

## Supplemental Digital Content 2. A Summary of the Secondary Literature Systematic Search

### Strategy

Original PubMed searches run from 1940 to October 22, 2016. Total Citations: 87

Updated PubMed searches run from October 22, 2016 to February 18, 2020. Updated Total Citations: 47. Updated Scopus searches run from July 21, 2016 to March 6, 2020. Updated Total Citations: 48

### PubMed

#### **Search 1: hypertension/pre-hypertension AND exercise AND systematic reviews/meta-analysis NOT terms for exclusion with drugs**

**1940's to October 22, 2016. Original Citations: 87. Updated Citations: 47**

(systematic[*sb*] OR meta-analy\*[*ti*] OR systematic[*ti*]) AND ("Hypertension"[*Mesh*] OR hypertens\*[*tiab*] OR "high blood pressure" OR "high blood pressures" OR "high arterial pressure" OR "high arterial pressures" OR "high systolic pressure" OR "high diastolic pressure" OR "high pulse pressure" OR "high venous pressure" OR "elevated blood pressure" OR "elevated blood pressures" OR "elevated arterial pressure" OR "elevated arterial pressures" OR "antihypertensive" OR "elevated systolic pressure" OR "elevated diastolic pressure" OR "elevated pulse pressure" OR "elevated venous pressure" OR "Prehypertension"[*Mesh*] OR prehypertens\* OR "pre hypertension" OR "pre-hypertension") AND ("exercise"[*majr*] OR exercise[*ti*] OR exercises[*ti*] OR exercising[*ti*] OR postexercise[*ti*] OR running[*mesh*] OR running[*ti*] OR bicycling[*mesh*] OR bicycling OR bicycle\* OR cycling[*ti*] OR treadmill\* OR ergometer\* OR "weight lifting" OR "weight training" OR "resistance training" OR "strength training" OR "endurance training" OR "speed training" OR "circuit training" OR "training duration" OR "training frequency" OR "training intensity" OR "aerobic endurance" OR "aerobic training" OR "interval training" OR "combination training" OR "combined training" OR plyometric\* OR "HIIT" OR walking[*mesh*] OR walking[*ti*] OR swimming) NOT ("pulmonary hypertension" OR "pulmonary arterial hypertension" OR "heart transplant" OR "heart failure" OR "cystic fibrosis" OR "DASH"[*tiab*] OR cancer OR neoplasms OR fibromyalgia OR alzheimers OR alzheimer OR pregnant OR pregnancy OR "epidemiology"[*Subheading*] OR "obesity/drug therapy"[*mesh*] OR pharmacol\*[*ti*] OR drug[*ti*] OR pharmacist\*[*ti*] OR "diet therapy"[*mesh*] OR "diet therapy"[*subheading*] OR "nutritional intervention" OR "dietary intervention" OR "nutritional counseling" OR "dietary counseling" OR caffeine OR "eating change" OR "activities of daily living" OR "dehydration" OR "dehydrate" OR "dehydrated" OR "dietary salt" OR sodium OR epilepsy OR influenza OR flu OR pneumonia OR septicemia OR arthritis OR hiv OR "Acquired Immunodeficiency Syndrome" OR meningitis OR "substance abuse" OR alcoholism OR "drug abuse" OR "Cross-Sectional Studies"[*MeSH Terms*] OR Comment[*pt*] OR Editorial[*pt*] OR Letter[*pt*] OR "Case Reports"[*pt*] OR "case control"[*ti*] OR "case report"[*ti*] OR "case study"[*ti*] OR "case series"[*ti*] OR "Case-Control Studies"[*Mesh*] OR "Follow-Up Studies"[*Mesh*] OR "observational study"[*ti*] OR "prospective cohort"[*ti*] OR "cohort studies" [*Mesh:NoExp*] OR "cohort study"[*ti*] OR "Longitudinal Studies" [*Mesh:NoExp*] OR "Follow-Up Studies"[*mesh*] OR "Retrospective Studies"[*mesh*] OR "non-randomized"[*ti*] OR "follow up study"[*ti*] OR "animals"[*MeSH*]

