

Table 2. Study characteristics. *Italics indicates trials that have been part of the same study.*

Author & year	Country	Population	Duration & frequency	Intervention Group	Control Group	Timing of outcomes	Funding & conflicts of interest
Ades et al. 1996	USA	RT = 69.9 ± 4 yrs CON = 70.7 ± 5 yrs Male and female Healthy elderly	12 weeks 3 d per week	Supervision not reported Free weights and weight machines 3 sets of 8 reps at 50% 1RM with progression to 80% by week 9	Continued with habitual activities	Baseline and 12 weeks	Grants from National Institute of Health and General Clinical Research Centres.
Afshar et al. 2010	Iran	RT = 51 ± 16.4 yrs AT = 50.7 ± 21.1 yrs CON = 53 ± 19.4 yrs Males Haemodialysis	8 weeks	Supervised by a physician Ankle weights 2 sets of 8 reps progressed to 3 sets	Not reported	Baseline and 8 weeks	Not reported
Ahmadizad et al. 2007	Iran	RT = 40.9 ± 3.2 yrs AT = 41.3 ± 5.1 yrs CON = 38.6 ± 3.2 yrs Male Sedentary obese	12 weeks 3 d per week	Supervision not reported Circuit resistance training 4 sets of 12 maximal reps at 11 stations 50–60% of 1RM in each station	Not reported	Baseline and 12 weeks	Tarbiat Moallem University of Sabzevar in Iran.
Ahmadizad et al. 2014	Iran	Total cohort 23.4 ± 0.6 yrs Male Sedentary overweight	8 weeks 3 d per week	Supervised Free weights, weight machines and body weight 1-2 weeks: 1 set of 10 reps 3-8 weeks: 2–3 sets of 20–30 reps NP: constant moderate intensity DUP: rotated loading LP: volume was decreased and the training intensity was increased each week	Not reported	Baseline and 8 weeks	Not reported
Almenning et al. 2015	Norway	Total cohort 27.2 ± 5.5 yrs Females Polycystic ovary syndrome	10 weeks 3 d per week	Supervised by an exercise physiologist at least 1 session a week 3 sets of 10 reps at 75% 1RM	Not reported	Baseline and 10 weeks	The Norwegian Fund for Research in Sports Medicine.
Anderson et al. 2004	USA	RT = 26.4 ± 7.5 yrs AT = 20.9 ± 2.4 yrs CON = 26.6 ± 6.5 yrs Males Healthy sedentary	6 weeks 3 d per week	Supervision not reported Free-weight and machine exercises 2 sets of 10-15 reps	Refrain from systematic physical activity	Baseline and 6 weeks	Not reported
Andersen et al. 2008	Denmark	RT = 44 ± 9 yrs Fitness Training = 45 ± 9 yrs CON = 42 ± 8 yrs Females Trapezius myalgia	10 weeks 3 d per week	Supervised Free-weight and machine exercises 3 sets Intensity progressively increased from 12RM to 8RM	Health advice	Baseline and 10 weeks	Grants from Danish Medical Research Council and the Danish Rheumatism Association.

Andersen et al. 2014	Denmark	Total cohort = 68.2 ± 3.2 yrs Males Healthy elderly	16 weeks 2 d per week	Supervised Free-weight and machine exercises 0-4 weeks: 3 sets of 16-20 reps 5-8 weeks: 3 sets of 12 reps 9-12 weeks: 3 sets of 10 reps 13-16 weeks: 4 sets of 8 reps	Not reported	Baseline and 16 weeks	Supported by the FIFA Medical Assessment and Research Centre, The Danish Ministry of Culture, and Nordea-fonden, Denmark.
Andersen et al. 2016	USA	Total cohort = 68.1 ± 2.1 yrs Healthy elderly	36 weeks 2 d per week	Supervised Free weight, weight machines and body weight 0-4 weeks: 3 sets of 16-20RM 5-8 weeks: 3 sets of 12RM 9-12 week: 3 sets of 10RM 13-52 weeks: 4 sets of 8RM	Continued with habitual activities	Baseline and 36 weeks	Supported by the FIFA-Medical Assessment and Research Centre (Project 31964). The Danish Ministry of Culture (Kulturministeriets Udvalg for Idrætsforskning) (TKIF 2010-027), and Nordea-fonden (02-2011-4360).
Arora et al. 2009	India	RT = 49.6 ± 5.2 yrs AT = 52.2 ± 9.3 yrs CON = 58.4 ± 1.8 yrs Male and female Type 2 diabetes	8 weeks 2 d per week	Supervised 3 sets of 10 reps at 60-100% 1RM	Continued with habitual activities	Baseline and 8 weeks	Grant from University Grants Commission, Delhi, India.
Asad et al. 2012	Iran	RT = 21 ± 1.6 yrs AT = 22 ± 0.9 yrs Concurrent = 21.4 ± 2.1 yrs CON = 21.4 ± 1.1 yrs Male Healthy sedentary	8 weeks 3 d per week	Supervision not reported Free weights and weight machines 3 sets of 10-15 reps Weeks 2-8: first set for 10-12 reps, 8-10 reps for second set and 4-8 reps for third set	Not reported	Baseline and 8 weeks	Not reported
Augusto Libardi et al. 2012	Brazil	RT males = 47 ± 4.5 yrs RT females = 53.7 ± 3.7 yrs CON males = 49.5 ± 5.6 yrs CON females = 51.2 ± 6.4 yrs Males and females Healthy sedentary	16 weeks 3 d per week	Supervision not reported Free-weight, machine exercises and body weight 3 sets of 10 reps 9-16 weeks: 8 reps	Not reported	Baseline and 16 weeks	Supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico
Azərbayjani et al. 2014	Iran	RT = 23.1 ± 1.4 yrs AT = 23.3 ± 1.3 yrs Concurrent = 22.9 ± 1.7 yrs CON = 22.9 ± 1.7 yrs Males Healthy sedentary	12 weeks 3 d per week	Supervision not reported Free-weight and machine exercises 3 sets of 10 reps at 70% 1RM	Continued with habitual activities	Baseline and 12 weeks	Grant (90084702) from the Islamic Azad University, Central Tehran Branch grants commission.

Badrov et al. 2013	Canada	IHG3 = 23 ±4 yrs IHG5 = 27 ±6 yrs CON = 24 ± 8 yrs Females Healthy sedentary	8 weeks IHG3 - every other day IHG5 - five consecutive days	Supervision for 2 sessions a week Isometric hand grip at 30% MVC	Continued with habitual activities	Baseline, 4 and 8 weeks	Supported by the University of Windsor (810043; 809264; 808316; CLM), the Canadian Institutes of Health Research, Heart and Stroke/Richard Lewar Centre of Excellence Postdoctoral Fellowship, and an Ontario Graduate Scholarship.
Baldi & Snowling 2013	New Zealand	RT= 46.5 ± 2.1 yrs CON = 50.1 ± 1.3 yrs Females Type 2 diabetes	10 weeks 3 d per week	Supervised 1-2 circuits of 12 reps at 10RM (upper body) or 15RM (lower body)	Continued with habitual activities	Baseline and 10 weeks	Not reported
DeBarros et al. 2010	Brazil	RT = 31.8 ± 4.9 yrs CON = 32.4 ± 5.4 yrs Female Type 2 diabetes	24-34 weeks 3 d per week	Supervised by the researcher for 1 session a week Elastic resistance band circuit Exercise intensity was controlled using a perceived exertion scale. Subjects advised to maintain an exercise intensity close to 5 or 6, which corresponds to a “somewhat heavy”.	Continued with habitual activities	Baseline and 24 weeks	Supported by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior with master’s fellowship grant.
Beck et al. 2013 <i>Beck et al. 2013</i>	USA	RT = 21.1 ± 2.5 yrs AT = 20.1 ± 1.1 yrs CON = 21.6 ± 2.9 yrs Normotensive CON = 21.6 ± 2.7 yrs Male and female young Pre-hypertensives <i>RT = 21.1 ± 0.6 yrs AT = 20.1 ± 0.9 yrs CON = 21.6 ± 0.8 yrs Normotensive CON = 21.6 ± 0.7 yrs Male and female Pre-hypertensives</i>	8 weeks 3 d per week	Supervision not reported Weight machines 2 sets of 8–12 reps to volitional fatigue <i>Weight machines 2 sets of 8–12 reps to volitional fatigue</i>	Continued with habitual activities	Baseline and 8 weeks	Supported, in part, by a National Institutes of Health pre-doctoral training grant (NIH 5-T32-HL083810-04) awarded by the University of Florida Hypertension Centre. <i>Supported, in part, by a National Institutes of Health predoctoral training grant (NIH 5-T32-HL083810-04) awarded to D.T.B. by the University of Florida Hypertension Centre.</i>
Bell et al. 2000	Canada	Total cohort = 22.3 ± 3.3 yrs Male and female Physically active	12 weeks 3 d per week	Supervision not reported Free-weight and machine exercises 2-6 sets of 4-12 reps	Continued with habitual activities and asked to refrain from beginning any	Baseline, 6 and 12 weeks	Not reported

