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Letter to the Editor

Effects of Functional Exercise Program on Improving Gluteus Medius Muscle Strength in Postmenopausal Women

Kyoung Soo Suh [1], *Woo Yeul Baek [2]

1. *Department of Physical Education, Kyonggi University, Suwon, South Korea*
2. *Department of Sport Science, Kyonggi University, Suwon South Korea*

***Corresponding Author:** Email: wyb71@kyonggi.ac.kr

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Dear Editor-in-Chief

The hip muscles play a vital role in connecting the upper and lower body, making a significant contribution to posture, movement, and overall stability. It becomes increasingly crucial to maintain hip strength for daily activities, especially during the postmenopausal stage when there is a rapid decline in physical fitness (1). This decline can result in joint instability and reduced mobility, underscoring the importance for middle-aged women in the postmenopausal phase to prioritize engaging in strength-building exercises and maintaining a well-balanced diet (2).

Middle-aged women in the postmenopausal phase frequently face daily stress, household responsibilities, and emotional disorders like depression and anxiety, which can have a significant impact on their overall quality of life (3). It is essential for these women to proactively address stress management and improve their daily lives by engaging in regular physical activity, prioritizing adequate rest and sleep, and maintaining a nutritious diet.

Engaging in practical exercise programs has been demonstrated to enhance physical fitness, alleviate stress, and reduce depression among postmenopausal women with obesity (4). In the pursuit of a healthy lifestyle, the development of gluteal muscle strength holds significant importance for middle-aged women. Specifically, strengthening the gluteus medius muscle plays a crucial role in maintaining optimal movement patterns and overall well-being (5). Previous studies have provided evidence that regular gluteus medius exercises contribute to improved movement, reduced knee pain, and enhanced spinal health (6, 7).

However, there is a limited amount of research exploring the effects of a functional exercise program specifically targeting the gluteal muscles in postmenopausal women. Thus, the objective of this study is to evaluate the influence of a functional exercise program on the strength of the gluteus medius muscle in postmenopausal women.

Between January and February 2023, the study conducted in Seoul, South Korea, encompassed the enrollment of a total of 34 adult females who were devoid of musculoskeletal disorders and exhibited a minimum of one year of postmenopausal amenorrhea. After obtaining informed consent from all participants, they were randomly assigned to one of two groups: the control group (CG, n=17), representing the general training group and the experimental group (EG, n=17), representing the functional training group.

The CG underwent a general training program that involved exercises such as leg extension, leg

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curl, side lunge, back extension, and bent squat. Conversely, the EG participated in a functional training program that included exercises such as band lateral walk, one-leg deadlift, side-lying hip abduction, and squat deceleration. Both groups performed 15 repetitions and 3 sets for each exercise. Each training program was conducted three times a week for the duration of four weeks, with each session lasting 60 minutes. To determine the effectiveness of each training program, the gluteus medius muscle strength was assessed on two occasions: prior to the initiation of training and after a period of 4 weeks, employing the microFET®2 device (Salt Lake City, UT, USA).

The data were reported as mean ± standard deviation and analyzed using both paired t-tests and independent t-tests. All statistical analyses were conducted using SPSS software (version 23.0, Chicago, IL, USA). The level of statistical significance was set at $P<0.05$. The participant characteristics for the EG were as follows: female (n = 14), age = 58.90 ± 2.40 years, height = 157.20 ± 3.90cm, weight = 60.30 ± 4.00kg, BMI = 23.8 ± 2.20. Similarly, for the CG: female (n = 14), age = 59.20 ± 2.40 years, height = 158.60 ± 5.20cm, weight = 58.50 ± 4.41kg, BMI = 21.72± 2.02.

The results of the study revealed a significant increase in muscle strength for both the right gluteus medius (t=6.71, $P<.001$) and the left gluteus medius (t=8.46, $P<.001$) in the EG following the training program, compared to their respective pre-training levels. Similarly, significant improvements in muscle strength were observed for both the right gluteus medius (t=5.63, $P<.001$) and the left gluteus medius (t=2.18, $P<.05$) in the EG, relative to their respective pre-training levels. Furthermore, the EG demonstrated significantly higher muscle strength in both the right gluteus medius (t=3.81, $P<.001$) and the left gluteus medius (t=3.87, $P<.001$) compared to the CG after the 4-week training program.

Thus, the findings demonstrate that both the general training program in the CG and the FT program in the EG led to significant improvements in gluteus medius muscle strength. Additionally, the EG exhibited significantly greater muscle strength in both the right and left gluteus medius compared to the CG after the training period. These results underscore the effectiveness of the FT program in enhancing gluteus medius muscle strength and highlight its potential as an impactful intervention for improving hip muscle function in postmenopausal women.

Conflict of interest

The authors declare that there is no conflict of interests.

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