

## COMPARING EXERCISE PRESCRIPTION METHODS IN KNEE OSTEOARTHRITIS PATIENTS IN MALAYSIA

D. D'Gasper<sup>1</sup>, B. S. Bains<sup>1,2</sup>, H. Sadeghi<sup>3</sup>, P. Kumar<sup>4</sup>

<sup>1</sup>BainsPhysio Group Practice, Jalan Melawati, Kuala Lumpur, Malaysia

<sup>2</sup>School of Physiotherapy, Aihmsa College, Kuala Lumpur, Malaysia

<sup>3</sup>Malaysian Research Institute on Ageing (MyAgeing), Universiti Putra, Malaysia

<sup>4</sup>School of Physiotherapy, INTI International University College, Malaysia

**Abstract. Aim:** This study was a qualitative study that investigated the exercise prescription method in knee osteoarthritis patients in Malaysia. It purposed to find out the most common and effective method used by physiotherapist in prescribing exercises for knee osteoarthritis patients in Malaysia. **Method:** This study used a self-administered survey questionnaire. The subjects recruited for this study were diagnosed with knee osteoarthritis, age range of between 50 to 80 years old. The methods of delivery were divided into three categories, which include only verbal instructions, verbal instruction together with demonstration and lastly a combination of all three methods including verbal instruction, demonstration and handouts with diagrams. **Results:** The results showed that 52% received their exercise prescription with verbal instruction and together with demonstration, about 43% of them received all three types of methods which included the verbal instruction, demonstration and take home handouts and 5% of them only received verbal instruction. Out of 5% who received verbal instruction alone, only 1% understood the exercises and the remaining 4% did not and 45% out of 52% who received verbal and demonstration method understood the exercises and the remaining 7% did not. 5% who received only verbal instruction did not seem to continue the exercises at home. 52% received verbal instruction together with demonstration, with about 44% of them having continued their exercises but the remaining 8% did not. 43% who received all three methods reported to continue. **Conclusion:** The best method of delivering exercises to knee osteoarthritis patients was proven to be the method with a combination of verbal instruction, demonstration together with a take home handout. This method showed very positive outcome and should be implemented and emphasized more in both the government and private sectors of physiotherapy departments.

**Key words:** knee osteoarthritis, verbal instructions, exercise, prescription

**Corresponding author:** Dineesha D'Gasper. BainsPhysio Group Practice, Jalan Melawati, Kuala Corresponding, Malaysia. e-mail: dineesha.d.gasper@gmail.com

### INTRODUCTION

Osteoarthritis is commonly known as a wear-and-tear arthritis which is the fourth most common cause of disability worldwide and

is more common in females than males [1]. This condition is also most common in Asians and is told to be due to ageing above age 55 and nature of job [2]. Osteoarthritis has negative effect on ligaments, muscles, tendon, and capsule, leading to deficits

on knee proprioception and body position [3, 4]. In addition it can have effects on daily activities [5]. These changes on knee proprioception and body position lead to loss of balance and fall among elderly people [6]. There are many types of effective exercises that can be given to knee osteoarthritis patients are proven to reduce their symptoms and improve the condition [7]. These exercises may be delivered in several methods such as verbal instruction, demonstration and hand-outs. Jusko Friedman et al. [8] found that audiotapes, videotapes, written materials and lectures were all more effective teaching strategies than verbal teaching and discussions alone. A greater proportion of those in community support (face to face) exercised five or more days of the week compared to phone support [9]. Mode of exercise delivery has cost implications and may influence overall outcome. It appears that supervised exercise sessions are superior to home exercises for pain reduction [10]. Demonstrations can be a very effective teaching strategy. Jordan, Holden, Mason, & Foster [11] concluded that interventions such as supervised or individualised exercise therapy and self-management techniques may enhance exercise adherence. Potentially the most beneficial self-care treatment components are training self-management skills, information delivery, and goal setting [12]. A written goal-oriented exercise prescription, in addition to verbal advice, is a useful tool for general practitioners in motivating their patients to increase physical activity [13]. Self-management education programmes may slightly improve self-management skills, pain and function [14]. Peer-delivered interventions lead to significant increases in physical activity, which are similar in magnitude to increases achieved by professionally led interventions [15].

