# Comparison of mean concentric velocity using different cluster set protocols with the bench press exercise – A closer look at the 3/7 protocol

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**Introduction:** In the constantly evolving world of strength and conditioning, cluster sets have become increasingly popular. It is important to understand the interaction among training var- iables, which might include the number of sets, the velocity of the executed movement, the rest in between the sets or even between single reps. **Purpose:** Firstly, this study analyzes the difference in mean concentric velocity between three cluster set protocols. Secondly, it com- pares the executed repetitions between all-out-/ and cluster sets. **Methods:** A total of 20 male subjects [age: $29 \pm 5$ years; weight: $85.4 \pm 6.4$ kg; 1RM bench press: $121 \pm 13$ kg (mean $\pm$ SD)] first performed a 1RM test with the bench press movement. Before they completed three cluster sets in a randomized order, they also performed an all-out set at 65% of the 1RM. The first cluster set was a 3-4-5-6-7 ascending protocol, the second was a 5x5 constant protocol and the third was a 7-6-5-4-3 descending protocol. All cluster sets were performed at 65% of 1RM with 15 seconds of intra-set rest and mean concentric velocity was recorded. **Results:** Mean concentric velocity did not differ significantly between cluster sets. The executed repe- titions during the all-out set pre performing all three cluster set protocols were lower (18.6 repetitions $\pm$ 1.8) than the cluster sets (25 repetitions). **Discussion and conclusion:** Interestingly, no differences in mean concentric veloc- ity be- tween cluster set protocols were found in the present study. Given that mean concentric veloc- ity is a direct indicator for mean power output if – as in the present experiment – movement direction and amplitude as well as displaced mass remain constant, the current results suggest that mean power output across 25 repetitions was robust against differences in cluster set pro- tocols. Further research needs to be done in regards to the manipulation of cluster set varia- bles, such as intra-set rest or rep schemes, in order to support the current literature. As sug- gested by the current literature, the inclusion of cluster set protocols is beneficial for develop- ing power or maximizing hypertrophy. Since none of the findings in the present study were significant, all three cluster sets might be suitable for either purpose with no difference.

**Keywords:** cluster set protocol, velocity-based training, bench press, power, hypertrophy, mean concentric velocity

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