

Supplementary Table S-F10-1. Hypertension Summary of the Qualifying Systematic Review and Meta-Analyses

Author, Year	Coverage Dates	Publication Type	Total Included Studies (N)	Total Participants in Study Sample (N)	Exercise Type (Mode)	Methodological Study Quality (AMSTAR_{EX})	Blood Pressure Change Exercise vs Control by BP Group (mm Hg) [SBP/ DBP / MAP [Hypertension (H); Prehypertension (PH); Normal (N)] & Other Relevant Outcomes
Cornelissen, 2013b	Up to February 2012	Meta-Analysis of RCTs	93	5223	Aerobic	Moderate	<p>H -8.3 (95% CI -10.7 to -6.0) / -5.2 (95% CI -6.9 to -3.4); PH -4.3 (95% CI -7.7 to -0.9) / -1.7 (95% CI -2.7 to 0.7); N -1.7(95% CI -2.2 to 0.7) / -1.1 (95% CI -2.2 to -0.1)</p> <p>Subgroup Analyses: Greater blood pressure reductions occurred among men 2x the magnitude vs women; ≤24 wk vs >24 wk; ≤210 min/wk vs >210 min/wk; ≥30 min/ session vs <30 min/session; moderate to vigorous vs low intensity; greater weight loss vs less weight loss</p>
Dickinson, 2006	1998 to May 2003	Meta-Analysis of RCTs	105	6805	Aerobic	Moderate	<p>H -4.6 (95% CI -7.1 to -2.0) / -2.4 (95% CI -4.0 to -0.7)</p>
Fagard, 2007	Up to December 2003	Meta-Analysis of RCTs	72	3836	Aerobic	Poor	<p>H -9.1 (95% CI -9.1 to -4.6) / -4.9 (95% CI -6.5 to -3.3) N -2.0 (95% CI -3.0 to -0.9) / -1.6 (95% CI -2.3 to -1.0)</p>
Conceicao, 2016	Up to February 2016	Meta-Analysis of RCTs	4	216	Aerobic (Dance)	Moderate	<p>H -12.0 (95% CI -16.1 to -7.9) / -3.4 (95% CI -4.8 to -1.9)</p>
Wen, 2017	1985 to May 2015	Meta-Analysis of RCTs	13	802	Aerobic	Moderate	<p>H -7.0 (SMD 95% CI -1.29 to -0.28) / -3.0 (SMD 95% CI -1.14 to -0.12)</p>
MacDonald, 2016	1987 to 2013	Meta-Analysis of RCTs	64	2344	Dynamic Resistance	High	<p>H -5.7 (95% CI -9.0 to -2.7) / -5.2 95% CI -8.4, -1.9) PH -3.0 (95% CI -5.1 to -1.0) / -3.3 (95% CI -5.3 to -1.4) N 0.0 (95% CI -2.5 to 2.5) / -0.9 (95% CI -2.1 to 2.2)</p>

							Subgroup Analyses: Greater blood pressure reductions occurred among Nonwhite samples with hypertension -14.4 /-10.3; by BP classification; white vs nonwhite; not taking meds vs taking meds; ≥8 exercises vs < 8 exercises; ≥ 3 days vs < 3 days, lower quality vs moderate vs high
Cornelissen, 2011	1987 to June 2010	Meta-Analysis of RCTs	28	1012	Dynamic Resistance	Moderate	H -1.7 (95% CI -5.5 to 2.0) / -3.2 (95% CI -4.7 to -1.7) / PH -4.7 (95% CI -7.8 to -1.6) / -3.2 (95% CI -5.0 to -1.4) / N -1.2 (95% CI -3.5 to 1.0) / -3.2 (95% CI -5.47 to -0.9)
Casonatto, 2016*	1999 to March 2015	Meta-Analysis of RCTs	30	646	Dynamic Resistance	Moderate	H -9.0 (95% CI -11.3 to -6.8) / -5.4 (95% CI -7.1 to -3.8) N -3.2 (95% CI -4.0 to -2.3) / -2.7 (95% CI -3.4 to -2.1) Subgroup Analyses: Greater blood pressure reductions occurred among hypertensive vs normotensive; using larger than smaller muscle groups; recovering in supine vs seated position
Corso, 2016	Up to January 2015	Meta-Analysis of RCTs	68	4110	Concurrent	High	H -5.3 (95% CI -6.4 to -4.2) / 5.6 (95% CI -6.9 to -3.8) PH -2.9 (95% CI -3.9 to -1.9) / -3.6 (95% CI -5.0 to -0.2) N 0.9 (95% CI 0.2 to 1.6) / -1.5 (95% CI -2.5 to -0.4) Subgroup Analyses: Greatest potential blood pressure reductions occurred among hypertensives in higher quality trials and when blood pressure was measured as the primary outcome -9.2/-7.7
Carlson, 2014	January 1966 to July 2013	Meta-Analysis of RCTs & Cross Over Studies	9	233	Isometric Resistance	Moderate	H -4.3 (95% CI -6.4 to -2.2) / -5.5 (95% CI -7.9 to -3.0) / -6.1 (95% CI -8.0 to -4.0) N -7.8 (95% CI -9.2 to -6.4) /

