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**Efficacy of Isometric Hand Grip Training to Lower Resting Blood Pressure: A Systematic Review and Meta-Analysis**  
Cardiovascular disease is responsible for 17.5 million deaths per year. CVD includes heart attack, heart failure, and stroke. Known risk factors for CVD include high cholesterol level a sedentary life style, elevated blood pressure (BP), and high triglyceride levels. Hypertension also has a significant public health impact. It is estimated 62% of US adults have hypertension, and is implicated in 7.1 million deaths worldwide (Pescatello et al, 2010).

Aerobic exercise is recommended as a non- pharmacological intervention to lower BP. However, aerobic exercise may not be medically appropriate for all patients who are with elevated BP and many individuals do not engage in the recommended amounts of regular aerobic exercise. Handgrip exercise has also been shown to lower BP, suggesting this could be an alternative option to aerobic exercise. In the limited amount of research on handgrip exercise and BP with individuals who have hypertension, researchers have found that reductions in BP were comparable to more intense aerobic activity. However, more studies need to be conducted with individuals with prehypertension and hypertension.

High levels of cardiorespiratory fitness expressed as maximal oxygen consumption (VO<sub>2</sub>max) is associated with reduced all-cause mortality and morbidity. Further, individuals who have a high VO<sub>2</sub> max are typically physically active, which reduces the risk for CVD by preventing the onset of important risk factors, in particular, elevated BP or hypertension. Artero et al (2011) found a similar relationship with muscular strength in men with hypertension. Artero demonstrated that greater muscular strength was associated with reduced all-cause mortality and morbidity, and that this effect was greatest in those who had high muscular strength and high cardiorespiratory fitness. However, it is unclear if this relationship would be robust in a sample that included both men and women and those individuals with normal BP to stage 1 hypertension.

Therefore, this manuscript will meta-analyze the most recent data from 2000 to the present on the efficacy of isometric hand grip training to lower blood pressure in adults with normal to stage 1 hypertension. Secondly, this manuscript will provide a short summary of each trial serving as a systematic review.