

## 論文の欧文要旨

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(Title)

Effect of Lifting Velocity on Response to Resistance Training

(Abstract)

For athletes, resistance training plays a crucial role in enhancing athletic performance. Training variables such as intensity, repetition, and rest intervals are associated with response to resistance training. Recently, there is a growing interest in lifting velocity as a method of adjusting training variables. However, research related to monitoring lifting velocity during exercise is still insufficient and lacks of conclusive evidence. Therefore, this study seeks to clarify the importance of lifting velocity in resistance training in order to utilize it as a training variable.

For that, this study 1) performed a meta-analysis and systematic-review of training effects in Velocity loss training, 2) analyzed the relationship between rest intervals and lifting velocity in each set, 3) investigated the effect of different velocity loss training on improvement of strength and power performance, and 4) evaluated the effects of a power-specific protocol that uses multiple loads in a single set and minimizes velocity loss within a set.

The results revealed that 1) the training effect varies with velocity loss, and high velocity loss affects muscle strength gains differently in the upper and lower body. Furthermore, after adjusting the number of repetitions, sprint was more effective at low velocity loss, 2) the length of the rest intervals affected average lifting velocity, 3) similar volume of different velocity loss training were not associated with improvement of strength and power performance, 4) Protocols with low velocity loss, involving multiple loads within a single set, were found to increase high-load power, maximal muscle strength, and decrease metabolic stress.

The study suggests that lifting velocity can be used to adjust recovery from fatigue. Additionally, performing resistance exercises while observing lifting velocity may enhance training effectiveness, emphasizing the importance of feedback on lifting velocity.