**Appendix 1**: Search strategy for Medline (via Pubmed) to identify meta-analyses of exercise RCTs in cardiovascular disease.

|  |  |
| --- | --- |
| #1  #2  #3  #4  #5  #6  #7  #8  #9  #10  #11  #12  #13  #14  #15  #16  #17  #18  #19  #20  #21  #22  #23  #24  #25  #26  #27  #28  #29  #30  #31  #32  #33  #34  #35  #36  #37  #38 | exercise [mh]  exercise therapy [mh]  exercise movement techniques [mh]  resistance training [mh]  aerobic exercises [tiab]  training resistance [tiab]  weight lifting [tiab]  strengthening program [tiab]  weight bearing [tiab]  physical exercise [tiab]  physical activity [tiab]  running [tiab]  jogging [tiab]  fitness [tiab]  isometric [tiab]  endurance [tiab]  #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16  cardiovascular diseases [mh]  heart diseases [mh]  coronary disease [mh]  vascular diseases [mh]  cardiovascular [tiab]  cardio-vascular [tiab]  coronary [tiab]  heart [tiab]  CHD [tiab]  myocardial [tiab]  ischaemic [tiab]  ischemic [tiab]  ischaemia [tiab]  ischemia [tiab]  myocardial infarct\* [tiab]  atherosclero\* [tiab]  #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33  meta-analysis [pt]  meta-analysis [tiab]  #35 OR #36  #17 AND #34 AND #37 |

*[pt] Publication Type term*

*[tiab] title or abstract*

*[mh] Medical Subject Heading (MeSH) term (‘exploded’)*

**Appendix 2**: Search strategy for Medline (via Pubmed) to identify RCTs of exercise interventions.

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| --- | --- |
| #1  #2  #3  #4  #5  #6  #7  #8  #9  #10  #11  #12  #13  #14  #15  #16  #17  #18  #19  #20  #21  #22  #23  #24  #25  #26  #27  #28  #29 | exercise [mh]  exercise therapy [mh]  exercise movement techniques [mh]  resistance training [mh]  aerobic exercises [tiab]  training resistance [tiab]  weight lifting [tiab]  strengthening program [tiab]  weight bearing [tiab]  physical exercise [tiab]  physical activity [tiab]  running [tiab]  jogging [tiab]  fitness [tiab]  isometric [tiab]  endurance [tiab]  #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16  randomized controlled trial [pt]  controlled clinical trial [pt]  randomized [tiab]  placebo [tiab]  clinical trials as topic [mesh: noexp]  randomly [tiab]  trial [ti]  #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24  animals [mh] NOT humans [mh]  #25 NOT #26  blood pressure [tiab]  #17 AND #27 AND #28 |