					formal exercise training programme		
Beltran Valls et al. 2014	Italy	RT = 72 ± 1 yrs CON = 72 ± 1 yrs Male and female Healthy elderly	12 weeks 2 d per week	Supervised Weight machines 1-2 weeks: 4 sets of 15 reps at 40–50 % 1RM 3-12 weeks: 3–4 sets of 10–12 reps at 70 % of baseline 1RM	Continued with habitual activities	Baseline and 12 weeks	Grants from the University of Rome “Foro Italico” (Research 2009) to D. C. The Lazio Regional Municipality (Agreement CRUL-Lazio n. 12650/2010) supported the post-doc scholarship to ID.
Boardley et al. 2007	USA	RT = 74.1 ± 6.2 yrs Combined = 75.3 ± 6 yrs AT = 73.2 ± 6.6 yrs CON = 75.9 ± 7.7 yrs Male and female Healthy elderly	16 weeks 3 d per week	Supervised by project staff for 2 sessions a week Elastic resistance bands 1-2 weeks: 1 set of 10 reps 3-16 weeks: 2 sets of 12 reps Theraband colour was changed so that it provided sufficient resistance to produce mild fatigue at the final rep	Not reported	Baseline, 8 and 16 weeks	Funded by the National Institute for Nursing Research grant #R01 NR04929. The Hygenic Corporation supplied the Thera-Band but had no other role in the study.
Borges & Carvalho 2014	Brazil	RT = 64.1 ± 12.5 yrs CON = 67.8 ± 9 yrs Male and female COPD	Completed a minimum of 3 sessions	Supervised Free weights and weight machines 2 sets of 9 reps Initial load was 80% 1RM and adjusted in subsequent sessions based on symptoms, Borg Dyspnea Scale scores, and patient fatigue	Normative daily care e.g. chest physiotherapy, non-invasive ventilation, and instructions to carry on with daily physical activities	Evaluated on the second day in hospital, at discharge, and 30 days post discharge	Not reported
Brentano et al. 2008	Brazil	Age not reported Female Post-menopausal	24 weeks 3 d per week	Supervision not reported Free-weight and machine exercises RT circuit: 2-3 sets of 10-20 reps at 45-60% 1RM RT: 2-4 sets of 6-20 reps at 45-80% 1RM	Continued with habitual activities	Baseline, 8, 16 and 24 weeks	Not reported
Brito et al. 2013	Brazil	Age not reported. Male and female HIV/AIDS	24 weeks. 3 d per week	Supervised Free-weight and machine exercises 3 sets of 8-10 reps at 80% 1RM	Continued with habitual activities and received nutritional advice	Baseline and 24 weeks	Not reported
Broeder et al. 1992	USA	Only report cohort 18-35 years Males Physically active	12 weeks 4 d per week	Supervised Free-weight and machine exercises 1-2 weeks: 10-12 reps 3-12 weeks: 10-12 reps on the first set, 8-10 reps on the second set, and 6-8 reps on the third set	Continued with habitual activities	Baseline and 12 weeks	Not reported

Brooks et al. 2007	USA	RT = 66 ± 2 yrs CON = 66 ± 1 yrs Males and females Type 2 diabetes	16 weeks 3 d per week	Supervision not reported Weight machines 3 sets of 8 reps 1-9 weeks: 60% 1RM 10-14 weeks: 70-80% 1RM	Continued with habitual activities and medications	Baseline and 16 weeks	Funded, in part, by the Brookdale Foundation, the USDA ARS agreement 58-1950-9-001, the NIH General Clinical Research Center M01 RR000054, and the International Life Sciences Institute North America.
Buchner et al. 1997	USA	RT = 74 yrs AT = 75 yrs AT + RT = 75 yrs CON = 75 yrs Male and female Healthy elderly	24-26 weeks 3 d per week	Supervised Weight machines 2 sets of 10 reps with the first set at 50-60% 1RM and the second set 75% 1RM	Continued with habitual activities	Baseline and 24 weeks Follow up at 28 weeks	Grants from the National Institute on Aging (UO1 AG09095), Centres for Disease Control and Prevention (R48 CCR002181), and the Department of Veterans Affairs.
Camargo et al. 2008	Brazil	RT = 29 ± 3 yrs AT = 29 ± 4 yrs CON = 30 ± 4 yrs Males Healthy sedentary	12 weeks 3 d per week	Supervised Weight machines 3 sets of 15 reps at 60% of 1RM	Continued with habitual activities	Baseline and 12 weeks	Partially supported by a grant from FIPE-Hospital de Clinicas de Porto Alegre and FAPICC.
Castaneda et al. 2002	USA	RT = 66 ± 2 yrs CON = 66 ± 1 yrs Male and female Type 2 diabetes	16 weeks 3 d per week	Supervision not reported 3 sets of 8 reps Weight machines 1-8 weeks: 60-80% of baseline 1RM 10-14 weeks: 70-80% of mid-study 1RM	Continued with medications and received a weekly phone call	Baseline and 16 weeks	Funded, in part, by Brookdale foundation in U.S. Department of Agriculture, the National Institutes of Health Clinical Research Centre and the International Life Sciences Institute, North America.
Christensen et al. 2014	Denmark	RT = 34.4 ± 7.6 yrs CON = 35.8 ± 8.9 yrs Male Disseminated germ cell cancer	9 weeks 3 d per week	Supervised 1-2 weeks: 3 sets of 15 reps at 15RM 3-9 weeks: 4 sets of 10 reps at 10-12RM	Received standard care and continued with medications	Baseline and 9 weeks	Supported by Copenhagen University Hospital, the Beckett Foundation and the Centre for Integrated Rehabilitation of Cancer Patients.
Colado et al. 2009	Spain	RT = 54 ± 2.8 yrs Aquatic = 54.7 ± 2 yrs CON = 52.9 ± 1.9 yrs Female Post-menopausal	24 weeks	Supervised Free-weight, machine and body weight exercises 1-12 weeks: 8 exercise circuit, 1 set of 20 reps with 30 sec active rest	Not reported	Baseline and 24 weeks	Funding (PMAFI-PI-01/1C/04) from the Research Funds Program of the Catholic University San Antonio in Murcia (Spain).

