

## The Effectiveness of Physiotherapy Modality Combining with Exercise towards Reducing Pain among Elderly with Knee Osteoarthritis in Malang, Indonesia

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**Introduction:** The prevalence of symptomatic knee osteoarthritis (OA) among elderly in Indonesia is still high with 11.55% in men and 15.7% in women, which this condition affect their mobility. Due to the fact that pain is one of the main factors responsible for limitation of their functionality, thus it such an important things to do intervention to manage it. Modality physiotherapy and exercises proved is an effective therapy to improve function as the use of non-hormonal anti-inflammatory drugs in patients with knee OA. Previous studies explained that it has an advantageous effect on increasing physical function, and also their mobility. This study aimed to assess the effectiveness of modality physiotherapy and exercise towards pain among knee OA patients in Malang within 12 weeks interventions. This study employs a quasi experimental study with thirty participants recruited from 3 public hospitals in Malang. Participants were recruited using purposive sampling method with inclusion criteria : diagnosed with knee OA grade 1 and 2, and aged 50-75 years-old. They were divided into three group interventions, with each consists of ten participants. Group I has been given modality physiotherapy and exercise interventions for 12- weeks. While, Group II has been given the same interventions for 6-weeks, and group III were assigned as the control group and received usual care of physiotherapy. All of the participants were measured for their pain level using Visual Analogue Scale (VAS) questionnaire during the baseline, 6-weeks follow-up, and 12-weeks follow-up. Two way ANOVA were used as data analysis. As a result, generally there was statistically significant reducing pain level after 12-weeks, which group I has the lowest level of reducing pain among other groups. Thus, the modality physiotherapy exercise was effective to reduce pain of patients with knee osteoarthritis. The authors of a simple 6-week clinical trial concluded that multi-station kinesthesia, balance, and agility (KBA) type exercises had added benefits compared to strength training alone and may improve physical function, decrease knee instability, and increase physical activity levels.

Degenerative joint arthritis is the most common joint disorder that is caused by biomechanical stresses affecting both the articular cartilage and subchondral bone. Degenerative osteoarthritis (OA) is the most common form of arthritis and is a major cause of morbidity and functional limitation, especially in elderly patients. The incidence of knee OA is expected to increase over the next decades. Knee OA is directly related to disabilities due to pain, quadriceps dysfunction, and impaired proprioception. Moreover, knee OA is responsible for the impaired ability of the quadriceps muscle to control force in patients with OA. Nevertheless, exercise therapy is effective in reducing

the pain and improving the function of patients with knee OA. Unlike many other pain conditions in which the underlying injury typically heals or resolves, OA is a disease that does not resolve. Thus, OA is typically accompanied by chronic pain. Whether, and to what degree, this ongoing chronic pain (i) plays an important nociceptive role, (ii) represents maladaptive pain, or (iii) reflects other aspects of the pain experience are not clear.

Pain is one of the most commonly reported and prominent factors that are responsible for physical inactivity in patients with knee OA. This impairment in physical activity associated with knee OA has important implications for aerobic power and cardiovascular health. Hence, patients with OA are at a particular risk of poor health outcomes. Pain pattern and severity of knee OA as either absent, mild, moderate, severe, or very severe could affect the range of motion (ROM) that involves daily activities and quality of life.

Moreover, muscle weakness in knee OA usually results in joint stiffness and decreasing ROM that involves daily activities. Quadriceps muscle impairment in knee OA is well documented in the literature. In addition, the differences in the magnitudes of muscle strength are caused by the differences in the subjects' characteristics, OA severity, pain severity, and definition of the control group. Patients with knee OA experience chronic form of pain and show a declining ability to use their joints, which consequently weakens the muscles. Hence, these destabilise the joints and reduce the physical functions of patients; further, the motions required for the patients' daily activities become restricted.

Although pain is a symptom of OA that is present in almost all classification criteria for OA, there is often a discordance between reports of pain and radiologic OA. It is suggested that this discordance applies, in particular, to the less severe grades of knee OA and that pain is more common in more severe grades of OA (1 and 2). Moreover, Erden et al. reported that pain intensity and degrees of inaccuracy of knee joint position sense were positively correlated at 60° and 90° knee flexions. The relationship between pain intensity and knee joint position sense is very important for patients with OA in the improvement of rehabilitation programs. Given these findings, only few studies have considered pain severity during rehabilitation programs for patients with knee OA. Therefore, the aim of this study was to examine the effect of a physiotherapy treatment program on moderate knee OA with different grades of pain intensity. Fallrisk is an index to assessthe efficacy of

interventions in this study. The index is calculated by BBS. In this test, the patient stands on the BBS platform without shoes. Patients were instructed to put their feet on the marked area of the platform and grab the adjustable support handles and focus on the BBS monitor. The patient opens feet as much as shoulder width while being located on the platform and trying to maintain the marker in the smallest circle shown on the device screen for 20 seconds. This test was done 3 times with a 10-second interval and the instability degree of the platform in level eight for all participants was assessed. In the fall risk test, an unstable surface is used in which the patient's swing is used to specify the falling risk index. The participant tries to keep his/her body balanced on the platform and it is locked when this goal is achieved.