

University of North Dakota Physical Therapy  
Research on the Plyo Press vs. Squat Study

The ongoing research in the evolution of athlete training continues to reveal new principles and training designs, which strive to heighten athletic performance and maximize athletic ability. One example of the application of such research is the Plyo Press machine, a patented device used in the Frappier Acceleration Program for athletes. This device was specifically designed to combine strength training with plyometrics to enhance speed and dynamic muscle activity without the excessive low back stress of traditional training methods.

As the Plyo Press has been recently designed and incorporated into training programs, no research has yet been conducted on the machine to validate the claims made by the manufacturer. Therefore, an EMG analysis of selected back and lower extremity musculature was conducted in an attempt to provide information on the muscle activity and recruitment pattern elicited by the Plyo Press. The purpose of this study was to compare muscle activity levels during the Plyo Press exercises with traditional strength and power training exercises (i.e., a squat lift and a vertical jump), to determine effects on muscle activity regarding task experience, and to determine the resulting changes on muscle activity with usage of a pelvic stabilization belt.

Ten healthy male subjects, who met the selection criteria, were asked to participate in this study. These athletes were divided into two groups (Trained and Untrained) based on their familiarity with the Plyo Press. Each subject performed a total of four different test exercises. An analysis of the normalized EMG data was conducted using the myosoft software package.

The results of this study showed that the Plyo Press appeared to specifically recruit the vastus lateralis muscle during each of the test sessions: 1) leg press vs. squat, 2) plyojump vs. vertical jump, and 3) with and without a pelvic stabilization belt. The Plyo Press appears to offer the advantage of specifically training the vastus lateralis muscle while minimizing recruitment of other lower extremity and back muscles.