Terms:noexp] OR rat[ti] OR rats[ti] OR mice[ti] OR mouse[ti] OR dog[ti] OR dogs[ti] OR cats[ti] OR horse\*[ti] OR supplement\*[ti] OR contraceptive\*[ti] OR "water intake"[ti] OR "water ingestion"[ti] OR "spinal cord"[ti] OR "Sleep"[Majr] OR "Sleep Apnea Syndromes"[Majr] OR sleep[ti] OR "administration and dosage"[subheading] OR "pharmacology"[subheading] OR "drug effects"[subheading] OR "drug therapy"[subheading] OR meal[ti])

**PubMed Search 2: hypertension/pre-hypertension AND exercise AND systematic reviews/meta-analysis AND anti-hypertensive agents NOT terms for exclusion omitting terms for drugs. Original Citations: 8. Updated Citations: 7**

(systematic[sb] OR meta-analy\*[ti] OR systematic[ti]) AND ("Hypertension"[Mesh] OR hypertens\*[tiab] OR "high blood pressure" OR "high blood pressures" OR "high arterial pressure" OR "high arterial pressures" OR "high systolic pressure" OR "high diastolic pressure" OR "high pulse pressure" OR "high venous pressure" OR "elevated blood pressure" OR "elevated blood pressures" OR "elevated arterial pressure" OR "elevated arterial pressures" OR "antihypertensive" OR "elevated systolic pressure" OR "elevated diastolic pressure" OR "elevated pulse pressure" OR "elevated venous pressure" OR "Prehypertension"[Mesh] OR prehypertens\* OR "pre hypertension" OR "pre-hypertension") AND ("exercise"[majr] OR exercise[ti] OR exercises[ti] OR exercising[ti] OR postexercise[ti] OR running[mesh] OR running[ti] OR bicycling[mesh] OR bicycling OR bicycle\* OR cycling[ti] OR treadmill\* OR ergometer\* OR "weight lifting" OR "weight training" OR "resistance training" OR "strength training" OR "endurance training" OR "speed training" OR "circuit training" OR "training duration" OR "training frequency" OR "training intensity" OR "aerobic endurance" OR "aerobic training" OR "interval training" OR "combination training" OR "combined training" OR plyometric\* OR "HIIT" OR walking[mesh] OR walking[ti] OR swimming) AND ("Antihypertensive Agents"[Mesh] OR "Antihypertensive Agents" [Pharmacological Action] OR "anti-hypertensive agent" OR "antihypertensive agent" OR "anti hypertensive agent" OR "anti-hypertensive agents" OR "antihypertensive agents" OR "anti hypertensive agents" OR "anti-hypertensive drug" OR "antihypertensive drug" OR "anti hypertensive drug" OR "anti-hypertensive drugs" OR "antihypertensive drugs" OR "anti hypertensive drugs" OR "anti-hypertensive medication" OR "antihypertensive medication" OR "anti hypertensive medication" OR "anti-hypertensive medications" OR "antihypertensive medications" OR "anti hypertensive medications" OR "anti-hypertensives" OR antihypertensives OR "anti hypertensives" OR acebutolol OR aliskiren OR Ambrisentan OR amlodipine OR atenolol OR "azilsartan medoxomil" OR benazepril OR betaxolol OR bisoprolol OR bosentan OR "candesartan cilexetil" OR captopril OR carteolol OR carvedilol OR chlorthalidone OR clonidine OR cilazapril OR clevidipine OR deserpidine OR diazoxide OR diltiazem OR doxazosin OR enalapril OR enalaprilat OR "eprosartan mesylate" OR hydrochlorothiazide OR felodipine OR fenoldopam OR fosinopril OR guanabenz OR guanadrel OR guanethidine OR guanfacine OR hydralazine OR irbesartan OR isradipine OR labetalol OR lisinopril OR "losartan potassium" OR macitentan OR mecamylamine OR methyl dopa OR metoprolol OR metyrosine OR mibefradil OR minoxidil OR moxipril OR moxonidine OR nadolol OR nebivolol OR nicardipine OR nifedipine OR nisoldipine OR nitroprusside OR "olmesartan medoxomil" OR omapatrilat OR penbutolol OR perindopril OR phentolamine OR pindolol OR prazosin OR propranolol OR quinapril OR ramipril OR rescinnamine OR reserpine OR sildenafil OR "sodium nitroprusside" OR tadalafil OR telmisartan OR terazosin OR timolol OR trandolapril OR treprostinil OR trimethaphan OR valsartan OR verapamil OR diuretic\* OR thiazide OR "adrenergic beta-antagonist" OR

