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The Effect of Using a Knee Decker to Reduce Knee Pain in Farmers

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Abstract

Background: Farmers are people who carry out activities in the agricultural sector, both garden farming, fields, rice fields, fisheries, and others on land with the aim of obtaining economic benefits. Farmers have prevalence of knee pain symptoms that lead to reduced mobility and ability to work. Knee pain occurs due to heavy and continuous pressure such as standing, squatting, lifting crops, and hoeing. In this case to treat knee pain using a tool in the form of a knee lifter to determine the ability to reduce knee pain.
Objective: To determine the effect of using a knee decker on reducing the degree of knee pain in farmers in Mojopuro Village, Sragen Regency.
Methods and Subjects: This research was conducted from March to April in Mojopuro Village, Sragen Regency using a quantitative research method using a quasi-experimental one group pre-test and post-test design. The sampling technique used is purposive sampling. The subjects used were all farmers who experienced knee pain.
Results: A statistical analysis with a p-value 0.000 less than 0.05 revealed that using a knee decker had a substantial impact on lowering the severity of knee pain in farmers by 43% from a sample of 25 people who had knee pain
Conclusion: There is an effect of using a knee decker to reduce the degree of knee pain in farmers, so that increasing mobility and ability to work.

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Introduction

The majority of informal sector workers in Indonesia work in the agricultural sector that have various risks of health problems related to environmental interaction, muscle and bone disorders. Increasing the population causes basic or food needs to increase, so that it has an impact on increasing the economy of farmers, so that welfare also increases. Thus many people are interested in farmers (Susanto et al., 2016).

Farmers with a work period of more than 10 years more often experience complaints of musculoskeletal disorders, complaints of musculoskeletal are most experienced by farmers who work more than 8 hours a day (Kanti et al., 2019). A short rest period and non -ergonomic work position in farmers resulting in the problem of knee joint pain, this pain arises due to the use of musculoskeletal systems that exceed the workload capacity (Susanto et al., 2016).

Knee pain is a skeletal muscle disorder experienced by many workers around the world (Rachmi et al., 2018). High knee pain disorders cause pain in the legs, physical disability, reduce mobility and ability to work (Puntumetakul et al., 2018). Farmers are accustomed to carrying out tasks that involve high loading intensity in the knee of inappropriate posture and repeated muscle work (Isaramalai et al., 2017). Farmers have the prevalence of knee pain symptoms that cause pain in the legs, physical disability, reduce mobility and ability to work (Puntumetakul et al., 2018).

Knee pain occurs because the thickened cartilage begins to thin out gradually, the cartilage functions as a cushion between bones and joints. Cartilage that starts to thin causes continuous friction between the ends of the bones making up the joints, this recurring friction causes inflammation, causing pain sensation in the knee (Therkleson, 2014). Knee pain can affect the activities of daily life (ADL) by making it difficult to carry out daily activities with continuous pressure on the knee, such as squatting, kneeling, standing and lifting heavy loads can cause knee pain (Rachmi et al., 2018). Knee Diarrhea pain also affects the quality of life and causes disability (Sarmanova et al., 2018).

Efforts to reduce disability can be done by using orthosis, namely Knee Support or Knee Decker. Knee Decker is one of the orthosis tools that covers the knee area where the function of the orthosis itself is to reduce pain, provide stability, amplifier and prevent further deformity (Yu et al., 2015). This study aims to determine the effect of the use of Knee Decker on the decrease in knee pain in farmers.

Methods

This study uses quantitative quantitative types of experimental one group pre-test and post-test. The study was conducted in one group without a comparison group. The study location was conducted in Mojopuro Village, Sragen Regency. The research population is all farmers in the Mojopuro village who experience pain in the knee. The sample was selected by sampling technique using purposive sampling.

Classification of inclusion criteria in this study, namely; Farmers in Mojopuro Village, Sragen Regency, the subject experiencing pain in the knee, willing to be the subject of research and approval of informed consent, has never used a previous knee decker, not taking pain relievers. Classification of Exclusion Criteria In this study, farmers who experience knee pain due to tumors. Data processing using SPSS, a normality test first then a hypothesis test

Results

The research subjects are farmers in Mojopuro Village who meet inclusion and exclusion criteria with characteristics such as Table 1 for Age, Table 2 for Gender and Table 3 for Body Mass Index.

Table 1. Characteristics by age

age	frequency	Presentation
41-50	8	32%
51-60	14	56%
61-70	3	12%
Total	25	100%

Source: Primary Data 2022

Table 2. Characteristics by Gender

Gender	frequency	Presentation
Male	14	56%
Female	11	44%
Total	25	100%

Source: Primary Data 2022

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Table 3. Characteristics Based on Body Mass Index

Body Mass Index	frequency	Presentation
Underweight	3	12%
Normal	9	36%
Overweight	1	4%
Risk	6	24%
Obesity 1	2	8%
Obesity 2	4	16%
Total	25	100%

Source: Primary Data 2022

In this study the data normality test was conducted with the Saphiro Wilk test. Normality test results such as table 4. It is known that the results of the data normality test before and after the use of Knee Decker are distributed abnormal and normal.

Table 4. Normality Test Results

	p value	information
Pre-Intervention	0.028	Abnormal
Post-Intervention	0.170	Normal

Source: Primary Data 2022

The hypothesis test in this study was with the Wilcoxon test. The results of the analysis of the effect of the use of Knee Decker on a decrease in the degree of knee pain in the activity of farmers in Mojopuro, Sragen with the Wilcoxon test showed the z value of (-4.475) with p value of (0,000), where p value <0.05 so it can be concluded there is an effect Static significantly the use of Knee Decker to decreased knee pain in farmers.