*[pt] Publication Type term*

*[tiab] title or abstract*

*[mh] Medical Subject Heading (MeSH) term (‘exploded’)*

*[mesh: noexp] Medical Subject Heading (MeSH) term (not ‘exploded’)*

*[ti] title*

**Appendix 3**: Characteristics of RCTs evaluating the systolic blood pressure-lowering effects of exercise interventions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | **Population characteristics** | **% female** | **Mean age** | **Intervention and comparator characteristics** |
| Albright 1992a | Men with optimal BP | 0 | 49 | Arm 1: Exercise; walking/jogging; 65-77% HRpeak; 26 weeks; 5/week; >45 mins/session  Arm 2: Control |
| Albright 1992b | Women with optimal BP | 100 | 47 | Arm 1: Exercise; walking/jogging; 65-77% HRpeak; 26 weeks; 5/week; >45 mins/session  Arm 2: Control |
| Anderssen 1995 | Men and women with optimal blood pressure and mild hypertension | 10 | 45 | Arm 1: Exercise; walking/jogging; 60-80% HRpeak; 52 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Anshel 1996 | Men with optimal BP | 0 | 22 | Arm 1; cycling; 75% HRpeak; 10 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Anton 2006 | Men and women with optimal BP | 73 | 52 | Arm 1: Exercise; resistance; 75% 1RM; 13 weeks; 3/week; NA mins/session  Arm 2: Control |
| Colado 2009 | Pre-hypertensive women | 100 | 53 | Arm 1; circuit resistance; NA intensity; 24 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Duncan 1985 | Hypertensive men | 0 | 30 | Arm 1: Exercise; walking/jogging; 75% HRpeak; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Elliot 2002 | Pre-hypertensive women | 100 | 55 | Arm 1: Exercise; resistance; 80% of 10RM; 8 weeks; 3/week; NA mins/session  Arm 2: Control |
| Figueroa 2011 | Pre-hypertensive women | 100 | 54 | Arm 1: Exercise; combined endurance and resistance; 60% HRmax; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Finucane 2010 | Men and women with optimal BP | 44 | 71 | Arm 1: Exercise; cycling; 70% Wmax (power output); 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Fortmann 1988 | Men with optimal BP | 0 | 45 | Arm 1: Exercise; walking/jogging/calisthenics; 70-85% HRpeak; 52 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Georgiades 2000 | Hypertensive men and women | 43 | 48 | Arm 1: Exercise; walking/cycling; 70-85% HRres; 26 weeks; 3-4/week; 30-45 mins/session  Arm 2: Control |
| Hamdorf 1999 | Hypertensive women | 100 | 83 | Arm 1: Exercise; walking; 40% HRres; 26 weeks; 2/week; <30 mins/session  Arm 2: Control |
| Harris 1987 | Hypertensive men | 0 | 32 | Arm 1: Exercise; circuit weight training; 40% 1RM; 9 weeks; 3/week; NA mins/session  Arm 2: Control |
| Hass 2001 | Pre-hypertensive men and women | 52 | 48 | Arm 1: Exercise; step training; 75% HRres; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Higashi 1999b | Hypertensive men and women | 24 | 47 | Arm 1: Exercise; walking/jogging; 52% VO2 peak; 12 weeks; 5-7/week; 30-45 mins/session  Arm 2: Control |
| Higashi 1999a | Hypertensive men and women | 26 | 52 | Arm 1: Exercise; walking/jogging; 52% VO2 peak; 12 weeks; 5-7/week; 30-45 mins/session  Arm 2: Control |
| Hua 2009 | Hypertensive men and women | 50 | 57 | Arm 1: Exercise; walking; 35-40% HRres; 12 weeks; 4/week; >45 mins/session  Arm 2: Control |
| Jessup 1998 | Pre-hypertensive men and women | 52 | 69 | Arm 1: Exercise; walking/stair climbing; 85% HRpeak; 16 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Kokkinos 1995 | Hypertensive men | 0 | 58 | Arm 1: Exercise; cycling; 74% HRmax; 16 weeks; 3/week; 44 mins/session  Arm 2: Control |
| Laterza 2007 | Hypertensive men and women | 35 | 44 | Arm 1: Exercise; combined endurance and resistance; 70% VO2 peak; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Lindheim 1994 | Women with optimal BP | 100 | 50 | Arm 1: Exercise; walking/cycling; 70% HRres; 26 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Lovell 2009 | Pre-hypertensive men | 0 | 74 | Arm 1: Exercise; resistance; 70-90% 1RM; 16 weeks; 3/week; <30 mins/session  Arm 2: Control |
| Maeda 2004 | Pre-hypertensive women | 100 | 64 | Arm 1: Exercise; cycling; 50% VO2 max; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Martin 1990 | Hypertensive men | 0 | 44 | Arm 1: Exercise; walking/jogging/cycling; 65-80% HR peak; 10 weeks; 4/week; 30-45 mins/session  Arm 2: Control |
| Millar 2008 | Men and women with optimal BP | 57 | 67 | Arm 1: Exercise; isometric training; 30-40% MVC; 8 weeks; 3/week; NA mins/session  Arm 2: Control |
| Miyachi 2004 | Men with optimal BP | 0 | 22 | Arm 1: Exercise; resistance; 80% of 1RM; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Moreau 2001 | Hypertensive women | 100 | 54 | Arm 1: Exercise; walking; unspecified intensity; 24 weeks; NA/week; NA mins/session  Arm 2: Control |
| Murphy 2006 | Men and women with optimal BP | 65 | 42 | Arm 1: Exercise; walking; 62% HRmax; 8 weeks; 2/week; 30-45 mins/session  Arm 2: Control |
| Myslivecek 2002 | Pre-menopausal women | 100 | 46 | Arm 1: Exercise; walking; RPE 12-13; 12 weeks; 5/week; NA mins/session  Arm 2: Control |
| Myslivecek 2002b | Post-menopausal | 100 | 52 | Arm 1: Exercise; walking; RPE 12-13; 12 weeks; 5/week; NA mins/session  Arm 2: Control |
| Ohkubo 2001 | Pre-hypertensive men and women | 51 | 67 | Arm 1: Exercise; combined endurance and resistance; 50-60% HRres; 25 weeks; 2-3/week; NA mins/session  Arm 2: Control |
| Olson 2007 | Women with optimal BP | 100 | 39 | Arm 1: Exercise; resistance; labeled 'moderate'; 52 weeks; 2/week; NA mins/session  Arm 2: Control |
| Pitsavos 2011 | Pre-hypertensive men | 0 | 54 | Arm 1: Exercise; cycling; 60-80% HRpeak; 16 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Posner 1992 | Men and women with optimal BP | 50 | 68 | Arm 1: Exercise; cycling; 70% HRpeak; 16 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Sakai 1998 | Hypertensive men and women | 83 | 55 | Arm 1: Exercise; cycling; 40-60% VO2 peak; 4 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Santa-Clara 2003 | Pre-hypertensive white women | 100 | 57 | Arm 1: Exercise; walking/cycling/rowing; 70-85% HRpeak; 26 weeks; 3-4/week; >45 mins/session  Arm 2: Control |
| Santa-Clara 2003b | Pre-hypertensive African-American women | 100 | 58 | Arm 1: Exercise; walking/cycling/rowing; 70-85% HRpeak; 26 weeks; 3-4/week; >45 mins/session  Arm 2: Control |
| Saremi 2010 | Pre-hypertensive men | 0 | 43 | Arm 1: Exercise; walking/running; 50-85% HRpeak; 12 weeks; 5/week; >45 mins/session  Arm 2: Control |
| Staffileno 2001 | Hypertensive women | 100 | 60 | Arm 1: Exercise; walking/cycling; 50-60% HRres; 8 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Stefanick 1998 | Pre-hypertensive women | 100 | 57 | Arm 1: Exercise; walking/jogging; unspecified intensity; 38 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Stefanick 1998b | Men with optimal BP | 0 | 48 | Arm 1: Exercise; walking/jogging; unspecified intensity; 38 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Tanabe 1989 | Hypertensive men and women | 52 | 50 | Arm 1: Exercise; cycling; 40-60% VO2 peak; 10 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Tanaka 1997 | Hypertensive men and women | 44 | 48 | Arm 1: Exercise; swimming; 60% VO2 peak; 10 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Taylor 2003 | Hypertensive men and women | 41 | 67 | Arm 1: Exercise; isometric training; 30% of MVC; 10 weeks; 3/week; NA mins/session  Arm 2: Control |
| Tsai 2002 | Hypertensive men and women | 48 | 48 | Arm 1: Exercise; walking/jogging; 60-70% HRpeak; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Tsai 2002b | Hypertensive men and women | 45 | 42 | Arm 1: Exercise; walking/jogging; 60-70% HRpeak; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Tsai 2004 | Hypertensive men and women | 54 | 49 | Arm 1: Exercise; walking/jogging; 60-70% HRpeak; 10 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Tsuda 2003 | Hypertensive men | 0 | 48 | Arm 1: Exercise; jogging; labeled 'mild' intensity; 26 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Tully 2005 | Pre-hypertensive men and women | 58 | 57 | Arm 1: Exercise; walking; labeled 'moderate' intensity; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Van Hoof 1989 | Pre-hypertensive men | 0 | 39 | Arm 1: Exercise; endurance; unspecified intensity; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Westhoff 2008 | Hypertensive men and women | 54 | 67 | Arm 1: Exercise; upper-limb endurance exercise; lactate concentration 2mmol/L; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Wiley 1992 | Pre-hypertensive men and women | NA | 28 | Arm 1: Exercise; isometric; 30% MVC; 8 weeks; 3/week; NA mins/session  Arm 2: Control |
| Yoshizawa 2009 | Women with optimal BP | 100 | 58 | Arm 1: Exercise; walking/cycling; 70-75% HRpeak; 8 weeks; 4-5/week; 30-45 mins/session  Arm 2: Control |
| Andersen 2014 | Hypertensive men | 0 | 46 | Arm 1: Exercise; football training; unspecified intensity; 24 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Arija 2017 | Men and women with optimal BP and hypertension | 77 | 65 | Arm 1: Exercise; walking; unspecified intensity; 36 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Azadpour 2017 | Pre-hypertensive women | 100 | 57 | Arm 1: Exercise; walking/jogging; 50-70% HRres; 10 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Burich 2015 | Men and women with hypertension | 82 | 63 | Arm 1: Exercise; combined cycling and strength training; 65% HRres and 10RM; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; cycling; 65% HRres; 12 weeks; 3/week; 40 mins/session |