"adrenergic beta-antagonists" OR "adrenergic alpha-antagonist" OR "adrenergic alpha-antagonists" OR "angiotensin-converting enzyme inhibitor" OR "angiotensin-converting enzyme inhibitors" OR "calcium channel blocker" OR "calcium channel blockers" OR "ganglionic blocker" OR "ganglionic blockers" OR "vasodilator agent" OR "vasodilator agents") NOT ("pulmonary hypertension" OR "pulmonary arterial hypertension" OR "heart transplant" OR "heart failure" OR "cystic fibrosis" OR "DASH"[tiab] OR cancer OR neoplasms OR fibromyalgia OR alzheimers OR alzheimer OR pregnant OR pregnancy OR "epidemiology"[Subheading] OR "obesity/drug therapy"[mesh] OR pharmacist\*[ti] OR "diet therapy"[mesh] OR "diet therapy"[subheading] OR "nutritional intervention" OR "dietary intervention" OR "nutritional counseling" OR "dietary counseling" OR caffeine OR "eating change" OR "activities of daily living" OR "dehydration" OR "dehydrate" OR "dehydrated" OR "dietary salt" OR sodium OR epilepsy OR influenza OR flu OR pneumonia OR septicemia OR arthritis OR hiv OR "Acquired Immunodeficiency Syndrome" OR meningitis OR "substance abuse" OR alcoholism OR "drug abuse" OR "Cross-Sectional Studies"[MeSH Terms] OR Comment[pt] OR Editorial[pt] OR Letter[pt] OR "Case Reports"[pt] OR "case control"[ti] OR "case report"[ti] OR "case study"[ti] OR "case series"[ti] OR "Case-Control Studies"[Mesh] OR "Follow-Up Studies"[Mesh] OR "observational study"[ti] OR "prospective cohort"[ti] OR "cohort studies" [Mesh:NoExp] OR "cohort study"[ti] OR "Longitudinal Studies" [Mesh:NoExp] OR "Follow-Up Studies"[mesh] OR "Retrospective Studies"[mesh] OR "non-randomized"[ti] OR "follow up study"[ti] OR "animals"[MeSH Terms:noexp] OR rat[ti] OR rats[ti] OR mice[ti] OR mouse[ti] OR dog[ti] OR dogs[ti] OR cats[ti] OR horse\*[ti] OR supplement\*[ti] OR contraceptive\*[ti] OR "water intake"[ti] OR "water ingestion"[ti] OR "spinal cord"[ti] OR "Sleep"[Majr] OR "Sleep Apnea Syndromes"[Majr] OR sleep[ti])

**Scopus Update Search 1: hypertension/pre-hypertension AND exercise AND systematic reviews/meta-analysis NOT terms for exclusion with drugs. From October 22, 2016 to March 6, 2020. Updated Citations: 43**

TITLE-ABS-KEY (meta-analy\* OR metanaly\* OR metaanaly\* OR met-analy\* OR "integrative research" OR "integrative review" OR "integrative overview" OR "research integration" OR "research overview" OR "collaborative review" OR "collaborative overview" OR "systematic review" OR "comparative efficacy" OR "comparative effectiveness" OR "outcomes research" OR Embase\* OR Cinahl OR "systematic overview" OR "methodological overview" OR "methodologic overview" OR "methodological review" OR "methodologic review" OR "quantitative review" OR "quantitative overview" OR "quantitative synthesis" OR "pooled analysis" OR Cochrane OR Medline OR Pubmed OR Medlars OR handsearch\* OR "hand search" OR prisma OR "meta-regression" OR metaregression\* OR "data synthesis" OR "data extraction" OR "data abstraction") AND TITLE-ABS-KEY (hypertens\* OR "high blood pressure" OR "high blood pressures" OR "high arterial pressure" OR "high arterial pressures" OR "high systolic pressure" OR "high diastolic pressure" OR "high pulse pressure" OR "high venous pressure" OR "elevated blood pressure" OR "elevated blood pressures" OR "elevated arterial pressure" OR "elevated arterial pressures" OR "antihypertensive" OR "elevated systolic pressure" OR "elevated diastolic pressure" OR "elevated pulse pressure" OR "elevated venous pressure" OR prehypertens\* OR "pre hypertension" OR "pre-hypertension") AND (TITLE (exercise OR exercises OR exercising OR postexercise OR running OR bicycling OR bicycle\* OR cycling OR walking) OR TITLE-ABS-KEY (treadmill\* OR ergometer\* OR "weight lifting" OR "weight

