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Neuromuscular Activation By Means Of Vibrations

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A researcher from the Universidad Politecnica de Madrid has collaborated with the University of Granada in the development of a research study on the possible effects of vibrations as a mean of neuromuscular activation to improve jumping performance. The results suggest that the effect could be dependant on the level of training.

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Lately, new technologies applied to improving performance and health have experienced a booming rise. One of those has been the use of vibrating platforms to improve athletic performance in general and muscular strength in particular.

The application of mechanical vibrations through technologies like vibrating platforms has been proposed by many recent studies as tool capable of increasing muscular performance. Nevertheless, the results offered are contradictory. This has motivated the group EFFECTS-262 of the Universidad de Granada, in collaboration with the Facultad de Ciencias de la Actividad Física y del Deporte at the Universidad Politécnica de Madrid, to try to clear this situation by evaluating the possible effects of a short vibration on the jumping abilities of young adults of both sexes.

A group of 114 university students, 37 of them male and 77 female, with an average of 19.6 years of age has been used as test subjects for an experiment to evaluate the height reached by the subjects when jumping, and compare the results with the height reached after a short stimulation by the vibration platform (Fig 1.)

The main parameters to be controlled, since they accurately represent the characteristics of the vibration training, are: the frequency of the vibrations (number of vibration cycles per second, measured in hertz Hz), the time duration of the training measured in seconds or minutes, the amplitude of movement of the vibration source measured in millimeters and the vibration charge that is generated (g)

The results of the study indicate that vibration stimuli ranging from 20 to 30 Hz and lasting from 90 to 120 seconds would generate a short decrease in the jumping heights achieved immediately after the application of the stimulation. However, such decrease seems to completely disappear after a short resting period. The test subjects recovered their normal jumping ability after a minute of recovery, as shown in (fig 2.)

The researchers believe that vibration stimulation could cause a local temporal muscular fatigue that would be the cause of the decrease on the heights reached.

If the results from this study are compared with those presented by experiments with a similar focus, it could be suggested that such stimulation has stronger effects proportional to the level of the training that the subjects are accustomed to. The inclusion of test subjects with low training levels in this study* could account for the decrease in jumping heights. The researchers involved concluded that in subjects that are not actively training, it is convenient to have resting periods of at least a minute after stimulation before jumping to their full potential.

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