| Carlson 2016 | Men and women with hypertension | 63 | 53 | Arm 1: Exercise; isometric; 30% MVC; 8 weeks; 3/week; <30 mins/session  Arm 2: Exercise; isometric; 5% MVC; 8 weeks; 3/week; <30 mins/session |
| Conceiao 2013 | Women with optimal BP | 100 | 53 | Arm 1: Exercise; resistance; 50-70% 1RM; 16 weeks; 3/week; NA mins/session  Arm 2: Control |
| Croymans 2014 | Men with elevated blood pressure | 0 | 22 | Arm 1: Exercise; resistance; 100% 6-8 RM labeled 'high' intensity; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Cruz 2017 | Men and women with hypertension | 91 | 53 | Arm 1: Exercise; water-based callisthenic exercises and walking; unspecified intensity; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Dalager 2016 | Men and women with optimal BP | 74 | 44 | Arm 1: Exercise; combined strength training and aerobic exercises; 60-80% 1RM and 77-95% HRmax; 52 weeks; 1/week; >45 mins/session combined with 64-76% HRmax; 52 weeks; 6/week; <30 mins/session  Arm 2: Control |
| Dantas 2016 | Women with hypertension | 100 | 66 | Arm 1: Exercise; resistance; unspecified intensity (labeled 'low' intensity); 10 weeks; 3/week; NA mins/session  Arm 2: Control |
| Farinatti 2016 | Men and women with hypertension | 72 | 51 | Arm 1: Exercise; home-based walking exercise; 60-85% HRmax; 64 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Figueroa 2013 | Women with hypertension | 100 | 54 | Arm 1: Exercise; resistance; unspecified intensity (labeled 'low' intensity); 12 weeks; 3/week; NA mins/session  Arm 2: Control |
| Fisher 2015 | Men with optimal BP | 0 | 20 | Arm 1: Exercise; cycling; 85% peak power (interval) and 15% peak power (recovery); 6 weeks; 3/week; <30 mins/session  Arm 2: Exercise; cycling; 55-65% VO2 peak; 6 weeks; 5/week; >45 mins/session |
| Franklin 2015 | Women with optimal BP | 100 | 31 | Arm 1: Exercise; resistance; 80-90% 10RM (labeled as 'moderate' intensity; 8 weeks; 2/week; NA mins/session  Arm 2: Control |
| Gelecek 2012 | Women with optimal BP | 100 | 53 | Arm 1: Exercise; resistance training; 60% 1RM; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Gerage 2013 | Women with optimal BP | 100 | 66 | Arm 1: Exercise; resistance training; unspecified (labeled as 'low-to-moderate' intensity); 12 weeks; 3/week; NA mins/session  Arm 2: Control |
| Ghroubi 2016 | Men and women with optimal blood pressure and hypertension | 90 | 42 | Arm 1: Exercise; combined endurance and isokinetic muscle strengthening; 70% HR max; 8 weeks; 3/week; 30-45 mins  Arm 2: Exercise; treadmill running; 70% HR max; 8 weeks; 3/week; 30-45 mins |
| Goldberg 2012 | Men with optimal BP | 0 | 21 | Arm 1: Exercise; cycling; 65% VO2 max; 4 weeks; 3/week; 30 mins/session  Arm 2: Control |
| Ha 2012 | Women with optimal BP | 100 | 21 | Arm 1: Exercise; combined aerobic and resistance; 60-80% HRres and 10-15 RM; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Hefferman 2013 | Men and women with hypertension | 71 | 61 | Arm 1: Exercise; resistance; 40% 1RM for upper body and 60% 1RM for lower body; 12 weeks; 3/week; NA mins/session  Arm 2: Control |
| Hornbuckle 2012 | Women with optimal BP | 100 | 49 | Arm 1: Exercise; combined walking and resistance training; unspecified endurance intensity and 60-70% 1RM; 12 weeks; 2/week; NA mins/session  Arm 2: Exercise; walking; unspecified intensity; 12 weeks; NA/week; NA mins/session |
| Hur 2014 | Women with hypertension | 100 | 48 | Arm 1: Exercise; treadmill running; 60-70% HR max; 40 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Hur 2014b | Women with hypertension | 100 | 47 | Arm 1: Exercise; treadmill running; 60-70% HR max; 40 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Kang 2014 | Women with elevated blood pressure | 100 | 61 | Arm 1: Exercise; trekking program; RPE 12-15; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Kang 2016 | Women with elevated blood pressure | 100 | 50 | Arm 1: Exercise; treadmill walking; 60-80% HR max; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Khalid 2013 | Women with hypertension | 100 | 53 | Arm 1: Exercise; treadmill walking; 60-70% HR max; 8 weeks; 3/week; <30 mins/session  Arm 2: Control |
| Kim 2012 | Women with elevated blood pressure | 100 | 53 | Arm 1: Exercise; line dance program; 55-65% HR max to 70-80% HR max; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Kim 2014 | Women with optimal BP | 100 | 47 | Arm 1: Exercise; walking; 50-60% VO2 max; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Kozey Keadle 2014 | Men and women with optimal BP | 67 | 44 | Arm 1: Exercise; treadmill training, cycling, or arctrainer; 55-65% HRres; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Kozey Keadle 2014b | Men and women with optimal BP | 67 | 44 | Arm 1: Exercise; treadmill training, cycling, or arctrainer; 55-65% HRres; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Control |
| Krustrup 2017 | Women with elevated blood pressure | 100 | 45 | Arm 1: Exercise; soccer training; unspecified intensity; 15 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Krustrup 2013 | Men with hypertension | 0 | 46 | Arm 1: Exercise; soccer training; 85% HR max; 24 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Lamina 2012 | Men with hypertension | 0 | 59 | Arm 1: Exercise; cycling; 60-79% HR max; 8 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Lara 2015 | Men and women with hypertension | 50 | 62 | Arm 1: Exercise; isometric; 50% MVC; 1 week; 7/week; <30 mins/session  Arm 2: Control |
| Latosik 2014 | Women with hypertension | 100 | NA | Arm 1: Exercise; Nordic walking training; 38-69% HR max; 8 weeks; NA/week; >45 mins/session  Arm 2: Control |
| Lim 2015 | Men with elevated blood pressure | 100 | 58 | Arm 1: Exercise; walking; 60-79% HR max; 10 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Lima 2012 | Menopausal women with optimal and high blood pressure | 100 | 54 | Arm 1: Exercise; aerobic training; 60-70% HRres; 12 weeks; 5/week; >45 mins/session  Arm 2: Control |
| Lima 2012b | Non-menopausal women with optimal and high blood pressure | 100 | 42 | Arm 1: Exercise; aerobic training; 60-70% HRres; 12 weeks; 5/week; >45 mins/session  Arm 2: Control |
| Maruf 2013 | Men and women with hypertension | 50 | 51 | Arm 1: Exercise; dance training; 50-70% HRres; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Masuo 2012 | Men with hypertension | 0 | 38 | Arm 1: Exercise; walking/jogging/gym exercise; unspecified intensity; 24 weeks; 7/week; >45 mins/session  Arm 2: Control |
| Miura 2015 | Women with hypertension | 100 | 71 | Arm 1: Exercise; combined resistance and aerobic training; unspecified intensity; 12 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Miura 2015b | Women with optimal BP | 100 | 72 | Arm 1: Exercise; combined resistance and aerobic training; unspecified intensity; 12 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Mohr 2014 | Women with hypertension | 100 | 44 | Arm 1: Exercise; recreational football training; 80.5-98.9% HR max; 15 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Nualnim 2012 | Men and women with optimal to elevated BP | 70 | 60 | Arm 1: Exercise; swimming; 60% HR max; 12 weeks; 3-4/week; <30 mins/session  Arm 2: Control |
| Ohta 2012 | Women with hypertension | 100 | 72 | Arm 1: Exercise; bench step training; unspecified intensity; 12 weeks; 21/week; <30 mins/session  Arm 2: Control |
| Oneda 2014 | Women with optimal BP | 100 | 50 | Arm 1: Exercise; cycling; anaerobic threshold; 24 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Ozaki 2013 | Men with optimal BP | 0 | 24 | Arm 1: Exercise; resistance; 75% 1RM; 6 weeks; 3/week; NA mins/session  Arm 2: Exercise; resistance; 30% 1RM; 6 weeks; 3/week; NA mins/session |
| Pagonas 2014 | Men and women with hyertension | 57 | 66 | Arm 1: Exercise; treadmill walking; target-lactate concentration of 2.0 mmol/L; 8-12 weeks; 3/week; 30-45 mins/session  Arm 2: Control |
| Patterson 2017 | Women with optimal BP | 100 | 34 | Arm 1: Exercise; running; 75% HR max; 8 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Piras 2015 | Men and women with optimal BP | 50 | 24 | Arm 1: Exercise; high-intensity cycling; 100% VO2 max (for interval bouts); 12 weeks; 2-3/week; 30-45 mins/session  Arm 2: Exercise; strength training; 55-60% 1RM; 12 weeks; 2-3/week; 30-45 mins/session |
| Reis 2012 | Women with optimal BP | 100 | 53 | Arm 1: Exercise; strength training; 60-85% 1RM; 12 weeks; 2/week; >45 mins/session  Arm 2: Control |
| Said 2017 | Women with hypertension | 100 | 30 | Arm 1: Exercise; high-impact aerobic exercises; 75-85% HR max; 24 weeks; 4/week; >45 mins/session  Arm 2: Exercise; low-impact aerobics combined with strength training; 50-65% HR max and 60-80% 1RM ; 24 weeks; 4/week; >45 mins/session |
| Sari-Sarraf 2015 | Men with hypertension | 0 | 54 | Arm 1: Exercise; continuous and interval aerobic training; 70-90% HR max; 16 weeks; 3/week; >45 mins/week  Arm 2: Control |
| Senechal 2012 | Women with elevated blood pressure | 100 | 63 | Arm 1: Exercise; resistance training; unspecified intensity; 12 weeks; 3/week; NA mins/session  Arm 2: Control |
