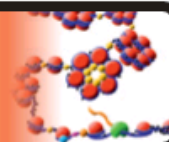


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Dietary protein to maximize resistance training: a review and examination of protein spread and change theories

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Abstract

An appreciable volume of human clinical data supports increased dietary protein for greater gains from resistance training, but not all findings are in agreement. We recently proposed "protein spread theory" and "protein change theory" in an effort to explain discrepancies in the response to increased dietary protein in weight management interventions. The present review aimed to extend "protein spread theory" and "protein change theory" to studies examining the effects of protein on resistance training induced muscle and strength gains. Protein spread theory proposed that there must have been a sufficient spread or % difference in g/kg/day protein intake between groups during a protein intervention to see muscle and strength differences. Protein change theory postulated that for the higher protein group, there must be a sufficient change from baseline g/kg/day protein intake to during study g/kg/day protein intake to see muscle and strength benefits. Seventeen studies met inclusion criteria. In studies where a higher protein intervention was deemed successful there was, on average, a 66.1% g/kg/day between group intake spread versus

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a 10.2% g/kg/day spread in studies where a higher protein diet was no more effective than control. The average change in habitual protein intake in studies showing higher protein to be more effective than control was +59.5% compared to +6.5% when additional protein was no more effective than control. The magnitudes of difference between the mean spreads and changes of the present review are similar to our previous review on these theories in a weight management context. Providing sufficient deviation from habitual intake appears to be an important factor in determining the success of additional protein in enhancing muscle and strength gains from resistance training. An increase in dietary protein favorably effects muscle and strength during resistance training.

Keywords: Protein; Habitual protein intake; Strength; Muscle hypertrophy; Resistance training

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