							-3.1 (95% CI -3.9 to -2.3) / -3.6 (95% CI -4.4 to -2.7)
Xiong, 2015a	1978 to November 2014	Meta-Analysis of RCTs	8	572	Baduanjin	Moderate	H -13.0 (95% CI -21.2 to -4.8) / -6.1 (95% CI -11.2 to -1.1) Subgroup Analyses: Greater blood pressure reductions occurred with Baduanjin + meds vs meds only -7.5 (95% CI -11.4 to -3.6)/ -3.6 (95% CI -5.2 to -1.8)
Xiong, 2015b	1959 to April 2014	Meta-Analysis of RCTs	20	2349	Qigong	Moderate	H -17.4 (95% CI -21.1 to -13.7) / -10.6 (95% CI -14.0 to -6.3) Subgroup Analyses: Greater blood pressure reductions occurred with exercise vs Qigong -6.5 (95% CI -2.8 to -10.2)/0.7 (95% CI -1.4 to 2.7); Qigong vs antihypertensive meds -7.9 (95% CI -16.8 to 1.0)/ -6.1 (95% CI -9.6 to -2.6); Qigong + antihypertensive meds vs antihypertensive meds -12.0 (95% CI -15.6 to -8.5)/-5.3 (95% CI -8.1 to -2.4)
Wang, 2013	1959 to April 2013	Meta-Analysis of RCTs	18	1371	Tai Chi	Moderate	H -12.4 (95% CI -12.6 to -12.2) / -6.0 (95% CI -6.2 to -5.9) Subgroup Analyses: Greater BP reductions occurred with Tai Chi vs antihypertensive meds -14.3 (95% CI -14.31 to -14.29)/-6.0 (95% CI -6.01 to -5.99); Tai Chi + antihypertensive meds vs meds -9.3 (95% CI -10.9 to -7.8)/-7.2 (95% CI -7.7 to -6.6; and Tai Chi vs routine care -12.4 (95% CI -12.6 to -12.2) /-6.0 (95% CI -6.2 to -5.9)
Park, 2017	1946 to 2014	Meta-Analysis of RCTs	6	394	Yoga	Moderate	H -11.4 (95% CI -14.6 to -8.2) / -2.4 (95% CI -4.3 to -0.4) These findings were noted in a subsample of study participations ≥60 years
Rossi, 2012	January 1985 to January 2012	Systematic Review of Prospective Cohort Studies	6	96,073	Habitual Physical Activity (Mostly General, Leisure)	High	Hu and colleagues (2007) investigated the associations among occupational, daily commuting, and leisure-time physical activity and cardiovascular mortality among 26,643 overweight, Finnish men and women with hypertension 25 to 64 years of age that were followed for 20 years. The multivariate-adjusted hazard ratios of cardiovascular mortality associated with low (almost

							<p>completely inactive), moderate (some physical activity more than 4 hours per week \approx 12 MET hours per week or more), and high (vigorous physical activity more than 3 hours per week \approx 18 MET hours per week or more) leisure-time physical activity were 1.00, 0.84 (95% CI: 0.77-0.92), and 0.73 (95% CI: 0.62-0.86) among men, respectively; and 1.00, 0.78 (95% CI: 0.70-0.87) and 0.76 (95% CI: 0.60-0.97) among women, respectively.</p> <p>Vatten (2006) found that among men with a resting systolic blood pressure between 140-159 mmHg, those who were highly physically active [RR 1.21 (95% CI: 0.97-1.52)] reduced their risk of CVD mortality by 30 percent compared to those who were physically inactive [RR 1.73 (95% CI: 1.37-2.19)]. Among men with a resting systolic blood pressure >160 mmHg, those who were highly physically active [RR 1.82 (95% CI: 1.46-2.28)] reduced their risk of CVD mortality by 19 percent compared to those who were physically inactive [RR 2.24 (95% CI: 1.78-2.83)]. In addition, among women with a resting systolic blood pressure between 140-159 mmHg, those who were highly physically active [RR 1.47 (95% CI: 1.04-2.09)] reduced their risk of CVD mortality by 24 percent compared to those who were physically inactive [RR 1.93 (95% CI: 1.39-2.69)]. Among women with a resting systolic blood pressure >160 mmHg, those who were highly physically active [RR 1.77 (95% CI: 1.26-2.54)] reduced their risk of CVD mortality by 27 percent compared to those who were physically inactive [RR 2.41 (95% CI: 1.76-3.30)]. Therefore, as systolic blood pressure increases within hypertensive ranges, the risk of CVD mortality increases. However, the increased risk is attenuated with higher levels of physical activity.</p>
Summary	1946 to 2016	14 Meta-Analyses & 1 Systematic Review	4 to 93	125,986	5 Aerobic, 3 Dynamic Resistance, 1 Concurrent, 1 Isometric Resistance, 4 CAM, 1 Habitual Physical Activity	Poor to High	<p>Aerobic H -8.3 / -5.2; PH -4.3/-1.7; N -1.4/-1.3 Dynamic Resistance H -5.7/-5.2; PH -2.9/-3.6; N -0.9/0.0 Concurrent H -5.3/-5.6; PH -2.9/-3.6; N +0.9/-1.5 CAM H -13.6 / -8.5</p> <p>Leisure-time moderate physical activity equating to \approx 12 MET hours per week or more reduced cardiovascular mortality by 16 percent among men and 22 percent among women, while higher amounts of leisure time vigorous physical activity equating to \approx18 MET hours per week or more reduced cardiovascular mortality by 27 percent among men and 24 percent among women, indicating</p>

							an inverse, dose-response relationship between leisure-time physical activity and cardiovascular mortality among adults with hypertension.
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Legend: *=Acute, all else are chronic (i.e., training) meta-analyses, AMSTAR_{EX}=Assessment of multiple systematic reviews adapted for exercise, BP=blood pressure, CAM=Complementary and alternative types (modes), CI=Confidence interval, DBP=Diastolic blood pressure, H=Hypertension, PH=Prehypertension, N=Normal blood pressure, MAP=Mean arterial blood pressure, SMD=Standardized mean difference, RR=Relative risk, SBP=Systolic blood pressure.

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