

Analysis of Gerontic Nursing Care on a Patient with Impaired Physical Mobility Using Elastic Band

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Abstract: The elderly are individuals aged 60 years and above, including those who remain active or are dependent on others for daily living. Physical mobility impairment refers to limitations in moving one or more limbs independently, resulting in decreased muscle strength. This may include difficulties in walking, standing, sitting, or other physical activities. Causes include neurological diseases, musculoskeletal disorders, chronic conditions, trauma, aging, medication side effects, and prolonged immobilization leading to muscle weakness. One non-pharmacological intervention to increase muscle strength in the elderly is resistance exercise using elastic bands. Isotonic contractions are predominant in elastic band exercises, enhancing muscle oxygenation and hemodynamics, thus accelerating muscle strength improvement. The priority nursing diagnoses in this case are impaired physical mobility related to decreased muscle strength, chronic pain related to musculoskeletal conditions, impaired verbal communication due to hearing loss, and risk of falls related to muscle weakness. Before intervention, muscle strength in the right hand and foot was graded 3; after 14 days of elastic band therapy, it improved to 4. Therefore, elastic band resistance training significantly increases muscle strength in elderly patients.

Keywords: Resistance exercise: Elastic band, Elderly, Decreased muscle strength

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Introduction

The occurrence of muscle disorders is one of the problems in the elderly. Decreased muscle function can cause various problems with a person's quality of life, such as loss of confidence in carrying out activities due to fear of falling, fractures, head injuries, and accidents due to the increased risk of falling (Lenak et al., 2024)

A person is considered elderly if aged 60 years or older, according to Law No. 25 of 2016 concerning the National Action Plan for Elderly Health.

In old age there are various changes that will be experienced by the elderly. Broadly speaking, the

changes that occur in the elderly are divided into five, namely physical changes, cognitive, emotional changes, psychosocial changes and changes in sexual function and potential. Changes in the physical aspects that occur include changes in the sensory system, cardiovascular system, respiratory system, digestive system, urinary system, nervous system and reproductive system. musculoskeletal system will affect the decrease in flexibility, muscle strength, joints, cartilage function and bone density. There are several cases that have decreased muscle strength such as sarcopenia, muscle

atrophy, stroke, disease motoric injury, osteoarthritis (Widjayanti et al., 2023).

The above case is one of the disorders often referred to as physical mobility disorders in the world of nursing, where physical mobility disorders are limitations in physical movements in one or more limbs independently, which can lead to decreased muscle strength. This can include difficulty in walking, standing, sitting, or performing other physical activities. So, where people who experience decreased muscle strength will have an impact on their quality of life because their daily activities are less fulfilled, therefore training is carried out to increase muscle strength, one of which is with progressive loads to increase muscle (Widjayanti et al., 2023)

BPS (2023) states that the prevalence of physical mobility disorders in the elderly in Indonesia reaches 9.92% or around 26.82 million people. Physical mobility disorders in the elderly can be caused by various factors, including musculoskeletal diseases such as rheumatoid arthritis, osteoarthritis, and osteoporosis, as well as physiological changes in the musculoskeletal system related to aging.

Strength training in which the load used increases gradually as muscle strength and ability increase. The main goal is to stimulate muscle adaptation resulting in increased muscle mass and strength. Progressive weight training is a type of mechanism by which muscles respond to weight training include neuromuscular adaptation, muscle hypertrophy, increased protein synthesis and improved metabolic function. Progressive weight training increases motor unit recruitment and synchronization between muscle fibers, which contributes to increased muscle strength. Progressive weight training can be done by training using resistance exercise: elastic bands and using weight lifting exercises with gradual weight (Susilawati et al., 2024) Resistance band exercises can help strengthen muscles in the elderly, where when entering old age many elderly people experience neuromuscular disorders and musculoskeletal disorders by doing resistance band exercises can increase muscle strength, especially lower extremity muscles, thereby reducing the risk of falls and increasing independence in the elderly (Santoso & Kristianto, 2020).

