

Power Plate[®] Training Proves Effective for the Elderly

Power Plate[®] training Increases Knee-Extension Strength and Speed of Movement in Older Women

This is a summary of a study published in the international scientific *Journal of the American Geriatrics Society* (June 2004)

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Study Conclusions:

1. The first long-term study on the effects of Power Plate[®] training—performed on the Power Plate in older women clearly demonstrates that strength and speed of movement increases after 24 weeks of Power Plate training.
2. Power Plate[®] training proves to be a safe, suitable and efficient strength training method for the aging population. The findings of this study show that Power Plate[®] training has great potential for application in geriatric and therapeutic settings as a safe, low-impact strength training method. The low exertion and safety of loading elderly subjects may indicate Power Plate training for weakened populations, as well as for people who are not attracted to, or physically able to perform conventional resistance training.

Introduction:

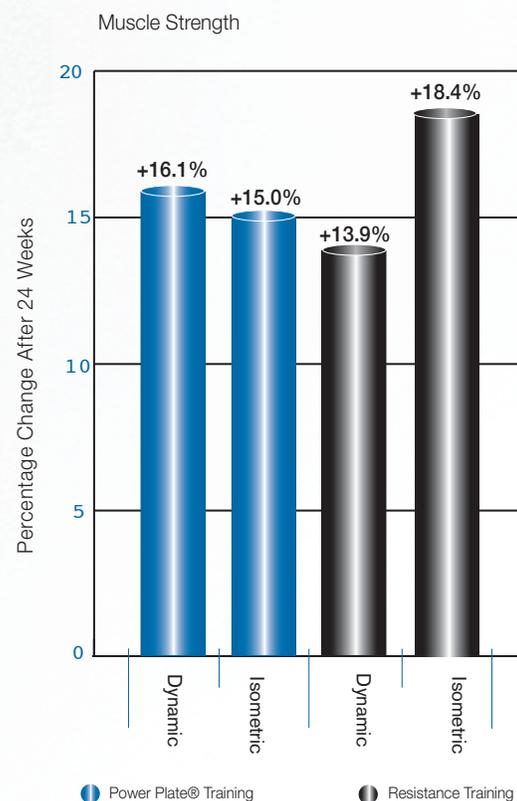
The hypothesis of this study was the potential of Power Plate Training, performed on the Power Plate machine, in a therapeutic context, where it may enhance muscular performance in patients and older adults for whom standard exercise programs are not an option. Maintaining muscle mass, functional strength and cardiovascular performance is a challenge for the elderly due to the risk of potential overload and the diminished ability of the aging body to adapt to high levels of loading. Power Plate Training provides a safe and easy opportunity to train these systems without excessive overload.

Muscle strength and peak muscle power have a great influence on the function of older adults in activities of daily life such as walking, climbing stairs and rising from a chair. Common risk factors leading to falls and hip fractures in older adults are muscle weakness and the inability of lower extremity muscles to produce rapid force. Older adults lose muscle mass with

an age-related decrease in physical activity. Therefore, the prevention of age-related strength loss and muscle atrophy is a public health issue.

Figure 1

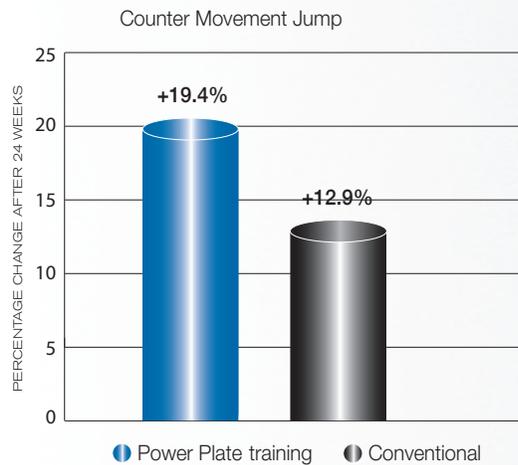
Change in muscle strength of the legs after 24 weeks in the Power Plate training group and conventional resistance training group.



The "classic" Power Plate was manufactured by LATAM b.v. for PPI between 2000 and 2004

Figure 2

Change in performing the counter movement jump.

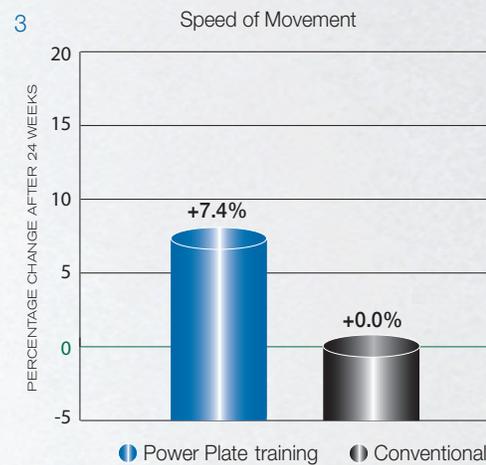


Method:

The research included 89 postmenopausal women between the ages of 58 and 74. Participants were randomly assigned to three groups: the Power Plate training group trained three times per week on a Power Plate; they performed a progressive program of static and dynamic knee extensor exercises such as squats and lunges. The conventional training group also trained three times per week; they performed dynamic leg press and leg extension exercises on conventional fitness equipment, increasing intensity from low to high resistance. The control group did not participate in any training for the entire duration of the study, which was 24 weeks.

Figure 3

The speed of movement increased only for the group that trained using Power Plate training.



Results:

The results prove that both Power Plate training and conventional training increases muscle strength of the legs (fig. 1). Both groups also showed an improvement in performing the counter movement jump (fig. 2). The speed of movement increased only for the group that trained on the Power Plate (fig. 3). The counter movement jump is an accurate method for measuring the stretch shortening of the muscles, a system used in daily life in activities such as rising from a chair, climbing a stair or maintaining balance. Speed of movement is a very important measure of reaction and balance, and plays a part in reducing the risk of falling.

Exercise Variables

Training volume and training intensity of the Power Plate® training program:

	Start	Week 12	End
Duration (min.)	3	20	30
Number of different exercises	2	6	9
Longest duration of vibration without rest (sec.)	30	60	60
Rest between exercises	60	5	5
Amplitude (low/high)	low	high	high
Frequency (Hz)	35	40	40

Power Plate® training minimizes the need for conscious exertion and stress on the musculoskeletal, respiratory, and cardiovascular systems. Most subjects enjoyed the Power Plate training sessions, did not consider the workouts to be difficult and reported only a moderate degree of muscle fatigue at the end of the session.