training" OR "resistance training" OR "strength training" OR "endurance training" OR "speed training" OR "circuit training" OR "training duration" OR "training frequency" OR "training intensity" OR "aerobic endurance" OR "aerobic training" OR "interval training" OR "combination training" OR "combined training" OR plyometric\* OR "HIIT" OR swimming)) AND NOT (TITLE-ABS-KEY ("pulmonary hypertension" OR "pulmonary arterial hypertension" OR "heart transplant" OR "heart failure" OR "cystic fibrosis" OR "DASH" OR cancer OR neoplasms OR fibromyalgia OR alzheimers OR alzheimer OR pregnant OR pregnancy OR "nutritional intervention" OR "dietary intervention" OR "nutritional counseling" OR "dietary counseling" OR caffeine OR "eating change" OR "activities of daily living" OR dehydration OR dehydrate OR dehydrated OR "dietary salt" OR sodium OR epilepsy OR influenza OR flu OR pneumonia OR septicemia OR arthritis OR hiv OR "Acquired Immunodeficiency Syndrome" OR meningitis OR "substance abuse" OR alcoholism OR "drug abuse") OR TITLE (epidemiology OR diet OR review OR "Cross-Sectional" OR comment\* OR editorial OR letter OR "case control" OR "case report" OR "case study" OR "case series" OR "follow-up" OR "follow up" OR observational OR cohort OR longitudinal OR retrospective OR "non-randomized" OR rat OR rats OR mice OR mouse OR dog OR dogs OR cats OR horse\* OR supplement\* OR contraceptive\* OR "water intake" OR "water ingestion" OR meal OR "spinal cord" OR sleep) OR INDEXTERMS (mice OR reptilia) OR KEY (nonhuman OR "animal experiment") OR INDEX (medline))

**Scopus Update Search 2: hypertension/pre-hypertension AND exercise AND systematic reviews/meta-analysis AND anti-hypertensive agents NOT terms for exclusion omitting terms for drugs. From October 22, 2016 to March 6, 2020. Updated Citations: 5**

TITLE-ABS-KEY (meta-analy\* OR metanaly\* OR metaanaly\* OR met-analy\* OR "integrative research" OR "integrative review" OR "integrative overview" OR "research integration" OR "research overview" OR "collaborative review" OR "collaborative overview" OR "systematic review" OR "comparative efficacy" OR "comparative effectiveness" OR "outcomes research" OR Embase\* OR Cinahl OR "systematic overview" OR "methodological overview" OR "methodologic overview" OR "methodological review" OR "methodologic review" OR "quantitative review" OR "quantitative overview" OR "quantitative synthesis" OR "pooled analysis" OR Cochrane OR Medline OR Pubmed OR Medlars OR handsearch\* OR "hand search" OR prisma OR "meta-regression" OR metaregression\* OR "data synthesis" OR "data extraction" OR "data abstraction") AND TITLE-ABS-KEY (hypertens\* OR "high blood pressure" OR "high blood pressures" OR "high arterial pressure" OR "high arterial pressures" OR "high systolic pressure" OR "high diastolic pressure" OR "high pulse pressure" OR "high venous pressure" OR "elevated blood pressure" OR "elevated blood pressures" OR "elevated arterial pressure" OR "elevated arterial pressures" OR "antihypertensive" OR "elevated systolic pressure" OR "elevated diastolic pressure" OR "elevated pulse pressure" OR "elevated venous pressure" OR prehypertens\* OR "pre hypertension" OR "pre-hypertension") AND (TITLE (exercise OR exercises OR exercising OR postexercise OR running OR running OR bicycling OR bicycle\* OR cycling OR walking) OR TITLE-ABS-KEY (treadmill\* OR ergometer\* OR "weight lifting" OR "weight training" OR "resistance training" OR "strength training" OR "endurance training" OR "speed training" OR "circuit training" OR "training duration" OR "training frequency" OR "training intensity" OR "aerobic endurance" OR "aerobic training" OR "interval training" OR "combination training" OR "combined training" OR plyometric\* OR "HIIT" OR swimming)) AND TITLE-ABS-KEY ("Antihypertensive Agent" OR "Antihypertensive Agents" OR "anti hypertensive