| Shaw 2016 | Women with optimal BP | 100 | 59 | Arm 1: Exercise; strength training; 67-85% 1RM; 6 weeks; 2/week; 40 mins/session  Arm 2: Control |
| Sikiru 2013 | Men with hypertension | 0 | 58 | Arm 1: Exercise; bicycle ergometer; 60-79% HR max; 8 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Sikiru 2014 | Men with hypertension | 0 | 58 | Arm 1: Exercise; bicycle ergometer; 60-79% HRres; 8 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Skrypnik 2015 | Women with elevated blood pressure | 100 | 50 | Arm 1: Exercise; cycle ergometer; 50-80% HR max; 12 weeks; 3/week; >45 mins/session  Arm 2: Exercise; combined cycling and strength training; 50-80% HR max and unspecified for resistance; 12 weeks; 3/week; >45 mins/session |
| Son 2016 | Women with hypertension | 100 | 75 | Arm 1: Exercise; combined resistance and aerobic training; 60-70% HRres; 12 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Sugawara 2012 | Women with optimal BP | 100 | 59 | Arm 1: Exercise; cycle ergometer; 70-75% HR peak; 8 weeks; 3-4/week; >45 mins/session  Arm 2: Control |
| Tanahashi 2014 | Women with optimal BP | 100 | 61 | Arm 1: Exercise; aerobic training; 65-80% HR max; 12 weeks; 3-6/week; >45 mins/session  Arm 2: Control |
| Tartibian 2015 | Men with optimal BP | 0 | 46 | Arm 1: Exercise; treadmill aerobic exercise; 50-65% HR max; 8 weeks; 4/week; >45 mins/session  Arm 2: Control |
| Tomeleri 2017 | Women with pre-hypertension and hypertension | 100 | 68 | Arm 1: Exercise; resistance training; unspecified intensity; 12 weeks; 2/week; NA mins/session  Arm 2: Control |
| Vianna 2012 | Men and women with hypertension | 66 | 69 | Arm 1: Exercise; combined walking/hydrogymnastics and strength training; 55-65% HR max; 16 weeks; 3/week; >45 mins/session  Arm 2: Control |
| Vicente-Campos 2012 | Men and women with hypertension | 58 | 64 | Arm 1: Exercise; aerobic training; 70% HR max; 30 weeks; 3-4/week; >45 mins/session  Arm 2: Control |
| Weiss 2016 | Men and women with optimal BP | 78 | 57 | Arm 1: Exercise; walking/cycling/yard work; 74% HR max; 12-14 weeks; 6/week; 30-45 mins/session  Arm 2: Control |
| Zavanela 2012 | Men with optimal BP | 0 | NA | Arm 1: Exercise; resistance training; unspecified intensity; 24 weeks; 3-4/week; NA mins/session  Arm 2: Control |
| Asikainen 2003a | Pre-hypertensive women | 100 | 58 | Arm 1: Exercise; walking once a day; 65% VO2 max; 15 weeks; 5/week; NA mins/session  Arm 2: Exercise; walking twice a day; 65% VO2 max; 15 weeks; 5/week; NA mins/session  Arm 3: Control |
| Blumenthal 1991 | Hypertensive men and women | 48 | 45 | Arm 1: Exercise; walking/jogging; 70% VO2 peak; 16 weeks; 3/week; >45 mins/session  Arm 2: Exercise; circuit weight training; unspecified intensity; 16 weeks; 2-3/week; >45 mins/session  Arm 3: Control |
| Braith 1994 | Pre-hypertensive men and women | 55 | 66 | Arm 1: Exercise; walking; 70% HR res; 26 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; walking; 85% HR res; 26 weeks; 3/week; 30-45 mins/session  Arm 3: Control |
| Brixius 2008 | Pre-hypertensive men | 0 | 57 | Arm 1: Exercise; running; 2-4 mmol/L lactate; 26 weeks; 3/week; >45 mins/session  Arm 2: Exercise; cycling; 2-4 mmol/L lactate; 26 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Cononie 1991 | Pre-hypertensive and hypertensive men and women | 47 | 72 | Arm 1: Exercise; resistance; 8-12 RM; 26 weeks; 3/week; NA mins/session  Arm 2: Exercise; walking/jogging/running; 75-85% VO2 peak; 26 weeks; 3/week; 30-45 mins/session  Arm 3: Control |
| Cortez-Cooper 2008 | Men and women with optimal BP | 73 | 52 | Arm 1: Exercise; resistance; 70% of 1RM; 13 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; combined resistance and walking/jogging; 60-75% HRres; 13 weeks; 4/week; 30-45 mins/session  Arm 3: Control |
| Dalleck 2009 | Pre-hypertensive and hypertensive women | 100 | 57 | Arm 1: Exercise; walking; 50% VO2 res; 12 weeks; 5/week; <30 mins/session  Arm 2: Exercise; walking; 50% VO2 res; 12 weeks; 5/week; 30-45 mins/session  Arm 3: Control |
| Guimaraes 2010 | Pre-hypertensive men and women | 70 | 48 | Arm 1: Exercise; combined endurance and resistance; 60% HRres; 16 weeks; 2/week; 30-45 mins/session  Arm 2: Exercise; combined endurance and resistance; alternating 50% HRres and 80% HRres; 16 weeks; 2/week; 30-45 mins/session  Arm 3: Control |
| Hagberg 1989 | Hypertensive men and women | NA | 64 | Arm 1: Exercise; walking; 50% VO2 max; 37 weeks; 3/week; >45 mins/session  Arm 2: Exercise; walking/jogging/cycling; 70-85% VO2 max; 37 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Kawano 2006 | Men with optimal BP | 0 | 21 | Arm 1: Exercise; resistance; 50% of 1RM; 17 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; combined resistance and endurance (cycling); 80% 1RM and 60% HR peak; 17 weeks; 3/week/ >45 mins/session  Arm 3: Control |
| Krustup 2009 | Hypertensive men | 0 | 20-43 | Arm 1: Exercise; soccer; 82% HR peak; 12 weeks; 2-3/week; >45 mins/session  Arm 2: Exercise; running; 82% HR peak; 12 weeks; 2-3/week; >45 mins/session  Arm 3: Control |
| Lamina 2010 | Hypertensive men | 0 | 59 | Arm 1: Exercise; cycling; 60-79% HRres; 8 weeks; 3/week; >45 mins/session  Arm 2: Exercise; cycling; 60-79% HRres; 8 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Murphy 1998 | Pre-hypertensive women | 100 | 47 | Arm 1: Exercise; walking; 70-80% HR peak; 10 weeks; 10/week; <30 mins/session  Arm 2: Exercise; walking; 70-80% HR peak; 10 weeks; 5/week; 30-45 mins/session  Arm 3: Control |
| Murtagh 2005 | Pre-hypertensive men and women | 65 | 46 | Arm 1: Exercise; walking; 73.1% HR peak; 12 weeks; 3/week; <30 mins/session  Arm 2: Exercise; walking; 72.1% HR peak; 12 weeks; 6/week; <30 mins/session  Arm 3: Control |
| Okamoto 2006 | Women with optimal BP | 100 | 19 | Arm 1: Exercise; resistance; 100% of 1RM; 8 weeks; 3/week; NA mins/session  Arm 2: Exercise; resistance; 80% of 1RM; 8 weeks; 3/week; NA mins/session  Arm 3: Control |
| Okamoto 2009 | Men with optimal BP | 0 | 20 | Arm 1: Exercise; resistance; 80% of 1RM; 10 weeks; 2/week; NA mins/session  Arm 2: Exercise; resistance; 80% of 1RM; 10 weeks; 2/week; NA mins/session  Arm 3: Control |
| Ready 1996 | Pre-hypertensive women | 100 | 61 | Arm 1: Exercise; walking; 60% VO2 max; 24 weeks; 3/week; >45 mins/session  Arm 2: Exercise; walking; 60% VO2 max; 24 weeks; 5/week; >45 mins/session  Arm 3: Control |
| Sarsan 2006 | Pre-hypertensive women | 100 | 43 | Arm 1: Exercise; resistance; 75-80% of 1RM; 12 weeks; 3/week; NA mins/session  Arm 2: Exercise; walking/cycling; 50-85% HRres; 12 weeks; 3-5/week; 30-45 mins/session  Arm 3: Control |
| Simons 2006 | Pre-hypertensive men and women | 70 | 83.5 | Arm 1: Exercise; walking; unspecified intensity; 16 weeks; 2/week; NA mins/session  Arm 2: Exercise; resistance; 75% of 1RM; 16 weeks; 2/week; <45 mins/session  Arm 3: Control |
| Tanimoto 2009 | Men with optimal BP | 0 | 20 | Arm 1: Exercise; resistance; 55-60% of 1RM; 13 weeks; 2/week; NA mins/session  Arm 2: Exercise; resistance; 89-90% of 1RM; 13 weeks; 2/week; NA mins/session  Arm 3: Control |
| Tsutsumi 1997 | Men and women with optimal BP and hypertension | 21 | 68 | Arm 1: Exercise; resistance; 75-85% of 1RM; 12 weeks; 3/week; NA mins/session  Arm 2: Exercise; resistance; 55-65% of 1RM; 12 weeks; 3/week; NA mins/session  Arm 3: Control |
| Tully 2007 | Pre-hypertensive men and women | 60 | 48 | Arm 1: Exercise; walking; unspecified; intensity ('brisk'); 21 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; walking; unspecified intensity ('brisk'); 5/week; 30-45 mins/session  Arm 3: Control |
| Vincent 2003 | Pre-hypertensive men and women | 55 | 68 | Arm 1: Exercise; resistance; 50% of 1RM; 26 weeks; 3/week; NA mins/session  Arm 2: Exercise; resistance; 80% of 1RM; 26 weeks; 3/week; NA mins/session  Arm 3: Control |
| Wiles 2010 | Men with optimal BP | 0 | 18-34 | Arm 1: Exercise; isometric; 21% MVC (95% HR peak); 8 weeks; 3/week; <30 mins/session  Arm 2: Exercise; isometric; 10% MVC (75% %HR peak); 8 weeks; 3/week; <30 mins/session  Arm 3: Control |
| Yoshizawa 2009b | Women with optimal BP | 100 | 48 | Arm 1: Exercise; resistance; 60% of 1RM; 12 weeks; 2/week; NA mins/session  Arm 2: Exercise; cycling; 60-70% VO2 peak; 12 weeks; 2/week; 30-45 mins/session  Arm 3: Control |
| Verrusio 2016 | Men and women with elevated blood pressure | 43 | 61 | Arm 1: Exercise; combined walking and strength training; unspecified intensity; 26 weeks; 2/week; >45 mins/session  Arm 2: Exercise; spinning; 75% HR max; 26 weeks; 2/week; >45 mins/session  Arm 3: Control |
| Ammar 2015 | Hypertensive women | 100 | 53 | Arm 1: Exercise; walking; 60-75% HR max; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; walking; 60-75% HR max; 12 weeks; 3/week; 30-45 mins/session  Arm 3: Control |
| Arca 2014 | Women with hypertension | 100 | 64 | Arm 1: Exercise; water-based aerobic training; 50-60% HRres; 12 weeks; 3/week; >45 mins/session  Arm 2: Exercise; land-based aerobic exercise; 50-60% HRres; 12 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Astorino 2013 | Women with optimal BP | 100 | 23 | Arm 1: Exercise; interval training; 85-100% HR max; 12 weeks; 3/week; <30 mins/session  Arm 2: Exercise; interval training; 75-95% HR max; 12 weeks; 3/week; <30 mins/session  Arm 3: Control |