				between sets, 1 set upper body, 2 sets lower body. 12-24 weeks: 10 exercise circuit, 1 set of 20 reps			
Conceição et al. 2013	Brazil	RT = 53.4 ± 4 yrs CON = 53 ± 5.7 yrs Females Post-menopausal	16 weeks 3 d per week	Supervision not reported Free-weight, machine and body weight exercises 1-8 weeks: 3 sets of 10 reps at 10RM with 60 s rest between sets 9-16 weeks: 3 sets of 8 reps at 8RM with 90 s rest between sets	Continued with habitual activities	Baseline and 16 weeks	Funding from the São Paulo Research Foundation (FAPESP) for financial support (2012/09709-0).
Courneya et al. 2007 Courneya et al. 2010	Canada	RT= 49.5 yrs AT = 49 yrs Control = 49 yrs Females Breast cancer	18 weeks <i>Not reported</i>	Supervised Weight machines 2 sets of 8-12 reps at 60% to 70% 1RM	Continued with habitual activity	Baseline, 9 (only for subjective measures) and 18 weeks	None reported <i>Grant from the Canadian Breast Cancer Research Alliance. Also supported by a Doctoral Research Award from the Canadian Institutes of Health Research, the Canada Research Chairs Program, a Research Team Grant from the National Cancer Institute of Canada with funds from the Canadian Cancer Society and the National Cancer Institute of Canada Canadian Cancer Society Socio-behavioural Cancer Research Network and a New Investigator Award from the Heart and Stroke Foundation of Canada.</i>
Croymans et al. 2013	USA	RT = 21.5 yrs Control = 22 yrs Male Sedentary obese	12 weeks 3 d per week	Supervised Free-weight, machine and body weight exercises 1-2 weeks: 2 sets of 12–15 reps at 100% of estimated 12–15RM 3–7 weeks: 3 sets of 8–12 reps, at 100% of 8–12RM 8–12: weeks: 6–8 reps at 6–8RM	Completed no resistance exercise for the duration of the intervention	Baseline and 12 weeks	Supported by the American Heart Association (BGIA no 0765139Y to CKR), the National Heart, Lung and Blood Institute (P50 HL105188 to CKR) and the National Centre for Advancing Translational Sciences through UCLA CTSI Grant

							UL1TR000124 RAH and the American Heart Association (10SDG305006).
Davidson et al. 2009	USA	FEMALES: RT = 67.6 ± 4.2 yrs AT = 69.1 ± 6.5 yrs Combined = 66.5 ± 5.3 yrs CON = 66.7 ± 3.7 yrs MALES: RT = 67.4 ± 6 yrs AT = 68.8 ± 6 yrs Combined = 67.1 ± 5 yrs CON = 67.4 ± 3.8 yrs Male and female Sedentary obese	24 weeks 3 d per week	Supervision not reported Free-weight, machine and body weight exercises 1 set Each exercise was performed until volitional fatigue	Continued with habitual activities	Baseline and 24 weeks	Supported by research grant MT 13448 from the Canadian Institutes of Health Research.
DeLima et al. 2012	Brazil	RT linear periodization = 25.2 ± 4.4 yrs RT undulating periodization = 27.4 ± 2.8 yrs CON = 23.4 ± 1.3 yrs Female Healthy sedentary	12 weeks 3 d per week	Supervised Free-weight, machine and body weight exercises 3 sets until failure RT linear: 3 sets of 30RM, in the second week 3 sets of 25RM, in the third week 3 sets of 20RM and in the fourth week 3 sets of 15RM RT undulating: weeks 1, 3, 5, 7, 9 and 11, participants trained on days 1 and 2 with 3 sets of 30RM and on days 3 and 4 with 3 sets of 25RM. Weeks 2, 4, 6, 8, 10 and 12, participants trained on days 1 and 2 with 3 sets of 20RM and on days 3 and 4 with 3 sets of 15RM.	Continued with habitual activity	Baseline and 12 weeks	Not reported
DeSouza et al. 2014	Brazil	RT = 25.9 ± 6.4 yrs Interval = 24 ± 7.5 yrs Concurrent = 22.5 ± 3.9 yrs CON = 22.1 ± 2.4 yrs Male Physically active	8 weeks 2 d per week	Supervision not reported 3-5 sets of 6-12RM	Not reported	Baseline and 8 weeks	Not reported
Deibert et al. 2011	Germany	RT = 55.5 ± 4.8 yrs RT + supplement = 55.9 ± 3.5 yrs CON = 55.8 ± 5.5 yrs	12 weeks 2 d per week	Supervised Weight machines 1-4 weeks: 25 reps 5-9 weeks: 15 reps	Continued with habitual activity and received lifestyle advice	Baseline and 12 weeks	Grants from Almased Wellness Corp.

		Male Healthy sedentary		10-12 weeks: 10 reps			
DeVallance et al. 2016	USA	RT = 51 ± 3 yrs CON = 44 ± 3 yrs Male and female Metabolic syndrome	8 weeks 3 d per week	Supervision not reported Weight machines 3 sets of 8-12 reps 1-2 weeks: 60% of 1RM 3-4 weeks: 70% of 1RM 5-6 weeks: 80% of 1RM 7-8 weeks: 85% of 1RM	Continued with habitual activity	Baseline and 8 weeks	Supported in part by the American Heart Association Grant 11CRP7370056, National Heart, Lung, and Blood Institute Grant T32-HL-090610, and National Institute of General Medical Sciences of the National Institutes of Health under Award U54-GM-104942 and 1P20 GM109098, STEM Mountains of Excellence Fellowship.
Donges et al. 2010	Australia	Age not reported. Male and female Healthy sedentary	10 weeks 3 d per week	Supervised Weight machine exercises 10RM that is reported to approximate with 75% of a 1RM	Continued with habitual activity	Baseline and 10 weeks	Funded by Charles Sturt University.
Dunstan et al. 1998	Australia	RT Circuit = 50.3 ± 7.7 yrs CON = 51.1 ± 7.6 yrs Male and female Type 2 diabetes	8 weeks 3 d per week	Supervised Free-weight, machine and body weight exercises 1-2 weeks: 2 sets of 10-15 reps at 50-55% 1RM 3-8 weeks: 3 sets of 10-15 reps at 50-55% 1RM	Continued with habitual activities	Baseline and 8 weeks	Supported by a National Health and Medical Research Council program grant 'Studies in hypertension and vascular disease'.
Edge et al. 2006	Australia	Total cohort = 18 ± 1 yrs Female Physically active	5 weeks	Supervision not reported Free weights and machines 1-2 weeks: 2-3 sets of 15-20 reps 3-5 weeks: 3-5 sets of 15-20 reps Set 1 at 70% 3RM; set 2 at 60% 3RM; sets 3-5 at 50% 3RM	Not reported	Baseline and 5 weeks	Not reported
Egana et al. 2010	Ireland	RT = 69 ± 5 yrs CON = 64 ± 4 yrs Female Healthy elderly	12 weeks 2 d per week	Supervised Therabands 2 sets at 100% 10RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Elliott et al. 2002	UK	RT = 58 ± 4 yrs CON = 53 ± 3 yrs Female Post-menopausal	8 weeks 3 d per week	Supervision not reported 3 sets of 8 reps at 80% 10RM	Continued with habitual activity	Baseline and 8 weeks Follow-up at 16 weeks	Not reported