Despite the previous findings, the reasons for carrying this research is to find out which is the best way to prescribe an exercise and how these exercises influence the patients' understanding and compliances to the prescribed treatments. In addition, while there has been much research on exercise prescription type, there has been little research into comparing the Exercise Prescription Methods in Knee Osteoarthritis Patients. The current study tried to analyse exercise prescription method in knee osteoarthritis patients in Malaysia, and it was hypothesized that a combination of verbal instruction, demonstration together with a take home handout would be the best method of delivering exercises to knee osteoarthritis patients. The novelty of this research

would be related to the link made between exercise science and medicine and also the target population in Malaysia.

## MATERIAL AND METHODS

### *Participation*

This study was a qualitative study conducted in Selangor and Malacca with a sample size of 100 knee osteoarthritis patients. The inclusion criteria were as follows: patient who was diagnosed with knee osteoarthritis, age range between 50 to 80 years old. The exclusion criteria were as follows: arthritis of other joint (rheumatoid), osteoarthritis of other joints, patients younger than 50 or older than 80. This study was approved by participants signed informed consent form in accordance with the ethical guidelines of the Helsinki Declaration pertaining to the use of human participants in medical research. Ethics approval was obtained from the Ethics Committees of INTI International University & Colleges Malaysia.

### *Procedure*

The participants had 15-20 minutes to fill the questionnaire and participation in this study was voluntary. This research was carried out in around Klang Valley area in Malaysia and about 100 copies of questionnaires were prepared to be distributed. This questionnaire consist of about 11 short and simple questions which include mostly closed ended questions with some open ended questions as well. The questionnaires were distributed randomly in both private and government hospitals and physiotherapy centers. The respected patients were required to sign if they agree to complete the survey and then they proceeded to the 11 questions. They were required and also reminded to answer the questions based on their real life situation and experience of pain and physiotherapy sessions. They were ensured that both their names as well as the physiotherapist's names will not be revealed and are only for research purposes. The questions in the questionnaire were related to their experience such as their feeling of pain, duration of pain, type of delivery of a method, which was received from their physiotherapist. There were also questions to find out their level of understanding of the exercises prescribed, and if they continue their home exercise program, if there was any reduction in pain and finally their perception towards physiotherapy. Self-administered questionnaire was filled out under supervision of researchers around 10:00 a.m.

*Statistical analysis*

SPSS software version 22 was used to analyze the data. Descriptive analysis was used to analyze data.

**RESULTS**

Table 1 shows the demographic characteristics of participation such as number of males and females. The mean and SD of age and time duration of patients suffering knee pain are illustrated.

**Table 1.** Demographic characteristics of participants (N = 100)

Gender	Frequency	Age	Pain duration
Male	36	58.7 ± 4.3	2.8 ± 2.2
Female	64	62.3 ± 6.5	3.0 ± 2.02

There were 3 types of methods of delivery where the first one is for patients who only received their exercise prescription verbally, second is for those who received verbal instruction along with the demonstration by the physiotherapist, and third is for those who receive all three which is verbal instruction, demonstration together with handouts regarding the exercises given. From the result in table 2, most of the patients (about 52) received their exercise prescription with verbal instruction together with demonstration. About 43 of them received all three types of methods which is the verbal instruction, demonstration and handouts. The least number of patients with about 5 of them only received verbal instruction on how to do the exercises and were told to do them on their own without any demonstration or handouts given.

**Table 2.** Method of exercise prescription

Method of delivery	Frequency
Verbal	5
Verbal & Demo	52
Verbal, demo, handouts	43

Table 3 shows the method of exercise prescription and the level of understanding of each individual. From the chart above, it is stated that out of the 5 who received verbal instruction alone, one understood the exercises while the remaining 4 did not understand. Moving to verbal and demonstration method, about 45 out of 52 who received this method understood the exercises and the remaining 7 did not seem to understand them. For those who received all three

methods in combination, which is verbal instruction, demonstration together with handouts, all they understood the exercises prescribed to them completely.

