

A Systematic Note of the Effects of WBV on Balance, Mobility, and Strength in Aging Adults

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SHORT COMMUNICATION

Physical activity helps to prevent the onset of age-related changes and to maintain a person's general health by increasing balance, stability, and musculoskeletal health. As people get older, their physical activity decreases, making it even more vital to exercise in order to stay healthy. However, if exercise is not done on a regular basis, there will be no possible benefit. In conclusion, exercise is the greatest option for physically inactive persons who want to stay healthy. However, among the elderly, reported discomfort during exercise is a primary factor that affects exercise rates and compliance [1].

Whole-body vibration (WBV) is one of the new effective alternative options for physical activity and exercise, and it involves the application of vibrations to the entire body. Vibrations can be localised or generalised, but WBV is different in that it targets a specific body area, whereas localised vibrations do not. The optimal place for a person to stand while being vibrated is on a vibratory platform. Depending on the movement of the vibratory platform in a certain direction, it can be horizontal, vertical, or cyclo-vibrations. There are also other characteristics to investigate, such as vibration frequency (f), amplitude (a), magnitude (m), and time length (t) (T). Effect of WBV can be tested for physiological changes, reduction in diseases, musculoskeletal health, pain relief, balance, or macro and micro circulation if desired. The working principle of WBV and exercise, to raise exercise intensity, the mass (M) is increased further, and the working of resistive exercise is based on M , whereas the working of WBC is based on acceleration (A) and variations in it, as defined by 'Isaac Newton. It is based on the 'law of motion.' Both have the same general goal of increasing force (F), and the formula is as follows: $F=M*A$ As a result, either M or A can be increased to increase F . The advantages of adopting WBV are

that it takes less time, is easier for the elderly to accomplish, and requires no physical exertion. For example, an adult of 70 years of age is unable to lift a weight of 10 kg or more for as long as a young person can. WBV exercising has a far greater compliance rate than resistive training because there is no physical exertion involved [2].

Both are important in terms of needs; for example, in the instance of a stroke patient who requires the strength of a certain muscle, BMS will be more effective. Furthermore, the application of WBV is greater for boosting overall health and fitness, such as in the elderly, because it covers a much broader area of the body. The 'tonic vibration reflex' is thought to arise as a result of WBV. Vibration elicits muscular contractions by activating muscle spindles, which are primarily activated by neurophysiological mechanisms.

Even when the person is not moving, he activates muscles and boosts electromyography (EMG). As a result, WBV, like exercise, can help older persons increase their stability, strength, and power. With vibration, a myotactic stretch reflex was triggered, which operates on muscle spindles and, as a result, muscle contraction. Abercromby et al. conducted another study in which participants performed squats on a vibration platform as well as the same actions without the vibration platform. The EMG activity was measured and found to be much higher when the vibrations were increased.

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