Fahlman et al. 2002	USA	RT = 73 ± 3 yrs AT = 76 ± 5 yrs CON = 74 ± 5 yrs Female Healthy elderly	10 weeks 3 d per week	Supervision not reported Weight machines 3 sets of 8 reps at 8RM	Continued with habitual activity	Baseline and 10 weeks	Not reported
Fatouros et al. 2005	Greece	RT low intensity = 71.1 ± 3.6 yrs RT mod intensity = 69.7 ± 3.8 yrs RT high intensity = 70.8 ± 2.8 yrs CON = 69.8 ± 5.1 yrs Male Sedentary obese	24 weeks 3 d per week	Supervised Weight machines and body weight RT low intensity – 1-8 weeks: 2 sets, 9-24 weeks: 3 sets, 45-50% 1RM RT mod intensity – 1-8 weeks: 2 sets, 9-24 weeks: 3 sets, 60-65% 1RM RT high intensity – 1-8 weeks: 2 sets, 9-24 weeks: 3 sets, 80-85% 1RM	Not reported	Baseline and 24 weeks Follow up at 48 weeks	Not reported
Fenkci et al. 2006	Turkey	RT = 44 ± 10.2 yrs AT = 41.7 ± 6.9 yrs CON = 43.8 ± 7.4 yrs Female Sedentary obese	12 weeks 3 d per week	Supervision not reported Weight machines 1 week: 1 set of 10 reps of 40-60% 1RM 2 weeks: 2 sets of 10 reps of 40-60% 1RM 3 weeks: 3 sets of 10 reps of 40-60% 1RM 4-12 weeks: 3 sets of 75-80% 1RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Figueroa et al. 2012 Figueroa et al. 2013 Figueroa et al. 2013	USA	Not reported. <i>RT with WBV = 56 ± 3 yrs</i> <i>CON = 56 ± 3 yrs</i> <i>RT with WBV = 55.5 ± 0.7 yrs</i> <i>CON = 56.4 ± 1 yrs</i> Female Sedentary obese	6 weeks 12 weeks 3 d per week	Supervised Whole body vibration with free weights Vibration intensity was progressed by increasing the frequency (25–30Hz) and amplitude (1–2mm). The duration of the sets and rest periods was progressively increased (30–60 s) and decreased (60–30 s), respectively.	Continued with habitual activity	Baseline and 6 weeks	Not reported
Franklin et al. 2015	USA	RT = 30.3 ± 5.4 yrs CON = 30.8 ± 9.0 yrs Female Sedentary obese	8 weeks 2 d per week	Supervised Free weights and machines 2-3 sets of 10 reps at 80–90% 10RM	Continued with habitual activity and offered educational material	Baseline and 8 weeks	Supported by the National Heart, Lung, and Blood Institute grants IK23HL85614, RO1HL095701, and HL095701-01A2S, and the University of Illinois at Chicago, Centre for

							Clinical and Translational Science, award UL1RR029879 from the National Centre for Research Resources.
Garcia-Lopez et al. 2007	Finland	RT = 54.9 ± 1.9 yrs AT = 53.6 ± 2.4 yrs CON = 53.3 ± 2.5 yrs Male Healthy sedentary	21 weeks 2 d per week	Supervised Weight machines 1-7 weeks: 2-4 sets of 8-15 reps at 40–70% 1RM 8–14 weeks: 2-5 sets of 5-12 reps at 60–80% 1RM 15-21 weeks: 3-5 sets of 5-10 reps at 60–85% 1RM	Continued with habitual activity	Baseline, 10.5 (not control group) and 21 weeks	Funded, in part, by a grant from the Ministry of Education, Finland.
Gater et al. 1992	USA	Physically active	10 weeks	Not reported		Baseline and 10 weeks	Grant from Ross Laboratories, the Achievement Reward for College Scientists Foundation, and National Heart, Lung and Blood Institute Research Services Award HL-07249.
Gelecek et al. 2012	Turkey	RT = 54.3 ± 5.3 yrs CON = 51.8 ± 3.7 yrs Female Post-menopausal	12 weeks 3 d per week	Supervised Free weights and machines 2 sets of 8-12 reps at 60% 1RM	Continued with habitual activity	Baseline and 12 weeks	Funded by the Department of Scientific Research Projects of Dokuz Eylül University.
Gettman et al. 1978	USA	Physically active	20 weeks 3 d per week	Supervision not reported Free weight, weight machines and body weight 1-6 weeks: 10-20 reps per set at 50% 1RM 7-20 weeks: 15 reps per set at 50% 1RM		Baseline and 20 weeks	Supported by the International Association of Chiefs of Police/Law Enforcement Assistance Administration, Grant No. 76-NI-99-001
Gordon et al. 2006	UK	RT = 67 ± 2 yrs CON = 67 ± 2 yrs Male and female Type 2 diabetes	16 weeks 3 d per week	Supervision not reported Weight machines 3 sets of 8 reps at 60-65% 1RM	Continued with habitual activity and received weekly phone calls	Baseline and 16 weeks	Supported by the Brookdale Foundation, USDA ARS Cooperative Agreement 58-1950-9-001 and NIH GCRC grant MOI RR000054.
Greenwood et al. 2015	USA	RT = 54.6 ± 10.6 yrs AT = 53.9 ± 10.7 yrs CON = 49.5 ± 10.6 yrs Male and female Kidney transplant recipients	12 weeks 3 d per week	Supervised Elastic resistance bands, ankle weights and free weights 1-2 sets of 10 reps at 80% 1RM	Usual care was followed and so seen routinely in the transplantation clinic	Baseline and 12 weeks	Funded by an NIHR Doctoral Research Fellowship. The study was hosted in the King's College Hospital NIHR clinical research facility.

							This article presents independent research funded by the NIHR.
Gregory et al. 2013	USA	Total cohort = 20.3 ± 0.3 yrs Female Physically active	8 weeks 3 d per week	Supervised Free-weight, machine and body weight exercises 3 sets of 3-12RM	Continued with habitual activity	Baseline, 4 and 8 weeks	Grant from the U.S. Army Medical Research and Materiel Command Bone Health and Military Medical Readiness Research Program to BCN.
Hagberg et al. 1989	USA	Total cohort = 72 ± 3 yrs Male and female Healthy sedentary	26 weeks 3 d per week	Supervised Weight machines 8-12 reps	Not reported	Baseline, 13 (not controls and 26 weeks	Funded, in part, by a grant from the Diabetes Treatment Centres of America Foundation.
Hagerman et al. 2000	UK	RT = 63.7 ± 5 yrs CON = 66.2 ± 6.5 yrs Male Healthy elderly	16 weeks 2 d per week	Supervision not reported Free-weight, machine and body weight exercises 1 set of 10 reps at 85-90% 1RM followed by 3 sets to failure of 6-8 reps at 85-90% 1RM	Not reported	Baseline and 16 weeks	Not reported
Hagstrom et al. 2016	Australia	RT - 51.2 ± 8.5 yrs CON - 52.7 ± 9.4 yrs Female Breast cancer	16 weeks 3 d per week	Supervised Free weight and weight machines 3 sets of 8-10 reps at 8RM		Baseline and 16 weeks	Supported by a grant from Western Sydney University, Australia.
Hallsworth et al. 2011 <i>Jakovljevic et al.</i>	Finland	RT = 52 ± 13.3 yrs CON = 62 ± 7.4 yrs RT = 49 ± 13 yrs CON = 62 ± 7 yrs Male and female Non-alcoholic fatty liver disease	8 weeks 3 d per week	Supervision biweekly Free weights and weight machine 2 sets at 50% 1RM	Not reported	Baseline and 8 weeks	Not reported
Hautala et al. 2006	Canada	RT = 42 ± 1 yrs CON = 41 ± 1 yrs Male and female Healthy sedentary	2 weeks 5 d per week	Supervised 1 set of 8-12 reps	Continued with habitual activity	Baseline and 2 weeks	Funding from the EU Seventh Framework Programme (FP7/2007-2013) under grant agreement no Health-F2-2009-241762, for the project FLIP; the MRC; the UK NIHR Biomedical Research Centre on Ageing and Age-Related Diseases and Diabetes UK.