agent" OR "anti-hypertensive agents" OR "antihypertensive agents" OR "anti hypertensive agents" OR "anti-hypertensive drug" OR "antihypertensive drug" OR "anti hypertensive drug" OR "anti-hypertensive drugs" OR "antihypertensive drugs" OR "anti hypertensive drugs" OR "anti-hypertensive medication" OR "antihypertensive medication" OR "anti hypertensive medication" OR "anti-hypertensive medications" OR "antihypertensive medications" OR "anti hypertensive medications" OR "anti-hypertensives" OR antihypertensives OR "anti hypertensives" OR acebutolol OR aliskiren OR Ambrisentan OR amlodipine OR atenolol OR "azilsartan medoxomil" OR benazepril OR betaxolol OR bisoprolol OR bosentan OR "candesartan cilexetil" OR captopril OR carteolol OR carvedilol OR chlorthalidone OR clonidine OR cilazapril OR clevidipine OR deserpidine OR diazoxide OR diltiazem OR doxazosin OR enalapril OR enalaprilat OR "eprosartan mesylate" OR hydrochlorothiazide OR felodipine OR fenoldopam OR fosinopril OR guanabenz OR guanadrel OR guanethidine OR guanfacine OR hydralazine OR irbesartan OR isradipine OR labetalol OR lisinopril OR "losartan potassium" OR macitentan OR mecamylamine OR methyl dopa OR metoprolol OR metyrosine OR mibefradil OR minoxidil OR moexipril OR moxonidine OR nadolol OR nebivolol OR nicardipine OR nifedipine OR nisoldipine OR nitroprusside OR "olmesartan medoxomil" OR omapatrilat OR penbutolol OR perindopril OR phentolamine OR pindolol OR prazosin OR propranolol OR quinapril OR ramipril OR rescinnamine OR reserpine OR sildenafil OR "sodium nitroprusside" OR tadalafil OR telmisartan OR terazosin OR timolol OR trandolapril OR treprostinil OR trimethaphan OR valsartan OR verapamil OR diuretic\* OR thiazide OR "adrenergic beta-antagonist" OR "adrenergic beta-antagonists" OR "adrenergic alpha-antagonist" OR "adrenergic alpha-antagonists" OR "angiotensin-converting enzyme inhibitor" OR "angiotensin-converting enzyme inhibitors" OR "calcium channel blocker" OR "calcium channel blockers" OR "ganglionic blocker" OR "ganglionic blockers" OR "vasodilator agent" OR "vasodilator agents") AND NOT (TITLE-ABS-KEY ("pulmonary hypertension" OR "pulmonary arterial hypertension" OR "heart transplant" OR "heart failure" OR "cystic fibrosis" OR "DASH" OR cancer OR neoplasms OR fibromyalgia OR alzheimers OR alzheimer OR pregnant OR pregnancy OR "nutritional intervention" OR "dietary intervention" OR "nutritional counseling" OR "dietary counseling" OR caffeine OR "eating change" OR "activities of daily living" OR dehydration OR dehydrate OR dehydrated OR "dietary salt" OR sodium OR epilepsy OR influenza OR flu OR pneumonia OR septicemia OR arthritis OR hiv OR "Acquired Immunodeficiency Syndrome" OR meningitis OR "substance abuse" OR alcoholism OR "drug abuse") OR TITLE (epidemiology OR diet OR review OR "Cross-Sectional" OR comment\* OR editorial OR letter OR "case control" OR "case report" OR "case study" OR "case series" OR "follow-up" OR "follow up" OR observational OR cohort OR longitudinal OR retrospective OR "non-randomized" OR rat OR rats OR mice OR mouse OR dog OR dogs OR cats OR horse\* OR supplement\* OR contraceptive\* OR "water intake" OR "water ingestion" OR meal OR "spinal cord" OR sleep) OR INDEXTERMS (mice OR reptilia) OR KEY (nonhuman OR "animal experiment") OR INDEX (medline))