Table 5. Hypothesis Test Results

	Mean	Z	P value
Pre-Intervention	6.48	-4.475	0,000
Post-Intervention	3.64		

Source: Primary Data 2022

Discussion

This research was conducted on farmers in the village of Mojopuro who experienced pain, 25 farmers who met the inclusion and exclusion criteria set by the researcher. The technique in taking this sampling uses purposive sampling. This study was conducted to determine the effect of using knee decker on knee pain in farmers.

The data taken is primary data by having conducted a preliminary study. Then the sample was taken according to the criteria for inclusion and exclusion, and interviews were conducted. Furthermore, research measuring the degree of pain (pre test) using the NRS (Numeric Rating Scale) measuring instrument. After that the intervention in the form of Knee Decker and re -measuring the degree of pain (post test). The data obtained are collected and then processed and evaluated using the SPSS version 15 software program.

Wilcoxon test results The effect of using knee decker on knee pain in farmers in the village of Mojopuro, Sragen Regency, the result before the treatment was obtained an average value (6.48) and after the treatment was obtained an average value (3.64) with the result of a decrease Knee pain is 43%, this means that seen from the average pain value obtained a decrease. The magnitude of the difference in the effect of the treatment in the form of the use of knee decker on knee pain is Z = -4.475 with a value of P = 0,000 (<0.05) so that it can be concluded that there is a statistically significant effect on the use of knee decker on knee pain in the activities of farmers in Mojopuro Village, Sragen before and after treatment. Where the more often uses Knee Decker during work activation that is as a farmer, the more it will be able to reduce the degree of knee pain.

The results of this study were supported by research from (Trimandasari et al., 2018) obtained the results of this study showed that there was an effect of the use of Knee Decker on a decrease in the degree of pain in the pedicab driver in the Klewer Market, with the results of the analysis of the value of P = 0,000 (p <0 , 05), Z = -4,041. This study shows that the use of elastic knee decker has an influence in a decrease in the degree of knee pain in pedicab drivers in the Surakarta Klewer Market. In the administration of Knee Decker on the work activities of pedicab rowing, the influence of knee pain reduction because the mechanism of action gives an emphasis around the knee.

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Regarding the function of the Knee Decker that provides support to the knee joints on the feet thereby reducing the weight burden that is fully supported by the knee joint and to maintain the stability of the knee joint while on the move, besides that according to the farmers' respondents in the Mojopuro village who have used the Knee Decker, it states that the suppressor in the section The muscles in the area around the knee provide a sense of comfort that results in a decrease in knee pain. This shows that pain in sufferers of knee pain before using knee support is higher than pain in knee pain sufferers after using knee support, so in this case the use of Knee Support is very significant in reducing knee pain in farmers. Increasing age, especially entering the age of the elderly, the age of 45 years is often found knee pain more in men than women.

Based on research (Chahak & Langari, 2015) short rest periods for farmers and non - ergonomic work positions result in knee joint pain problems, this pain arises due to the work of the musculoskeletal system that exceeds the limit. Farmers work activities required hard work of knee joints will have a risk of getting more knee pain. The addition of 1 kg increases the risk of knee pain by 10% because the loading of the knee and pelvis can cause cartilage damage, ligament failure and other structural support (Washilah et al., 2021).

The results of the hypothesis test can be influenced by several characteristics, namely age, weight, height and sex. In this study with the subject of age starting from 41-50 years number 8 people with a percentage of 32%, aged 51-60 years number 14 people with a percentage of 56%, age 61-70 years 3 people with a percentage of 12%. According to (Hakim, 2020) aged 36-45 years is the final adulthood, 46-55 years old is the early elderly, age 56-65 years is the final elderly period, while> 65 years is a period of elderly. According to (Paerunan U et al., 2019) there is a painful relationship as we get older. Adults will experience neurological changes, degenerative diseases and may experience a decrease in stimulus sensory perception and an increase in pain threshold. So it was concluded that the older a person's age. Then the risk factors for farmers experiencing knee pain are getting bigger.

In addition to the influence of age there is also the influence of the characteristics of the subject, namely BMI (body mass index) in line with increasing age of the body will decrease in physiological function so as to encourage degenerative diseases. Factors that influence the health of the elderly are unhealthy eating habits, lifestyle, and lack of physical activity that results in excessive accumulation of fat in the body (Nugroho et al., 2018). Increased fat mass that occurs in the elderly can result in an increase in body mass index (BMI) exceeding the normal limit (Solikhah et al., 2020). Research by (Fitria & Berawi, 2019) states that individual obesity has bad postural control than individuals with normal body weight so that it can cause joint pain.

BMI that exceeds the normal limit (obesity) is one of the nutritional problems faced by the elderly which is characterized by being overweight compared to normal body weight caused by excessive accumulation of fat in the body (Nugroho et al., 2018).

Working for a long period of time can cause a decrease in quality and can pose a risk of disruption in health and disease arise (Utami et al., 2018) Severe physical work will affect muscle work, cardiovascular, respiratory system, and others. If the work takes place for a long period of time, the body's ability will decrease and can cause pain in the limbs. In workers who work more than 8 hours a day can cause lack of rest time and muscle work heavier so that the risk of knee pain will increase (Bernal et al., 2015).

Conclusion and Recommendation

This study concluded that, the use of Knee Decker can reduce pain in the knee for farmers in Mojopuro Village. So farmers are advised to use knee decker to maintain the condition of the knee joint.

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