Method

This study employed a descriptive method with a case study approach to elastic band exercise intervention. The sample consisted of one individual.

Result and Discussion

The results of the study found that there was an increase in muscle strength in Mr. A after being given a

resistance exercise intervention. And after being given a resistance exercise intervention: elastic band for 14 days (3 sets x 10 reps of each movement). Before the elastic band exercise was performed, Mr. A's muscle strength in the upper extremities and A on the upper and lower extremities on the right side of the client's score 3 after doing resistance exercise: elastic band increased to 4.

Exercises using elastic bands in the elderly work through physiological mechanisms in the form of progressive elastic resistance which creates a mechanical load on muscle fibers. This load triggers muscle microtrauma which is then repaired through the process of protein synthesis, resulting in muscle hypertrophy and increased strength. In the elderly, this exercise is important due to the process of sarcopenia (decrease in muscle mass and strength due to aging). Mechanical stimulation from elastic bands also activates mechanosensitive receptors that play a role in muscle growth pathways, as well as increasing neuromuscular activation, resulting in better coordination of movement and body stability (Kurniawan et al., 2022).

This is in line with research conducted by Purwana et al (2023), after being given an Elastic Band Exercise intervention for 2-3 weeks, as many as 65% of the elderly experienced an increase in muscle strength from grade 4 to grade 5 based on Manual Muscle Test (MMT) measurements. This increase indicates that the elderly who were previously only able to move muscles with little resistance, are now able to fight full resistance, which reflects an increase in functional ability and independence in daily activities.

Based on research conducted by Purwana (2023), it is suggested that the increase in muscle strength in the elderly group who do exercises using elastic bands shows significant results. Based on these findings, the average increase in muscle strength is in the range of 25% to 35% after an exercise program of 10 to 14 meetings. This is in line with research conducted by Chen (2022) and Martins (2021), who report that elastic band-based resistance training effectively improves muscle especially in older age groups. Supported by research conducted by Berquiste in 2019, found that training with elastic band resistance exercise can improve muscle strength, quality of life, and muscle mass in the elderly. This study also revealed that increasing muscle strength in the elderly is more effective when done with resistance training compared to light aerobic exercise because it can increase metabolic activity in muscles and bones, as well as increase independence and reduce the risk of falls.

In addition to increasing muscle strength resistance exercise: elastic bands can also reduce joint pain suffered by the elderly. From research in this case, it was also found that resistance exercise: elastic bands

can reduce joint pain in Mr. A. This is in line with research conducted by Nindrahayu (2023), stating that elastic band exercises have proven effective in reducing leg pain in the elderly who have decreased muscle strength. A. This is in line with research conducted by Nindrahayu (2023), stating that elastic band exercises have proven effective in reducing leg pain in the elderly who have decreased muscle strength. This exercise can increase lower limb muscle strength, joint flexibility, and blood flow, thereby reducing pressure on painful joint structures. This is also in line with the findings of Lasalutu (2023) which shows that progressive weight training using elastic bands regularly can increase muscle strength and reduce the perception of leg pain in the elderly in social homes. Therefore, the use of elastic bands as a physical exercise intervention is a safe and effective alternative in musculoskeletal pain management in the elderly.

Conclusion

Based on the results of the study, it can be concluded that the provision of resistance exercise: elastic bands in the elderly who experience decreased muscle strength can significantly increase muscle strength in the elderly. before the exercise is given muscle strength in Mr. A with a score of 3 after being given the action for as long as possible. A with a score of 3 after being given action for approximately 14 days the muscle strength of Mr. A increased to 4, in addition to increasing muscle strength in Mr. A. An increased to 4, in addition to increasing muscle strength resistance exercise: elastic bands can also reduce joint pain in the elderly, improve quality of life, and can maintain balance in the elderly to reduce the risk of falling.

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Conflicts of Interest

The author declares no conflict of interest.

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