Haykowsky et al. 2000	Canada	RT = 68 ± 3 yrs CON = 68 ± 4 yrs Male Healthy elderly	16 weeks 3 d per week	Supervision not reported Free weights and weight machine 3-10 reps at 60-80% 1RM	Continued with habitual activity	Baseline, 4, 8, 12 and 16 weeks	Grants from the Ministry of Education (Helsinki, Finland) and the Medical Council of the Academy of Finland (Helsinki, Finland).
Haykowsky et al. 2005	Iran	RT = 70 ± 4 yrs AT = 66 ± 3 yrs Combined = 68 ± 6 yrs CON = 67 ± 4 yrs Female Healthy elderly	12 weeks 3 d per week	Supervised 2 sets of 10 reps at 50% 1RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Hedayati et al. 2012	USA	RT 40% 1RM = 23.2 ± 1 yrs RT 80% 1RM = 21.9 ± 1.5 yrs CON = 20.8 ± 1 yrs Female Physically active	4 weeks 4 d per week	Supervision not reported Free weights and machines 3 sets of 8-11 reps	Not reported	Baseline and 4 weeks	Not reported
Heffernan et al. 2013	USA	RT = 60 ± 2 yrs CON = 63 ± 2 yrs Sex not reported. Pre-hypertensive and newly diagnosed/never-treated hypertensive	12 weeks 3 d per week	Supervised Weight machines 2 sets of 12-15 reps at 40% 1RM for upper body and 60% 1RM for lower body	Continued with habitual activity	Baseline and 12 weeks	Not reported
Hendrickson et al. 2010	USA	RT = 21 ± 0.5 yrs AT = 21 ± 0.4 yrs Combined = 20 ± 0.4 yrs CON = 20 ± 0.5 yrs Female Physically active	12 weeks 3 d per week	Supervised Free weights, machine and body weight exercises 3-6 weeks - "light" days at 12RM, "moderate" days at 8-10RM, and "heavy" days at 6-8RM loads. 8-11 weeks - "light" days at 12RM, "moderate" days at 6-8RM, and "heavy" days at 3-5RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Hiatt et al. 1994 <i>Hiatt et al. 1996</i>	Finland	RT = 67 ± 6 yrs AT = 67 ± 7 yrs CON = 67 ± 5 yrs Male Peripheral artery disease	12 weeks 4 d per week 3 d per week	Supervised Cuff weight secured to the leg 3 sets or 6RM	Continued with habitual activity	Baseline and 12 weeks	Funded, in part, by a grant from the Medical Research and Material Command Bone Health Research Program to BCN.
Hoff et al. 2007	Norway	RT = 62.8 ± 1.4 yrs CON = 60.6 ± 3.0 yrs Male and female	8 weeks 3 d per week	Supervision not reported 4 sets of 5 reps at 85-90% 1RM	Continued with habitual activity	Baseline and 8 weeks	Grant H133G90114 from the National Institute on Disability and Rehabilitation Research.

		Chronic obstructive pulmonary disease					Dr Hiatt is the recipient of a National Institutes of Health Academic Award in Vascular Disease.
Holviala et al. 2012	Belgium	RT = 56.5 ± 7.6 yrs AT = 55.5 ± 8.7 yrs Combined = 56.9 ± 7.5 yrs CON = 56.7 ± 7.5 yrs Male Healthy sedentary	21 weeks 2 d per week	Supervised Weight machines 1-7 weeks - 40–60% of 1RM 8-14 weeks - 60–80% of 1RM 15-21 weeks - 70–85% of the 1RM	Continued with habitual activity	Baseline and 21 weeks	Not reported
Hoof et al. 1996	Canada	Age not reported. Male Healthy sedentary	16 weeks 3 d per week	Supervised Weight machines 1-4 weeks – 3 sets of 12 reps at 70%1RM 5-16 weeks - 3 sets of 10 reps at 70% 1RM followed by 4 reps at 90% 1RM	Continued with habitual activity	Baseline and 16 weeks	Funded, in part, by the Norwegian Research Council by providing a Professor II position for Dr Richardson, grant HL-17731 from the National Heart, Lung, and Blood Institute and Tobacco Related Disease Research Program grant #15RT-0100.
Horne et al. 1996	Finland	Total cohort = 22.3 ± 3.3 yrs Male and female Physically active	12 weeks 3 d per week	Supervision not reported Machines and free weights	Not reported	Baseline, 6 and 12 weeks	Grants from the Belgian Ministry of Defence.
Hu et al. 2009	USA	RT = 32.2 ± 7.2 yrs CON = 31 ± 7.5 yrs Males Healthy sedentary	10 weeks 2-3 d per week	Supervised	Continued with habitual activity	Baseline and 10 weeks	Not reported
Huffman et al. 2014	Norway	Age not reported. Male and female Metabolic risk factors	24 weeks 3 d per week	Supervised Weight machines 3 sets of 8-12 reps	Not reported	Baseline and 24 weeks	Grants from the National Technology Agency of Finland, the Ministry of Education of Finland, Juho Vainio Foundation and partially funded by the National Science Foundation of Guangdong Province (815100760100004), China.
Husby et al. 2009	USA	RT = 58 ± 5 yrs CON = 56 ± 8 yrs Male and female Total hip arthroplasty	4 weeks post-operative	Supervised Weight machines 4 sets of 5 reps at 85% 1RM	Usual care involving conventional rehabilitation	Pre-operative, 1 week post-operative, 5	Supported by the National Heart, Lung, and Blood Institute, National Institute on Aging and National

Husby et al. 2010			5 d per week		program following total hip arthroplasty	week Follow up at 24 and 52 weeks	Institute of Arthritis and Musculoskeletal and Skin Diseases.
Irving et al. 2015	Denmark	Young: RT = 25 ± 1 yrs AT = 25 ± 1 yrs CON = 26 ± 1 yrs Combined = 26 ± 1 yrs Old: RT = 70 ± 1 yrs AT = 70 ± 1 yrs CON = 71 ± 2 yrs Combined = 71 ± 2 yrs Male and female Healthy sedentary	8 weeks 4 d per week	Supervised 4 sets of 8–10 reps	Continued with habitual activity	Baseline and 8 weeks	Supported by National Institute of Health grant R01-AG09531, R01-DK41973, National Centre for Advancing Translational Science grants UL1-RR024150 and KL2-RR024151, CTSA Grant Number UL1- TR000135 from the National Centre for Advancing Translational Sciences a component of the National Institutes of Health.
Jay et al. 2011	Finland	RT = 44 ± 8 yrs CON = 43 ± 10 yrs Male and female Healthy sedentary	8 weeks 3 d per week	Supervised Kettlebells	Not reported	Baseline and 8 weeks	Funded by The National Research Centre for the Working Environment.
Kaikkonen et al. 2000	Brazil	RT = 42.5 ± 7 yrs AT = 41.6 ± 6 yrs CON = 41.9 ± 7 yrs Male and female Healthy sedentary	12 weeks 3 d per week	No supervision provided Weight machines 3 circuits of 10 stations	Continued with habitual activity	Baseline and 12 weeks	Not reported
Kanegusuku et al. 2011	Finland	RT = 63 ± 1 yrs Power Training = 65 ± 1 yrs CON = 63 ± 1 yrs Male Healthy elderly	16 weeks 2 d per week	Supervision not reported Weight machines RT: 2 sets, 10 reps at 70% to 4 sets, 4-6 reps, 85-90% PT: 3 sets, 7 reps, 30% to 4 sets, 4-6 reps, 45-50%	Continued with habitual activity	Baseline and 16 weeks	Supported by FAPESP (#07/56653-1 and #07/00788-6), CNPq (#471600/2008-3), CAPES, and Head of the Psychopharmacology Incentive Fund Association.
Karavirta et al. 2009 Karavirta et al. 2011	Finland	RT = 56 ± 6 yrs AT = 54 ± 8 yrs Combined = 56 ± 7 yrs CON = 54 ± 8 yrs Male Healthy sedentary	21 weeks 2 d per week	Supervised Weight machines and body weight 1-7 weeks: 3 sets of 15-30 reps at 40–60% 1RM 8-14 weeks: 2-4 sets of 6-12 reps at 60–80% 1RM 15-21 weeks: 2-4 sets of 5-8 reps at 70–85% 1RM	Continued with habitual activity	Baseline, 10.5 and 21 weeks	Partially supported by grants from the Ministry of Education, Finland, Central Finland Health Care District, Jyväskylä, Finland, and Polar Electro Oy. <i>Partly supported by the Ministry of Education,</i>