| Badrov 2013 | Women with optimal BP | 100 | 25 | Arm 1: Exercise; isometric; 30% MVC; 8 weeks; 3/week; <30 mins/session  Arm 2: Exercise; isometric; 30% MVC; 8 weeks; 5/week; <30 mins/session  Arm 3: Control |
| Baross 2012 | Men with elevated blood pressure | 0 | 54 | Arm 1: Exercise; isometric; 85% HR max; 8 weeks; 3/week; <30 mins/session  Arm 2: Exercise; isometric; 70% HR max; 8 weeks; 3/week; <30 mins/session  Arm 3: Control |
| Beck 2013 | Men and women with optimal BP | 30 | 21 | Arm 1: Exercise; resistance training; 60% 1RM; 8 weeks; 3/week; >45 mins/session  Arm 2: Exercise; treadmill training; 65-85% HR max; 8 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Dos Santos 2014 | Women with hypertension | 100 | 63 | Arm 1: Exercise; combined eccentric resistance training and aerobic treadmill training; 70-90% 10RM and 65-75% HR max; 16 weeks; 3/week; >45 mins/session  Arm 2: Exercise; combined traditional resistance training and aerobic treadmill training; 70-90% 10RM and 65-75% HR max; 16 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Karatrantou 2017 | Women with optimal BP | 100 | 47 | Arm 1: Exercise; aerobic dance and strength training; 65% HR max; 12 weeks; 3/week; >45 mins/session  Arm 2: Exercise; combined aerobic dance and strength training; 65% HR max; 12 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Kim 2017 | Men and women with optimal BP | 67 | 64 | Arm 1: Exercise; aerobic moderate intensity continuous training; 70% HR max; 8 weeks; 4/week; >45 mins/session  Arm 2: Exercise; high intensity interval training; 90% HR max; 8 weeks; 4/week; 30-45 mins/session  Arm 3: Control |
| Molmen-Hansen 2012 | Men and women with hypertension | 44 | 52 | Arm 1: Exercise; aerobic interval training; 90% HR max; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; isocaloric moderate intensity continuous training; 70% HR max; 12 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Paoli 2013 | Men with elevated blood pressure | 0 | 61 | Arm 1: Exercise; combined endurance and resistance; 75% HRres; 12 weeks; 3/week; >45 mins/session  Arm 2: Exercise; combined endurance and resistance; 50% HRres; 12 weeks; 3/week; >45 mins/session  Arm 3: Exercise; endurance; 50% HRres; 12 weeks; 3/week; >45 mins/session |
| Sousa 2013 | Men with hypertension | 0 | 69 | Arm 1: Exercise; aerobic training including walking/jogging/dancing/water-exercises; perceived exertion 12-13; 39 weeks; 3/week; >45 mins/session  Arm 2: Exercise; combined aerobic and resistance training; 65-75% 1RM; 39 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Venturelli 2015 | Men and women with hypertension | 50 | 68 | Arm 1: Exercise; treadmill, elliptical and stepper ergometers; 70% HR peak; 12 weeks; 3/week; >45 mins/session  Arm 2: Exercise; resistance; 70% of maximal mechanical power; 12 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Wanderley 2013 | Men and women with hypertension | 78 | 68 | Arm 1: Exercise; walking, cycling, dancing; 70-80% HRres; 35 weeks; 3/week; >45 mins/session  Arm 2: Exercise; resistance; 80% of 1RM; 35 weeks; 3/week; >45 mins/session  Arm 3: Control |
| Church 2007 | Women with elevated blood pressure | 100 | 57 | Arm 1: Exercise; walking/jogging/cycling; 50% VO2 peak; 26 weeks; 3-4/week; <30 mins/session  Arm 2: Exercise; walking/jogging/cycling; 50% VO2 peak; 26 weeks; 3-4/week; 30-45 mins/session  Arm 3: Exercise; walking/jogging/cycling; 50% VO2 peak; 26 weeks; 3-4/week; >45 mins/session  Arm 4: Control |
| Duncan 1991 | Women with optimal BP | 100 | 20-40 | Arm 1: Exercise; aerobic walker; unspecified intensity (distance specified); 24 weeks; 5/week; NA mins/session  Arm 2: Exercise; brisk walker; unspecified intensity (distance specified); 24 weeks; 5/week; NA mins/session  Arm 3: Exercise; stroller; unspecified intensity (distance specified); 24 weeks; 5/week; NA mins/session  Arm 4: Control |
| Gettman 1976 | Men with optimal BP | 0 | 24 | Arm 1: Exercise; walking/jogging; 85-90% HRres; 20 weeks; 1/week; 30-45 mins/session  Arm 2: Exercise; walking/jogging; 85-90% HRres; 20 weeks; 3/week; 30-45 mins/session  Arm 3: Exercise; walking/jogging; 85-90% HRres; 20 weeks; 5/week; 30-45 mins/session  Arm 4: Control |
| Gormley 2008 | Men and women with optimal BP | 65 | 22 | Arm 1: Exercise; cycling; 50% HRres; 6 weeks; 4/week; >45 mins/session  Arm 2: Exercise; cycling; 75% HRres; 6 weeks; 4/week; 30-45 mins/session  Arm 3: Exercise; cycling; 100% HRres; 6 weeks; 3/week; >45 mins/session  Arm 4: Control |
| King 1991a | Men with optimal BP | 0 | 58 | Arm 1: Exercise; walking/jogging/cycling; 73-88% HR peak; 52 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; walking/jogging/cycling; 73-88% HRres; 52 weeks; 3/week; 30-45 mins/session  Arm 3: Exercise; walking/jogging/cycling; 60-73% HR peak; 52 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| King 1991b | Women with optimal BP | 100 | 58 | Arm 1: Exercise; walking/jogging/cycling; 73-88% HR peak; 52 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; walking/jogging/cycling; 73-88% HRres; 52 weeks; 3/week; 30-45 mins/session  Arm 3: Exercise; walking/jogging/cycling; 60-73% HR peak; 52 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| Kraemer 2001 | Women (optimal BP and pre-hypertensive) | 100 | 34 | Arm 1: Exercise; step aerobics; 80-90% HR peak; 12 weeks; 3/week; <30 mins/session  Arm 2: Exercise; combined step aerobics and resistance; 80-90% HR peak; 12 weeks; 3/week; <30 mins/session  Arm 3: Exercise; step aerobics; 80-90% HR peak; 12 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| Sillanpaa 2009 | Pre-hypertensive women | 100 | 51 | Arm 1: Exercise; endurance; until exhaustion; 21 weeks; 2/week; >45 mins/session  Arm 2: Exercise; resistance; 70-90% of 1RM; 21 weeks; 2/week; >45 mins/session  Arm 3: Exercise; combined endurance and resistance; until exhaustion; 21 weeks; 4/week; >45 mins/session  Arm 4: Control |
| Sillanpaa 2009b | Pre-hypertensive men | 0 | 54 | Arm 1: Exercise; endurance; until exhaustion; 21 weeks; 2/week; >45 mins/session  Arm 2: Exercise; resistance; 70-90% of 1RM; 21 weeks; 2/week; >45 mins/session  Arm 3: Exercise; combined endurance and resistance; until exhaustion; 21 weeks; 4/week; >45 mins/session  Arm 4: Control |
| Stensvold 2010 | Hypertensive men and women | 60 | 49 | Arm 1: Exercise; endurance; 90-95% HR peak; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; combined endurance and resistance; 80% 1RM + 90-95% HR peak with 3 minutes of active recovery in between at 70% HR peak; 12 weeks; 3/week; >45 mins/session  Arm 3: Exercise; resistance; 80% of 1RM; 12 weeks; 3/week; >45 mins/session  Arm 4: Control |
| Wood 2001 | Pre-hypertensive men and women | 53 | 68 | Arm 1: Exercise; cycling/walking; 60-70% HRres; 12 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; resistance; 8-12 RM; 12 weeks; 3/week; NA mins/session  Arm 3: Exercise; combined endurance and resistance; 8-12 RM + 60-70% HRres; 12 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| Anek 2015 | Women with optimal BP | 100 | 40 | Arm 1: Exercise; aerobic step exercise training; 60-70% HR max; 16 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; resistance; 60-70% HR max; 16 weeks; 3/week; 30-45 mins/session  Arm 3: Exercise; combined; 70-80% HR max; 16 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| Baross 2017 | Men and women with optimal BP | 46 | 21 | Arm 1: Exercise; combined walking and isometric training; 20% MVC; 6 weeks; 4/week; 30-45 mins/session  Arm 2: Exercise; walking; unspecified intensity; 6 weeks; 4/week; 30-45 mins/session  Arm 3: Exercise; isometric; 20% MVC; 6 weeks; 4/week; <30 mins/session  Arm 4: Control |
| Fahs 2012 | Men with optimal BP | 0 | 21 | Arm 1: Exercise; resistance; 70% of 1RM; 6 weeks; 3/week; 30-45 mins/session  Arm 2: Exercise; resistance; 45% of 1RM; 6 weeks; 3/week; 30-45 mins/session  Arm 4: Exercise; resistance; 20% 1RM; 6 weeks; 3/week; 30-45 mins/session  Arm 4: Control |
| Ho 2012 | Men and women with optimal BP | NA | 53 | Arm 1: Exercise; treadmill training; 60% HRres; 12 weeks; 5/week; 30-45 mins/session  Arm 2: Exercise; resistance; 75% of 1RM; 12 weeks; 5/week; 30-45 mins/session  Arm 3: Exercise; combined aerobic treadmill training and resistance; 60% HRres and 75% 1RM; 12 weeks; 30-45 mins/session  Arm 4: Control |
| Asikainen 2003b | Pre-hypertensive women | 100 | 55 | Arm 1: Exercise; walking; 55% VO2 max; 24 weeks; 5/week; NA mins/session  Arm 2: Exercise; walking; 45% VO2 max; 24 weeks; 5/week; NA mins/session  Arm 3: Exercise; walking; 55% VO2 max; 24 weeks; 5/week; NA mins/session  Arm 4: Exercise; walking; 45% VO2 max; 24 weeks; 5/week; NA mins/session  Arm 5: Control |
| Foulds 2014 | Men and women with optimal BP | 63 | 44 | Arm 1: Exercise; walking; unspecified intensity; 13 weeks; 1/week; <30 mins/session  Arm 2: Exercise; walking; unspecified intensity; 13 weeks; 3/week; <30 mins/session  Arm 3: Exercise; walking; unspecified intensity; 13 weeks; 3/week; 30-45 mins/session  Arm 4: Exercise; walking; unspecified intensity; 13 weeks; 3/week; >45 mins/session  Arm 5: Exercise; running; unspecified intensity; 13 weeks; 3/week; 30-45 mins/session  Arm 6: Control |

