the pain disability and perceived health quality of life of the subject before and after undergoing the home exercise?

The following are the findings that found in conducting the study: The level of pain, disability and perceived quality of life of patients before home instruction exercise has a minimum observed score of 21 before the home instruction exercise and a maximum observed score of 41. While the Roland Morris Questionnaire, which measures the pain disability of the respondents, has a minimum declared back pain of 1 and a maximum declared pain score of 10.

The level of pain, disability and perceived quality of life of patients after home instruction exercise after ongoing the McKenzie exercise shows that there is a minimum observed score of an individual is 24 after the home instruction exercise, higher than the minimum observed before the McKenzie exercise was implemented. While the maximum observed score is 42 with 1 point higher than the previous result. On the other hand, the Roland Morris Questionnaire (RMQ) that measures the pain disability of the respondents, obtained a minimum declared back pain of 1 same with the minimum result before the intervention, and a maximum declared pain score of 7, indicating that they still experience pain even after the home instruction exercise. There is no significant difference between the health quality of life of the subject before and after undergoing the home exercise, however, there is a significant difference in the lower back disability of the respondents based on Table 3.

## CONCLUSIONS

There was no significant difference on the health status of the respondents before and after home instruction exercise, thus the null hypothesis was accepted. This means that after the treatment, there was no changes in the health status of the respondents. On the other hand, there was a significant difference in lower back disability of the respondents before and after home instruction exercise, thus the null hypothesis was rejected. This means that the disability stayed the same and pain was still present after the home instruction exercise. Also, there was no significant difference found in the health status (Physical and Mental Component) found between the before and after carrying out the McKenzie exercise. Factors such as the sudden change in the participants' activity, the execution of exercise and the number of participants involved in the study should also be considered as it affects the effectiveness of McKenzie exercise. Thus, the home based instruction on Mckenzie method is effective but not efficient since it lacks clinical supervision.

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