							<i>Finland and the Juho Vainio Foundation, Finland.</i>
Karavirta et al. 2013	Japan	RT = 52 ± 8 yrs AT = 52 ± 7 yrs Combined = 49 ± 6 yrs CON = 52 ± 8 yrs Female Healthy sedentary	21 weeks 2 d per week	Supervised Weight machines and body weight 1-7 weeks: 3 sets of 12-20 reps at 40–60% 1RM 8-14 weeks: 2-4 sets of 5-12 reps at 60–80% 1RM 15-21 weeks: 2-4 sets of 5-8 reps at 70–85% 1RM	Not reported	Baseline, 10.5 and 21 weeks	Partly supported by the grants from the Ministry of Education and Culture, Central Finland Health Care District, Juho Vainio Foundation, Yrjo Jahansson Foundation, the University of Jyväskylä, G. Harold and Leila Y. Mathers Charitable Foundation, James S. McDonnell Foundation, the National Institutes of Health-sponsored Research Resource for Complex Physiologic Signals, and the National Institute on Aging.
Karelis et al. 2015	Canada	RT - 45. 3± 14 yrs CON - 39.4 ± 8 yrs Male and female Kidney transplant patients	16 weeks 3 d per week	Supervised for 1 session a week Free weight, weight machines, body weight and elastic resistance 3 sets of 10 reps at 80% 1RM	Continued habitual activity	Baseline and 16 weeks	Supported by funds from investigator-sponsored research by AstellasPharma Canada, Inc (SG112). RRL is supported by the Fonds de Recherche du Québec - Santé and holds the J-A De Sève research chair. MJH is supported by the Canadian Institutes of Health Research and Canadian National Transplant Research Program and holds the Shire chair in nephrology and renal transplantation and regeneration at the Université de Montréal.
Kawano et al. 2006	Canada	RT = 20 ± 1 yrs Combined = 21 ± 1 yrs CON = 22 ± 1 yrs Male Healthy sedentary	20 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets at 50%1 RM	Continued with habitual activity	Baseline, 8 and 12 weeks Follow up at 24 and 32 weeks	Grants from the Ministry of Health, Labour and Welfare (H18-J-W-002), Japan Society for the Promotion of Science (17300226), and the

							National Institutes of Health in the US (AG20966).
Kell & Asmundson 2009	UK	RT = 40.1 ± 8.7 yrs AT = 36.7 ± 8.9 yrs CON = 35.3 ± 7.3 yrs Male and female Chronic lumbar pain	16 weeks 3 d per week	Supervised Free weights, weight machines and body weight 4 sets of 10 reps at 53–72% 1RM	Continued with habitual activity	Baseline, 8 (not controls) and 16 weeks	Support from the Saskatchewan Health Research Foundation (New Investigator Grant) and the University of Alberta, Augustana Campus (travel grant).
Kemi et al. 2011	Iran	RT = 20.8 ± 2.4 yrs CON = 23 ± 2.9 yrs Female Healthy sedentary	8 weeks 3 d per week	Supervised Free weights 5 sets of 5 reps at 85% 1RM	Continued with habitual activity	Baseline and 8 weeks	Not reported
Kemmler et al. 2016	Germany	HIT = 42.9 ± 5.4 yrs CON = 42.5 ± 5.6 yrs Male Healthy sedentary	22 weeks 2-3 d per week	Supervised Weight machines Single set to failure of 6-8 reps	Continued with habitual activity	Baseline and 22 weeks	The authors are grateful for the support of the Staedler-Stiftung (Nürnberg, Germany), Kieser Training (Erlangen, Germany), Post SV Nürnberg (Nürnberg, Germany), and Protein4you (Saarlouis, Germany).
Khorvash et al. 2012	USA	Total cohort = 25.1 ± 3.2 yrs Male Depression and anxiety	10 weeks 2 d per week	Supervision not reported Free weights, weight machines and body weight	Not reported	Baseline and 10 weeks	Not reported
Kim et al. 2011	Switzerland	Traditional RT = 20.8 ± 0.8 yrs Super slow RT = 19.5 ± 0.3 yrs CON = 21.5 ± 0.8 yrs Female Healthy sedentary	4 weeks	Supervision not reported Weight machines Traditional RT: 3 sets of 8 reps at 80% 1RM Super slow RT: 1 set to fatigue at 50% 1RM	Continued with habitual activity	Baseline and 4 weeks	Not reported
Ku et al. 2010	Korea	RT = 55.7 ± 6.2 yrs AT = 55.7 ± 7 yrs CON = 57.8 ± 8.1 yrs Female Type 2 diabetes	12 weeks 4 d per week	Supervised Elastic resistance bands 3 sets of 15-20 reps	Continued with habitual activity	Baseline and 12 weeks	Not reported
Kwon et al. 2010	Korea	RT = 55.7 ± 6.2 yrs CON = 57 ± 8 yrs Female Type 2 diabetes	12 weeks 3 d per week	Supervision not reported Elastic resistance bands 3 sets of 10-15 reps	Continued with habitual activity	Baseline and 12 weeks	Supported by Korean Diabetes Clinical Research Institution.

Kwon et al. 2011	Canada	RT = 56.3 ± 6.1 yrs AT = 55.5 ± 8.6 yrs CON = 58.9 ± 5.7 yrs Female Type 2 diabetes	12 weeks 3 d per week	Supervision not reported Elastic resistance bands 3 sets of 10-15 reps	Continued with habitual activity	Baseline and 12 weeks	Not reported
Larose et al. 2010	USA	RT = 54.7 ± 7.5 yrs AT = 53.9 ± 6.6 yrs Combined = 53.5 ± 7.3 yrs CON = 54.8 ± 7.2 yrs Male and female Type 2 diabetes	Run in of 4 weeks followed by 22 weeks intervention . 2-3 d per week	Supervised Biweekly supervision after week 4 Weight machines 4 week run-in phase: 1-2 sets of 10 reps 5-22 weeks: 3 sets of 8 reps	Continue with habitual activity	Baseline and 22 weeks	Grants from the Canadian Institutes of Health Research (grant MCT-44155), Canadian Diabetes Association (The Lillian Hollefriend Grant), and the Interfaculty Grant program of the University of Ottawa.
LeMura et al. 2000	Australia	RT = 20 ± 1 yrs AT = 21 ± 2 yrs Cross training = 19 ± 2 yrs CON = 20 ± 1 yrs Female Healthy sedentary	16 weeks 3 d per week	Supervised Free weights, weight machines and body weight 1-2 weeks: 1 set of 8-10 reps at 60-70% 1RM 3-14 weeks: 3 sets of 8-10 reps at 60-70% 1RM	Continued with habitual activity and completed an activity log	Baseline, 8 and 16 weeks Follow up at 20 weeks	Not reported
Levinger et al. 2007 <i>Levinger et al. 2008</i> <i>Levinger et al. 2009</i>	Brazil	LoMFC = 48.5 ± 7.7 yrs LoMFT = 50.6 ± 5.1 yrs HiMFC = 52.3 ± 5.8 yrs HiMFT = 51.6 ± 7.1 yrs LoMFC = 48.9 ± 7.4 yrs LoMFT = 50.3 ± 4.1 yrs HiMFC = 51.9 ± 5.8 yrs HiMFT = 51 ± 7 yrs LoMFC = 48.5 ± 7.7 yrs LoMFT = 50.6 ± 5.1 yrs HiMFC = 52.3 ± 5.8 yrs HiMFT = 51.6 ± 7.1 yrs	10 weeks 3 d per week	Supervised Weight machines Week 1: 2 sets of 15–20 reps at 40–50% 1RM Week 2: 3 sets of 15–20 reps at 50–60% 1RM 3-6 weeks: 3 sets of 12–15 reps at 60–75% 1RM 7-10 weeks: 3 sets 8 –12 reps at 75–85% 1RM	Continue with habitual activity	Baseline and 10 weeks	Not reported

