

McBride, J.M., Porcari, J.P., Scheunke, M.D. Effect of vibration during fatiguing resistance exercise on subsequent muscle activity during maximal voluntary isometric contractions. *J Strength Cond Res* 2004; **18**(4): 777-81.

This investigation was designed to determine if vibration during fatiguing resistance exercise would alter associated patterns of muscle activity. A cross-over design was employed with 8 subjects completing a resistance exercise bout once with a vibrating dumbbell (V) (44 Hz, 3 mm displacement) and once without vibration (NV). For both exercise bouts, 10 sets were performed with a load that induced concentric muscle failure during the 10th repetition. The appropriate load for each set was determined during a pretest. Each testing session was separated by 1 week. Electromyography (EMG) was obtained from the biceps brachii muscle at 12 different time points during a maximum voluntary contraction (MVC) at a 170 degrees elbow angle after each set of the dumbbell exercise. The time points were as follows: pre (5 minutes before the resistance exercise bout), T1-T10 (immediately following each set of resistance exercise), and post (15 minutes after the resistance exercise bout). EMG was analyzed for median power frequency (MPF) and maximum (mEMG). NV resulted in a significant decrease in MPF at T1-T4 ($p < 0.05$) and a significant increase in mEMG at T2 during the MVC. V had an overall trend of lower mEMG in comparison to NV. The mEMG and MPF values associated with NV were similar to previously reported investigations. The lower mEMG values and the higher MPF of V in comparison to NV are undocumented. The EMG patterns observed with vibration may indicate a more efficient and effective recruitment of high threshold motor units during fatiguing contractions. This may indicate the usage of vibration with resistance exercise as an effective tool for strength training athletes.