**Appendix 4:** Sensitivity of network meta-analysis results to imputed standard deviations for change from baseline in systolic blood pressure. Results of the base-case analysis (correlation coefficient=0.8) are shown in red; results of the sensitivity analysis with correlation coefficient 0.7 are shown in green; and results of sensitivity analysis with correlation coefficient 0.5 are shown in yellow). Results suggest that the findings obtained from the exercise RCTs were not very sensitive to the imputed standard deviations.



**Appendix 5:** Risk of bias judgements for a 10% random sample of exercise (n=20) and drug (n=20) RCTs.

**Trial name:** Brixius 2008(Exercise)

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| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | High risk | No detail was provided about random sequence generation between the two exercise groups. In addition, “A non-active, sedentary group was used as control.” It was unclear if the control group was assigned randomly. |
| Allocation concealment  (selection bias) | Unclear risk | Description of the allocation list was not provided. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | The methods section stated that “subjects were excluded if absent for >5% of the training sessions.” However, the number of subjects excluded as a result of this criterion was not reported. |

**Trial name:** Kang 2016 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Methods section simply stated that “subjects were divided into an exercise group and a control group for the study”. Although the abstract refers to random allocation (with details provided), the methods section provided no additional information about random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | Description of the allocation list was not provided. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No information was provided on the completeness of outcome data. |

**Trial name:** Sousa 2013 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | According to the methods section, “participants were randomly assigned to three groups”. However, no detail was provided about the sequence generation methods. |
| Allocation concealment  (selection bias) | Unclear risk | Description of the allocation list was not provided. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | According to the CONSORT diagram (Figure 1), outcome data was available for most (48/59) randomized participants. However, all drop-outs occurred in the intervention arm and the reasons were not clearly stated. |

**Trial name:** Albright 1992 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Methods used for generating a random sequence were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | Details of concealing random allocation sequence were not provided. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | High risk | Outcome data were not available for most participants. According to the methods section “Endpoint data was available for 83 of 102 randomised participants.” In addition, the number was not split up by trial arm, complicating the assessment of differential attrition. |

**Trial name:** Lara 2015 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | Details for generating a random sequence were discussed. According to the methods section, “using a parallel design, participants were randomised in blocks of 6, with a. 1:1:1 ratio, to [intervention and control], using RandList for Windows.” |
| Allocation concealment  (selection bias) | Low risk | According to the methods section, “concealed treatment allocation was implemented; one person, unrelated to the trial prepared the treatment allocation using sealed, opaque envelopes.” |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial: “Once allocation was disclosed, both participants and the researchers evaluating the impact of the interventions were not blinded to treatment.” |
| Incomplete outcome data  (attrition bias) | Low risk | As reported in Figure 1, outcome data were available for all participants. |

**Trial name:** Ammar 2015 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Randomization was done by a computer-generated random table.” |
| Allocation concealment  (selection bias) | Unclear risk | Details of how the allocation sequence was concealed were not discussed. |
| Blinding of participants and researchers  (detection bias) | Low risk | Investigator was blinded to treatment allocation. “Only one investigator, blinded to group allocation, conducted the testing procedures at the baseline and three months follow up.” |
| Incomplete outcome data  (attrition bias) | Unclear risk | There was no information about loss to follow-up or other reasons that could result in incomplete outcome data. |

**Trial name:** Farinatti 2016 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | High risk | While random allocation was indicated in the CONSORT diagram, methods section did not clearly describe the methods for random sequence generation. According to the methods section, “the control group was initially composed by 39 patients who did not engage in the exercise program, albeit satisfying the inclusion and exclusion criteria.” |
| Allocation concealment  (selection bias) | Unclear risk | Details of how allocation sequence was concealed were not discussed. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | High risk | According to Figure 1 (CONSORT diagram), only 14/35 participants in the intervention group and 29/39 participants in the control group contributed outcome data for analysis. |

**Trial name:** Badrov 2013 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | A random allocation sequence was generated using computer software. According to the methods section, “blind randomisation of participants was done via GraphPad software.” |
| Allocation concealment  (selection bias) | Unclear risk | No details were provided about allocation concealment. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Low risk | All participants from the exercise groups contributed outcome data: “All participants in the IHG3 and IHG5 groups completed 24 and 40 exercise sessions, respectively.” |

**Trial name:** Yoshizawa 2009 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | While the subjects were “randomly assigned” to one of three groups, methods used to generate allocation sequence were not reported. |
| Allocation concealment  (selection bias) | Unclear risk | No details were provided on the methods used to conceal allocation sequence. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No information was provided about potential missing outcome data. |

**Trial name:** Stefanick 1998 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | According to the methods section, “assignments were made by computer with use of a modified Efron procedure, which weighted the probability of assignment in order to balance groups in terms of sample size and average HDL cholesterol levels and LDL cholesterol levels.” |
| Allocation concealment  (selection bias) | Unclear risk | Methods for concealing sequence allocation were not discussed. |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Low risk | Outcome data were available for most participants: “Missing data for variables presented here were distributed evenly among the treatment groups; no more than three persons within a group had missing data for any given variable.” |

**Trial name:** Piras 2015 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No information provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Low risk | “Both training programs were successfully completed by all  participants.” |

**Trial name:** Andersen 2014 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “The randomization was performed by packing two sets of identical, sealed, opaque envelopes. The first set of envelopes contained the names of the subjects and the second set of envelopes contained a piece of paper with the transcription “Football training group” or “Control group” in a 2:1 ratio.” |
| Allocation concealment  (selection bias) | Low risk | “A researcher that had not been  involved in packing the envelopes picked pairs of envelopes to  decide on the group assignment for each of the subjects.” |
| Blinding of participants and researchers  (detection bias) | High risk | Open-label trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | The methods stated that last observation carried forward was used to handle missing values, but no information was provided about missing outcome data. |

**Trial name:** Latosik 2014 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No information provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | High risk | Only 25 / 38 participants were analysed. Reasons for incomplete outcome data are provided. Numbers for discontinuation differed between trial arms (9 of 19 in control group, 4 of 19 in trial intervention group). |

**Trial name:** Posner 1992 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No information provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Unclear risk | “Attrition rates of 8% were noted for the control group and 5% for the exercise group.” Reasons for discontinuation are not provided for each trial arm. |

**Trial name:** Vianna 2012 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | “simple drawing method” |
| Allocation concealment  (selection bias) | Unclear risk | No details provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Low risk | According to the results, SBP was measured in all participants at the end of the trial. |

**Trial name:** Ready 1996 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No information provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | High risk | 56 of 79 (71%) participants completed the trial. Proportions of participants with outcome data differed by trial arm (“20/25(80%) in the control group, 19/27 (70%) in the 3-d group, and 17/27 (63%) in the 5-d group”). Reasons for discontinuation were provided only overall, but not by trial arm. |

**Trial name:** Senechal 2012 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although “women were randomly assigned to one of the four groups”, no details regarding random sequence generation are provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Unclear risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No information provided on discontinuation/withdrawal numbers. |

**Trial name:** Tsuda 2003 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although “the patients were divided randomly into an exercise group and a non-exercise (control) group”, no information is provided on random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No information provided on discontinuation/withdrawal numbers. |

**Trial name:** Finucane 2010 (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | While the trial is described as “randomised”, no details are provided on the randomization procedure. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | High risk | No information provided. |
| Incomplete outcome data  (attrition bias) | Low risk | Outcome data were available for most participants: In the CONSORT diagram, 48/50 participants completed the trial in each group. |

**Trial name: Ho 2012** (Exercise)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Participants were randomized to 4 different groups as they were recruited by the researcher (using a randomization sequence generated from http://www.randomization.com).” |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Unclear risk | No information provided. |
| Incomplete outcome data  (attrition bias) | High risk | Only 64 of 97 (65%) randomized participants were analysed Numbers and reasons for discontinuations were similar across trial arms. |

**Trial name:** Smith 2000 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Randomization was conducted according to enrolment order at each site, using a computer-generated list.” |
| Allocation concealment  (selection bias) | Unclear risk | Methods used to conceal allocation sequence were not discussed. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | Outcome data were available for most participants. “During the double-blind period, 10 patients discontinued from the study”. Numbers and reasons for discontinuations were similar across trial arms. |

**Trial name:** White 1995 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Methods for generating a random allocation sequence were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | Details for concealing allocation sequence were not reported. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind study. |
| Incomplete outcome data  (attrition bias) | Unclear risk | There was no information available about completeness of outcome data. |

**Trial name:** Villamil 2007 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although group allocation was “randomized,” details of how the allocation sequence was generated were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | Methods of concealing group allocation were not reported. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | Of 2776 participants randomized, outcome data were available for 2752 which were included in the intention-to-treat population. |

**Trial name:** Motolese 1975 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Methods to generate the random allocation sequence were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | No information was available on any methods employed to conceal the allocation sequence. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. In addition, “all the trial medications, including placebo, were prepared by the manufacturer in identical capsules.” |
| Incomplete outcome data  (attrition bias) | Low risk | Although approximately 15% of participants discontinued the study, reasons and proportions of discontinuations were similar across comparison groups. |

**Trial name:** McInnes 1985 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Methods for generating a random allocation sequence were not mentioned: “The order of treatment is systematically varied to minimize any effect of sequence.” |
| Allocation concealment  (selection bias) | Unclear risk | No information was reported on the methods employed to conceal allocation sequence. |
| Blinding of participants and researchers  (detection bias) | High risk | No information was available. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No information was available on the numbers of participants who were lost to follow-up or any other exclusions. |