		Male and female Metabolic risk factors					
Libardi et al. 2011 <i>Libardi et al.</i> 2012	Taiwan	RT = 48.6 ± 5 yrs Concurrent = 48.5 ± 5.3 yrs CON = 49.1 ± 5.5 yrs Male Healthy sedentary RT = 49.3 ± 4.8 yrs AT = 49.3 ± 5.4 yrs Concurrent = 48.5 ± 5.4 yrs CON = 49.1 ± 5.9 yrs Male Healthy sedentary	16 weeks 3 d per week	Supervision not reported Free weights, weight machines and body weight 3 sets at 8-10RM	Not reported	Baseline and 16 weeks	Supported by the National Council of Technological and Scientific Development, Brazil. <i>Supported by the National Counsel of Technological and Scientific Development, Brazil.</i>
Lo et al. 2011	Australia	RT = 20.2 ± 1.4 yrs AT = 20 ± 0.7 yrs CON = 21.1 ± 1.7 yrs Male Healthy sedentary	24 weeks 3 d per week	Supervised Weight machines 1-8 weeks: 1 set at 15RM 9-16 weeks: 1 set of 10 reps at 75% 1RM 17-24 weeks: 2 sets of 4 reps at 90% 1RM	Not reported	Baseline and 24 weeks Follow-up at 48 weeks	Supported by the National Science Council, 95-2413-H-006-010, Taiwan, ROC.
Lovell et al. 2009 <i>Lovell et al.</i> 2012	USA	RT = 74.1 ± 2.7 yrs CON = 73.5 ± 3.3 yrs RT = 74.1 ± 2.7 yrs AT = 75.2 ± 3.0 yrs CON = 73.5 ± 3.3 yrs Male Healthy elderly	16 weeks 3 d per week	Supervised Weight machine 3 sets of 6-10 reps at 50-90%1RM	Continued with habitual activity	Baseline, 4, 8, 12, and 16 weeks	Not reported
Madden et al. 2006	Iran	RT = 69.8 ± 1.5 yrs AT = 70 ± 2.6 yrs CON = 71.8 ± 1.2 yrs Female Healthy elderly	24 weeks 5 d per week	Supervised Free weights 3 sets of 8-12 reps at 85% 1RM	Continued with habitual activity	Baseline and 24 weeks	Supported by the AHA Washington Affiliate Grant-in-aid, the Medical research service of the department of veterans affairs
Mahdirejei et al. 2014	Australia	RT = 47.6 ± 7.7 yrs CON = 49.6 ± 8.1 yrs Male Type 2 diabetes	8 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets of 8-15 reps at 50-80% 1RM	Not reported	Baseline and 8 weeks	Supported by Islamic Azad University Sari Branch, Sari, Iran.
Maiorana et al. 1997	Australia	RT = 61.2 ± 8.4 yrs CON = 59 ± 8.7 yrs Male Coronary bypass graft	10 weeks	Supervised Free weights, weight machines and body weight	Continued with habitual activity	Baseline and 10 weeks	Not reported

				1-3 sets of 10-15 reps at 40-60% MVC			
Maiorana et al. 2011	USA	RT = 58.8 ± 3.5 yrs AT = 61.3 ± 2.8 yrs CON = 64.4 ± 2.4 yrs Male and female Stable chronic heart failure	12 weeks 3 d per week	Supervised Free weights, weight machines and body weight 1-6 weeks: 3 sets of 60 secs at 50-60% 1RM 7-12 weeks: 3 sets of 60 secs at 60-70% 1RM	Continued with habitual activity	Baseline, 6 and 12 weeks	Supported by the National Heart Foundation (Australia), the Dutch Heart Foundation (E. Dekker, stipend) and the Australian Research Council.
Malin et al. 2013	USA	Normal body fat = 21.9 ± 0.8 yrs High body fat = 21.0 ± 0.8 yrs CON = 20.9 ± 0.6 yrs Female Healthy sedentary	7 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets of 10-12 reps at 60% 1RM	Not reported	Baseline and 7 weeks	Funded by the Wayne State College Foundation.
Manning et al. 1991	USA	RT= 35.4 ± 2.6 yrs CON = 40.3 ± 5.5 yrs Female Sedentary obese	12 weeks 3 d per week	Supervision not reported Free weights and weight machines 2-3 sets of 6-8 reps at 60-70% 1RM	Not reported	Baseline, 4, 8 and 12 weeks	Supported, in part, by grant from the Valley Hospital and the William Paterson College of New Jersey.
Marcinik et al. 1991	USA	RT= 29 ± 4 yrs CON = 30 ± 4 yrs Male Healthy sedentary	12 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets at 8-20RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Marcus et al. 2009	Portugal	RT Eccentric = 56.3 ± 6.4 yrs CON = 53.2 ± 6.5 yrs Females Impaired glucose tolerance	12 weeks 3 d per week	Supervised Weight machine	Continued with habitual activity	Baseline and 12 weeks	Supported by the Utah Building Interdisciplinary Research Careers in Women's Health Program (NIH grant 5K12HD043449-04).
Martins et al. 2010 <i>Martins et al. 2010</i>	USA	Total cohort = 76 ± 8 yrs Male and female Healthy sedentary RT= 73.2 ± 6.5 yrs AT = 76.2 ± 7.4 yrs CON = 81.2 ± 7.9 yrs <i>Males and females</i>	16 weeks 3 d per week	Supervised Elastic resistance bands 1-2 weeks: 1 set of 8 reps 3-4 weeks: 1 set of 12 reps 5-6 weeks: 2 sets of 8 reps 7-8 weeks: 2 sets of 10 reps 9-10 weeks: 2 sets of 12 reps 11-12 weeks: 2 sets of 15 reps 13-14 weeks: 3 sets of 12 reps 15-16 weeks: 3 sets of 15 reps	Not reported	Baseline and 16 weeks <i>Baseline and 16 weeks Follow-up at 32 weeks</i>	Supported by the Portuguese Foundation for Science and Technology and the Portuguese Institute of Sport.
McDermott et al. 2009	Australia	RT = 71.7 ± 8.7 yrs AT = 71.7 ± 8.7 yrs CON = 68.5 ± 11.9 yrs Male and female	24 weeks 3 d per week	Supervised Weight machines 3 sets of 8 reps at 50-80% 1RM	Education sessions	Baseline and 24 weeks	Supported by grants R01-HL073551 from the National Heart, Lung, and Blood Institute and by RR-