**Table 3.** Method of Exercise Prescription; Understanding Exercises Prescribed

Method of delivery	Yes	No
Verbal	1	4
Verbal & Demo	45	7
Verbal, Demo, Handouts	43	0

Table 4 illustrates the comparison between the method of exercise prescription and the number of the people who continued the exercises at home. The result showed that the 5 patients who received only verbal instruction did not seem to continue the exercises at home. Total of 52 of patients received verbal instruction together with demonstration, with about 44 of them continuing their exercises at home but the remaining 8 did not. The results of the patients who received all three methods, which are the verbal instruction, demonstration together with handouts [43], show that all 43 did continue their exercises at home.

**Table 4.** Method of Exercise Prescription; Continued Exercises At Home

Method of Delivery	Yes	No
Verbal	0	5
Verbal & Demo	44	8
Verbal, demo, handouts	43	0

**DISCUSSION AND CONCLUSION**

This study was carried out to assess the methods of delivery of instruction methods of delivery of instruction to knee osteoarthritis patients by the physiotherapist. It was conducted to find out the most common type of delivery that was given by the therapist. The methods of delivery were divided into three categories, which include only verbal instructions, verbal instruction together with demonstration and lastly a combination of all three methods which was verbal instruction, demonstration and along with handouts with diagrams. The aim was to find out the best method that was most understood and effective for the patients. Besides that our reason for carrying out this research was also the aim to understand how these methods of delivery influence the patients understanding of the given exercise and their compliances to the prescribed exercises, i.e. to know if they go home continuing their home ex-

ercise program which has been given by the physiotherapists before they leave at the end of every session. Furthermore, the aim was also to find out how these methods of delivery along with their understanding level and their compliances to the home exercise program assist in pain reduction, their perception towards physiotherapy and finally their will to return for physiotherapy in the future if they have other problems or pain which needs physiotherapy rehabilitation.

The results of current study reported that there are more female patients (54) who have knee osteoarthritis compared to men (36) and majority of them fall under the category of age 55-64 years old. This was supported by the result [16] that osteoarthritis is the fourth most common cause of disability worldwide and it is proven that there are more women (18%) who are affected compared to men (9.6%) and those who are of age 55 years old and above are more prone to have this condition. In addition, it has been found that most of knee osteoarthritis patients were housewives, teachers, and factory workers. This may be due to their nature of job which involves prolonged standing and walking.

The results showed that a very minor number of patients (5%) received their exercises by their physiotherapist only by verbal instructions. About 52% of them received verbal instruction together with demonstration of the respective exercises prescribed. The remaining 43% reported to receive a combination of all three methods which is verbal instruction, demonstration and handouts. Looking into this result, majority of them received a method with a combination of verbal instruction and demonstration and the second most common group are the ones who received together verbal instruction, demonstration and handouts.

Comparing the method of delivery and the level of understanding among the patients, only 1% out of the 5% of these who received only verbal demonstration reported that they understood the exercises being explained and the remaining 4% of them did not. This may be because verbal instructions alone without any parameters such as patient's learning style, literacy level, culture, environment, may not be enough for a person to understand the correct method or technique to perform the exercises [17]. It may be confusing especially for the elderly patients and they may tend to forget the instruction. Out of the 52% who received verbal instructions along with demon-

stration, about 7% reported to not understand the exercises and the remaining 45% says to understand them. Looking into this, majority of them reported to understand the exercises and it may be because a person tends to remember something better when an explanation is given together with some examples of body movement. This method may make it easier for patients where they can look at the physiotherapist performing the correct technique and follow the exact method or technique [18]. The reason behind the 7% of them who did not understand the exercise may be due to some miscommunication, communication barrier, short term memory loss in the elderly, or even difficulty in understanding something new due to old age. Lastly, the remaining 43% of the participants reported to understand the exercises given to them and this may be because there are many types of methods included during the delivery and this makes it easier for all types of patients to understand the exercises.