**Trial name:** Kassler-Taub 1998 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | While “eligible patients were randomized (1:1:1:1) to … parallel treatment groups,” details of how the random allocation sequence was generated were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | No information was available on the methods used to conceal allocation sequence. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind study. In addition, “all study drugs were administered in identical gray capsules.” |
| Incomplete outcome data  (attrition bias) | Low risk | Approximately 7% of randomized participants withdrew from the study. Therefore, outcome data were available for most participants. |

**Trial name:** Carlsen 1990 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Randomization was performed from a list of computer-generated numbers.” |
| Allocation concealment  (selection bias) | Unclear risk | No information was available on the methods for concealing the random allocation sequence. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. In addition, “placebo and active tables were identical in appearance and taste.” |
| Incomplete outcome data  (attrition bias) | Low risk | “Nine patients were withdrawn from the study” corresponding to approximately 4% of randomized participants. Therefore, outcome data were likely available for most participants. |

**Trial name:** Fogari 1997 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although “random allocation to treatment and the start of double-blind administration of medication occurred after satisfactory completion of the placebo lead-in period,” methods used to generate a random allocation sequence were not discussed. |
| Allocation concealment  (selection bias) | Unclear risk | Methods used to conceal the allocation sequence were not mentioned. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind study. In addition, “to maintain blinding, a suitable combination of [capsules] was administered daily.” |
| Incomplete outcome data  (attrition bias) | Low risk | Outcome data were available for 201 of 215 randomized patients. Therefore, outcome data were available for most participants. |

**Trial name:** Scholze 1999 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided about how a random allocation sequence was generated. |
| Allocation concealment  (selection bias) | Unclear risk | Whether any methods were employed to conceal random allocation sequence was not discussed. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | “40 patients withdrew from the study after randomization” However, the reasons for and numbers of discontinuations did not differ meaningfully across treatment arms. In addition, an intention-to-treat analysis was performed. |

**Trial name:** Levine 1995 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No information was available on the methods employed to generate a random allocation sequence. |
| Allocation concealment  (selection bias) | Unclear risk | Methods used to conceal the allocation sequence were not discussed. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. In addition, “study drugs were contained in capsules of identical appearance.” |
| Incomplete outcome data  (attrition bias) | Low risk | Efficacy analysis relied on 184/186 randomized participants. Therefore, outcome data were available for most participants. In addition, an intention-to-treat analysis was performed. |

**Trial name:** Drayer 1995 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although “patients were randomly allocated to one of nine separate study groups”, no details on random sequence generation were provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | 391 of 413 (95%) randomised participants completed the study. Reasons for discontinuation are provided, but not separately by trial arm. All participants were included in the efficacy analysis with the last observation carried forward. |

**Trial name:** London 2006 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although patients were randomized to one trial arm, no details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | 1674 of 1762 (95%) of participants completed the trial. Withdrawal rates were similar across trial arms. In addition, an intention-to-treat analysis was performed. |

**Trial name:** Pool 2007 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | 1161 of 1346 patients (86%) completed the trial. Discontinuation rates varied from 7.8% to 19.4% across trial arms  In addition, an intention-to-treat analysis was performed. “Discontinuation due to unsatisfactory therapeutic effect was more frequent in the HCTZ monotherapy and placebo groups (6.6%-10.7% of patients) compared with the VAL monotherapy and VAL/HCTZ combination therapy groups (0.6%-2.9%). |

**Trial name:** Weber 1995 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. Also, “to preserve the blind, all patients took a unit of medication or placebo at 12-hour intervals.” |
| Incomplete outcome data  (attrition bias) | Low risk | 117 of 122 (96%) patients had outcome data. Proportions without outcome data appeared similar between trial arms. The main analysis was a per-protocol analysis. |

**Trial name:** New 2000 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Randomization was performed by an external third party, treatment being randomized in blocks of four.” |
| Allocation concealment  (selection bias) | Low risk | See above. Block size was fixed, but randomization was performed externally. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. In addition, “both placebo and trandolapril were administered as identical capsules.” |
| Incomplete outcome data  (attrition bias) | Unclear risk | No statement regarding discontinuation/withdrawal or incomplete follow-up data is made. |

**Trial name:** Zamboulis 1996 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | No statement regarding discontinuation/withdrawal or incomplete follow-up data is made. |

**Trial name:** Grimm 2002 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | 134 of 150 (89%) patients completed the study. Reasons for discontinuation were provided by trial arm. Proportions of discontinuation were similar across trial arms. In addition, the analysis was performed on an intent-to-treat population. |

**Trial name:** Schmieder 2009 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Low risk | “Randomization by center was performed by the interactive voice  response system provider with the use of a validated system that  automates the random assignment of patients to randomization  numbers.” |
| Allocation concealment  (selection bias) | Low risk | “Randomization data were kept strictly confidential until the  time of unblinding.” |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | 978 of 1124 (87%) patients completed the trial. There was a slight imbalance in attrition rates (89.8% in the aliskiren group and 84.2% in the HCTZ group), and attrition rates and reasons for discontinuation were not provided separately for placebo and intervention groups. However, overall reasons for discontinuation appeared similar between intervention/placebo group pairs. |

**Trial name:** Chrysant 1992 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | Although “patients were randomized into six treatment groups”, no details on random sequence generation were provided. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Low risk | Outcome data was available for most participants (248 of 256). Reasons for discontinuation are stated, but not by trial arm. |

**Trial name:** Mancia 1997 (Drug)

|  |  |  |
| --- | --- | --- |
| **Bias** | **Author’s judgement** | **Support for judgement** |
| Random sequence generation  (selection bias) | Unclear risk | No details were provided on the random sequence generation. |
| Allocation concealment  (selection bias) | Unclear risk | No information provided. |
| Blinding of participants and researchers  (detection bias) | Low risk | This was a double-blind trial. |
| Incomplete outcome data  (attrition bias) | Unclear risk | 234 of 272 (86%) patients were included in the analysis. Numbers and reasons for discontinuation per trial arm are not provided; however, the number of patients included in the analysis differs considerably between trial arms (range 50 to 77). |

**Appendix 6:** Assessment of the consistency assumption. Figure below shows the sensitivity of the findings to the consistency assumption. Results of the base-case analysis (consistency model) are shown in red; results of the sensitivity analysis (inconsistency model) are shown in green. We did not observe substantial differences in the relative treatment effect estimates obtained from the two models.



Figure below shows the posterior mean deviance contributions of individual data points for the consistency model (horizontal axis) and the inconsistency model (vertical axis) along with the line of equality. While we observed several poorly fitting data points (each data point is expected to have a deviance contribution of about 1 with higher contributions suggesting a poorly fitting model), model fit was not improved when the consistency assumption was relaxed.



Table below shows the comparison of posterior summaries from consistency and inconsistency models for mean of the total residual deviance, DIC, and between-trial standard deviation. We did not observe any large reductions in between-study heterogeneity or large improvements in model fit (as measured by DIC and total residual deviance).

|  |  |  |
| --- | --- | --- |
|  | **Consistency model (base-case analysis)** | **Inconsistency model (sensitivity analysis)** |
| **Total residual deviance\*** | 982.9 | 985.1 |
| **DIC** | 4875.8 | 4869.5 |
| **Between-study heterogeneity** | 4.49 (95% CrI: 4.16 to 4.86) | 4.11 (95% CrI: 3.79 to 4.45) |

\* compare to 996 data points

**Appendix 7.** Comparison of model fit between unadjusted model (base-case analysis) and model adjusting for potential small-study effects. There was no reduction in between-study heterogeneity in the adjusted model. Although the improvements in DIC and residual deviance were large and meaningful, the adjusted total residual deviance was much lower than the number of data points, which suggests there may be over-fitting, i.e., the improvement in fit may be spurious.

The mean bias was -1.09 for exercise vs. control (95% CrI: -1.89 to -0.34) and -1.75 for drugs vs. control (95% CrI: -2.61 to -0.72) comparisons.

|  |  |  |
| --- | --- | --- |
|  | **Unadjusted model (base-case analysis)** | **Adjusted model (sensitivity analysis for small-study effects)** |
| **Total residual deviance\*** | 982.9 | 895.0 |
| **DIC** | 4875.8 | 4437.2 |
| **Between-study heterogeneity** | 4.49 (95% CrI: 4.16 to 4.86) | 4.51 (95% CrI: 4.07 to 4.92) |

\* compare to 996 data points

Figure below shows the findings of both the adjusted and unadjusted models. Results of the base-case analysis (unadjusted model) are shown in red; results of the small-study effects analysis show the predicted effect size from a study of infinite size (adjusted model), which are shown in green. Predicted treatment effect estimates for a study of infinite size was consistently lower for both exercise and drug interventions.