A study was conducted by Friedman et al. [8] on a topic regarding the effectiveness of teaching strategy and method of delivery for patient education. It is said that verbal instructions were proven to give least effectiveness in teaching strategy and that verbal method cannot be delivered to patients as a single method but with a combination of other methods of delivery such as demonstrations, written materials, diagrams, videotapes, or audiotapes. Besides that, all of these strategies have also been proven to produce some positive effect on patient's anxiety, satisfaction and also their knowledge.

The results showed that 5% of patients who received only verbal instruction admitted that they did not continue the exercises at home. Out of the 54% who received a combination of verbal and demonstration 8% reported that did not continue the exercises but the remaining 44% continued. A possible explanation for this might be that the minority of patient did not continue because they might have forgotten the exercises that had been demonstrated in the department when they got home. For example, some of the elderly patients might be having some short term memory loss and difficulty in understanding and remembering something new [19]. This may restrict them in continuing the exercises at home or maybe they do not remember the exercises if there were too many exercises given to them at a time. This may cause confusion and may stop them from doing exercises.

Other results of current study showed that those patients who received all three methods, which are verbal instruction, demonstration and handouts, given a positive result where all the 43% of them reported that they continued their home exercise programme that was taught to them. This may be supported with a study that has been carried out by Jordan et al. [11] on the types of different methods of delivering exercise, which includes refresher session, supervising sessions, audiotapes or videotapes for patients to take home.

This result may be explained by the fact that when a patient is given a material to take home, it may aid in enhancing their exercise adherence and especially at home. Besides that, another study reported that materials with diagrams may also help patients who have low literacy skills [8]. Another researcher has also mention in her study that a written goal-oriented exercise prescription, in addition to verbal advice, is said to be a very useful method for general practitioners in motivating their patients to increase physical activity [13]. In regard to method of delivery and how it influences the reduction of pain, the results showed that the 5% of patients who received only verbal instruction and did not continue the exercises at home, also claimed that they have no reduction in their pain. Besides that, most of patients who received verbal and demonstration method had reduction of pain.

The results also illustrated that the three types of methods of delivery have more effects on patients. The patients who received all types of methods together have better understanding, continued exercise at home and felt reduction of pain after exercise program. This is likely because when patients receive an exercise in a proper method, they tend to understand and remember it better compared to other patients who only receive a single method or without any handouts to take home which consist of some self-care, written materials of the exercises and simple diagrams on how to perform exercises. Having this kind of material at home, patient will find it more beneficial and useful where he can read and manage his own condition with proper self-care and doing the exercises with the correct technique. There is a study that has been conducted by Button et al., [12] to find out the effectiveness of self care programmes including exercise components for any type of knee conditions. It is proven that self care treatment with training

self management skills and some information delivery are the most beneficial way to help patients in managing themselves and their chronic condition. Besides that, Kroon et al. [14] also mentioned that self-management education programmes may slightly improve a patients self-management skills, pain and function. In addition, stretching exercise and modifying body ergonomics can be effective to prevent musculoskeletal disorder [20]. Looking into these studies, it is proven that self management care and information delivery to patients is a very useful method. A number of limitations needs to be considered: first the number of patients was small, second this study involved only knee osteoarthritis patients and there were no other health conditions. In conclusion, the main goal of the current study was to determine the best type of exercise prescription for knee osteoarthritis patient. This study has shown that mixed three methods of delivery were more effective than other two methods. But the minor percentage of patients who received only the verbal method has shown very poor outcome. Therefore, the best method of delivering exercises to knee osteoarthritis patients is proven to be the method with a combination of verbal instruction, demonstration and a take home handout. This method showed very positive outcome and should be implemented and emphasized more in both the government and private sectors of the physiotherapy departments.

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**Conflict of interest:** *The authors declare no conflict of interest*

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