**Appendix 8.** Systolic blood pressure lowering effects of exercise and drug interventions compared to control across analyses using different mean systolic blood pressure cut-offs. Table below shows findings from the base-case analyses pooling all trials; findings of analyses restricting exercise trials to those with mean systolic blood pressure ≥130 mmHg; findings of analyses restricting exercise trials to those with mean systolic blood pressure ≥140 mmHg; and findings of analyses restricting exercise trials to those with mean systolic blood pressure ≥150 mmHg.

| **Comparison** | **Base-case** | **Mean systolic blood pressure ≥130 mmHg** | **Mean systolic blood pressure ≥140 mmHg** | **Mean systolic blood pressure ≥150 mmHg** |
| --- | --- | --- | --- | --- |
| ***Exercise vs. control*** | | | | |
| Endurance vs. control | -5.67  (-4.24, -2.79) | -8.29  (-6.23, -4.23) | -10.8  (-7.96, -5.10) | -14.27  (-10.19, -6.11) |
| Resistance vs. control | -5.0  (-2.94, -0.88) | -10.39  (-6.23, -2.06) | -13.21  (-8.14, -3.04) | -40.2  (-6.558, 28.38) |
| Isometric vs. control | -9.41  (-6.13, -2.90) | -14.17  (-8.67, -3.21) | -19.23  (-8.01, 2.97) | -26.06  (-10.92, 4.374) |
| Combination vs. control | -8.68  (-6.23, -3.78) | -14.83  (-10.80, -6.86) | -18.93  (-14.12, -9.27) | -33.71  (-24.89, -16.11) |
| ***Drugs vs. control*** | | | | |
| ACE-I vs. control | -8.42  (-7.35, -6.28) | -8.44  (-7.35, -6.25) | -8.43  (-7.35, -6.28) | -8.436  (-7.356, -6.283) |
| ARB vs. control | -9.06  (-8.00, -6.96) | -9.09  (-8.01, -6.94) | -9.06  (-8.01, -6.96) | -9.06  (-8.004, -6.957) |
| Beta-blocker vs. control | -11.08  (-9.90, -8.76) | -11.17  (-9.98, -8.81) | -11.10  (-9.92, -8.77) | -11.11  (-9.928, -8.777) |
| CCB vs. control | -15.37  (-12.44, -9.51) | -15.45  (-12.45, -9.45) | -15.40  (-12.46, -9.49) | -15.39  (-12.46, -9.508) |
| Diuretic vs. control | -8.82  (-7.75, -6.71) | -8.88  (-7.78, -6.71) | -8.84  (-7.77, -6.71) | -8.838  (-7.766, -6.71) |
| ***Exercise vs. exercise*** | | | | |
| Resistance vs. endurance | -1.05  (1.30, 3.65) | -4.51  (0.01, 4.43) | -5.86  (-0.17, 5.41) | -30.12  (3.636, 38.6) |
| Isometric vs. endurance | -5.37  (-1.89, 1.54) | -8.27  (-2.44, 3.39) | -11.62  (-0.08, 11.33) | -16.49  (-0.7345, 15.14) |
| Combination vs. endurance | -4.60  (-1.98, 0.59) | -8.70  (-4.56, -0.45) | -11.57  (-6.17, -0.69) | -24.42  (-14.69, -5.076) |
| Isometric vs. resistance | -7.02  (-3.19, 0.59) | -9.40  (-2.42, 4.49) | -12.17  (0.10, 12.27) | -42.22  (-4.509, 32.55) |
| Combination vs. resistance | -6.28  (-3.29, -0.28) | -10.22  (-4.59, 1.13) | -12.90  (-5.97, 0.92) | -54.06  (-18.35, 16.51) |
| Combination vs. isometric | -4.02  (-0.08, 3.81) | -8.92  (-2.10, 4.63) | -18.09  (-6.08, 6.07) | -31.61  (-14.03, 3.534) |
| ***Drugs vs. exercise*** | | | | |
| ACE-I vs. endurance | -4.92  (-3.11, -1.31) | -3.38  (-1.12, 1.22) | -2.43  (0.59, 3.66) | -1.386  (2.823, 7.058) |
| ARB vs. endurance | -5.54  (-3.76, -1.98) | -4.06  (-1.78, 0.54) | -3.08  (-0.05, 2.97) | -2.028  (2.173, 6.388) |
| Beta-blocker vs. endurance | -7.49  (-5.66, -3.82) | -6.06  (-3.74, -1.39) | -5.04  (-1.96, 1.09) | -3.977  (0.248, 4.469) |
| CCB vs. endurance | -11.47  (-8.197, -4.923) | -9.79  (-6.21, -2.59) | -8.63  (-4.49, -0.41) | -7.29  (-2.28, 2.77) |
| Diuretic vs. endurance | -5.29  (-3.52, -1.74) | -3.82  (-1.55, 0.76) | -2.88  (0.18, 3.23) | -1.81  (2.41, 6.61) |
| ACE-I vs. resistance | -6.73  (-4.41, -2.08) | -5.42  (-1.11, 3.19) | -4.42  (0.79, 5.94) | -35.67  (-0.76, 32.80) |
| ARB vs. resistance | -7.38  (-5.06, -2.74) | -6.09  (-1.77, 2.51) | -5.09  (0.12, 5.30) | -36.43  (-1.45, 32.15) |
| Beta-blocker vs. resistance | -9.35  (-6.96, -4.61) | -8.06  (-3.74, 0.55) | -7.02  (-1.77, 3.40) | -38.24  (-3.35, 30.25) |
| CCB vs. resistance | -13.08  (-9.49, -5.89) | -11.37  (-6.21, -1.06) | -10.20  (-4.31, 1.53) | -40.97  (-5.90, 27.76) |
| Diuretic vs. resistance | -7.14  (-4.81, -2.50) | -5.87  (-1.54, 2.75) | -4.85  (0.37, 5.54) | -36.12  (-1.20, 32.40) |
| ACE-I vs. isometric | -4.62  (-1.21, 2.23) | -4.23  (1.32, 6.93) | -10.36  (0.65, 11.86) | -11.78  (3.57, 18.71) |
| ARB vs. isometric | -5.27  (-1.86, 1.58) | -4.90  (0.65, 6.23) | -11.06  (0.01, 11.25) | -12.43  (2.92, 18.1) |
| Beta-blocker vs. isometric | -7.20  (-3.76, -0.30) | -6.90  (-1.30, 4.30) | -12.98  (-1.91, 9.36) | -14.34  (0.98, 16.14) |
| CCB vs. isometric | -10.66  (-6.29, -1.89) | -10.00  (-3.77, 2.48) | -15.85  (-4.43, 7.13) | -17.17  (-1.51, 13.85) |
| Diuretic vs. isometric | -5.01  (-1.62, 1.82) | -4.68  (0.89, 6.50) | -10.83  (0.25, 11.50) | -12.22  (3.16, 18.33) |
| ACE-I vs. combination | -3.80  (-1.12, 1.57) | -0.62  (3.45, 7.61) | 1.79  (6.75, 11.68) | 8.65  (17.54, 26.40) |
| ARB vs. combination | -4.44  (-1.77, 0.89) | -1.29  (2.79, 6.92) | 1.13  (6.10, 11.03) | 8.01  (16.88, 25.77) |
| Beta-blocker vs. combination | -6.40  (-3.66, -0.96) | -3.29  (0.82, 4.98) | -0.76  (4.19, 9.12) | 6.09  (14.95, 23.83) |
| CCB vs. combination | -10.04  (-6.20, -2.36) | -6.61  (-1.65, 3.38) | -4.00  (1.66, 7.33) | 3.15  (12.42, 21.7) |
| Diuretic vs. combination | -4.20  (-1.52, 1.14) | -1.07  (3.01, 7.16) | 1.35  (6.34, 11.29) | 8.26  (17.12, 25.97) |
| ***Drugs vs. drugs*** | | | | |
| ARB vs. ACE-I | -2.03  (-0.64, 0.72) | -2.08  (-0.66, 0.75) | -2.05  (-0.65, 0.72) | -2.04  (-0.64, 0.74) |
| Beta-blocker vs. ACE-I | -4.14  (-2.54, -0.98) | -4.24  (-2.62, -1.04) | -4.17  (-2.56, -0.99) | -4.17  (-2.57, -1.01) |
| CCB vs. ACE-I | -8.20  (-5.08, -1.96) | -8.27  (-5.10, -1.90) | -8.21  (-5.11, -1.93) | -8.22  (-5.10, -1.96) |
| Diuretic vs. ACE-I | -1.83  (-0.40, 1.00) | -1.89  (-0.43, 1.00) | -1.85  (-0.40, 0.99) | -1.85  (-0.40, 1.01) |
| Beta-blocker vs. ARB | -3.46  (-1.90, -0.36) | -3.57  (-1.96, -0.38) | -3.49  (-1.90, -0.36) | -3.49  (-1.92, -0.38) |
| CCB vs. ARB | -7.54  (-4.43, -1.31) | -7.63  (-4.43, -1.24) | -7.57  (-4.44, -1.27) | -7.57  (-4.45, -1.30) |
| Diuretic vs. ARB | -1.10  (0.24, 1.58) | -1.16  (0.23, 1.60) | -1.11  (0.23, 1.59) | -1.12  (0.23, 1.59) |
| CCB vs. beta-blocker | -5.66  (-2.53, 0.63) | -5.69  (-2.47, 0.76) | -5.69  (-2.54, 0.68) | -5.67  (-2.53, 0.67) |
| Diuretic vs. beta-blocker | 0.60  (2.14, 3.70) | 0.61  (2.19, 3.78) | 0.599  (2.14, 3.72) | 0.62  (2.15, 3.72) |
| Diuretic vs. CCB | 1.54  (4.67, 7.78) | 1.47  (4.66, 7.85) | 1.51  (4.69, 7.81) | 1.55  (4.69, 7.81) |