		Peripheral artery disease					00048, National Institutes of Health and the Intramural Research Program, National Institutes on Aging.
McGuigan et al. 2001	USA	RT = 70 ± 6 yrs CON = 66 ± 6 yrs Male and female Peripheral artery disease	24 weeks 3 d per week	Supervised Free weights, weight machines and body weight 2 sets at 8-15RM	Continued with habitual activity	Baseline, 12 and 24 weeks	Supported by an American College of Sports Medicine Foundation Research Grant for doctoral students.
Mikesky et al. 1994	Canada	RT= 69.2 ± 4.0 yrs CON = 72.8 ± 5.7 yrs Male and female Healthy elderly	12 weeks 3 d per week	Supervision for 1 session a week Body weight and elastic resistance bands 1-2 weeks: 1 set of 12 reps 3-4 weeks: 2 sets of 12 reps 5-12 weeks: 2-3 sets of 12 reps	Attended two 3-h automobile driving safety classes during weeks 4 and 8	Baseline and 12 weeks	Grant from the Indiana University Grant-in-Aid program.
Millar et al. 2008	Japan	RT = 66 ± 1 yrs CON = 67 ± 2 yrs Male and female Healthy elderly	8 weeks 3 d per week	Supervision for 2 sessions a week Weight machine 1 set of 4 reps at 30-40% MVC	Not reported	Weekly for 8 weeks	Supported by an Ontario Graduate Scholarship award and a Natural Sciences and Engineering Research Council of Canada Discovery grant.
Miura et al. 2008	Japan	RT 1d·week = 69 ± 6.5 yrs RT 2d·week = 69.5 ± 7 yrs CON = 68.9 ± 7.5 yrs Female Healthy elderly	12 weeks 1 or 2 d per week	Supervised Free weights and elastic resistance bands 3-5 sets of 15-20 reps	Continued with habitual activity	Baseline and 12 weeks	Supported by a Grant-in Aid for Scientific Research from the Ministry of Education, Science, Sports and Culture of Japan (15700441).
Miyachi et al. 2004	Norway	RT = 22 ± 1 yrs CON = 22 ± 1 yrs Male Healthy sedentary	16 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets of 12 reps at 80% 1RM	Continued with habitual activity	Baseline and 16 weeks Follow-up at 24 weeks	Grants from the National Institutes of Health (AG-020966), Japan Society for Promotion of Science (13780041 and 14208005) and the Meiji Yasuda Life Foundation.
Mosti et al. 2013	Norway	RT = 61.9 ± 5 yrs CON = 66.7 ± 7.4 yrs Females Osteoporosis or osteopenia	12 weeks 3 d per week	Supervised Weight machines 4 sets of 3-5 reps at 85-90% 1RM	Encouraged to follow current exercise guidelines for osteoporotic patients	Baseline and 12 weeks	Funded by the Liaison Committee between the Central Norway Regional Health Authority and the Norwegian University of Science and Technology.

Mosti et al. 2014	Brazil	RT= 22.7 ± 2.2 yrs CON = 21.5 ± 2.2 yrs Female Healthy sedentary	12 weeks 3 d per week	Supervised Weight machines 4 sets of 3–5 reps at 85–90% 1RM	Encouraged to follow exercise advise in accordance with existing recommendations	Baseline and 12 weeks	Corresponding author funded by a PhD grant from the Liaison Committee between the Central Norway Regional Health Authority and the Norwegian University of Science and Technology.
Mota et al. 2013	Iran	RT = 67.5 ± 7 yrs CON = 66.8 ± 5.4 yrs Female Hypertensive	16 weeks 3 d per week	Supervised Free weights and weight machines 1-4 weeks: 3 sets of 10 reps 5-8 weeks: 3 sets of 12 reps at 60% 1RM 9-12 weeks: 3 sets of 10 reps at 70% 1RM 13-16 weeks: 3 sets of 8 reps at 80% 1RM	Not reported	Baseline, 4, 8, 12 and 16 weeks	Not reported
Nikseresht et al. 2014 <i>Nikseresht et al. 2014</i>	Denmark	RT non-linear = 40.4 ± 5.2 yrs AT = 39.6 ± 3.7 yrs CON = 38.9 ± 4.1 yrs <i>RT non-linear = 40.4 ± 5.2 yrs AT = 39.6 ± 3.7 yrs Lean = 39 ± 5.9 yrs CON = 38.9 ± 4.1 yrs</i> Male Sedentary obese	12 weeks <i>12 weeks training. 4 weeks detraining period</i> 3 d per week	Supervised Free weights and weight machines 1-4 sets of 2-20 reps at 40-95% 1RM	Continued with habitual activity	Baseline and 12 weeks <i>Baseline, 12 weeks and follow-up</i>	None reported. <i>Grants from the Ilam University of Medical Sciences, Ilam, Iran.</i>
Nybo et al. 2010	Japan	RT = 36 ± 2 yrs Interval running = 37 ± 3 yrs Prolonged running = 31 ± 2 yrs CON = 30 ± 2 yrs Male Healthy sedentary	12 weeks 3 d per week	Supervision not reported Free weights and weight machines 1-4 weeks: 4 sets of 12-16RM 5-12 weeks: 4 sets at 6-10RM	Continued with habitual activity	Baseline and 12 weeks	Supported by the Danish Ministry of Culture (Kulturministeriets Udvalg for Idrætsforskning).
O'Connor et al. 2017	UK	RT - 54.6 ± 10.6 yrs CON - 49.5 ± 10.6 yrs Male Kidney transplant recipients	12 weeks 3 d per week	Supervision for 2 sessions a week Free weights, weight machines and body weight 1-3 sets of 10 reps at 80% 1RM	Usual care were not provided with specific exercise guidance, they received general exercise encouragement at	Baseline and 12 weeks	Funded by the NIHR. The study was hosted in the KCH NIHR Clinical Research Facility. This paper presents independent research funded by the NIHR.

					routine appointments.		
Okamoto et al. 2006	Japan	RT Eccentric = 18.9 ± 0.3 yrs RT Concentric 19.1 ± 0.3 yrs CON = 19.9 ± 1.2 yrs Female Healthy sedentary	8 weeks 3 d per week	Supervised Free weights 5 sets of 8-10 reps 80-100% 1RM	Sedentary	Baseline and 8 weeks Follow-up (unclear duration)	Not reported
Okamoto et al. 2009a	Japan	RT Eccentric = 19.6 ± 0.4 yrs RT Concentric = 19.2 ± 0.3 yrs CON = 19.7 ± 0.3 yrs Male Physically active	10 weeks 2 d per week	Supervision not reported Free weights, weight machines and body weight 5 sets of 8-10 reps at 80% 1RM	Sedentary	Baseline and 10 weeks	Partially supported by the Ministry of Education, Science, Sports and Culture, Grant-in-Aid for Young Scientists (B), 19700539, 2007.
Okamoto et al. 2009b	Japan	RT Upper = 20.2 ± 0.4 yrs RT Lower = 20 ± 0.5 yrs CON = 20.1 ± 0.3 yrs Male and female Healthy sedentary	10 weeks 2 d per week	Supervised Free weights and weight machines 5 sets of 8-10 reps at 80% 1RM	Sedentary	Baseline and 10 weeks	Not reported
Okamoto et al. 2011	Japan	RT = 18.5 ± 0.5 yrs CON = 18.6 ± 0.5 yrs Male Healthy sedentary	10 weeks 2 d per week	Supervision not reported Free weights, weight machines and body weight 5 sets of 10 reps	Continued with habitual activity	Baseline and 10 weeks	Supported by the Grant-in-Aid for Scientists Research from the Ministry of Education, Culture, Sports, Science and Technology of Japan (21700680).
Okamoto et al. 2013	Norway	High then low intensity RT = 19.1 ± 0.7 yrs Low then high intensity RT = 19.3 ± 0.7 yrs CON = 19.1 ± 0.6 yrs Male and female Healthy sedentary	10 weeks 2 d per week	Supervision not reported Free weights and weight machines 3 sets of 10 reps to concentric failure	Sedentary	Baseline and 10 weeks	Not reported
Oldervoll et al. 2001	Brazil	RT = 42.2 ± 6 yrs AT = 42.6 ± 6 yrs CON = 43.9 ± 8.8 yrs Female Musculoskeletal pain	15 weeks 2 d per week	Supervision not reported 2-3 sets of 12-15 reps	Continued with habitual activity	Baseline and 15 weeks	Grant no. 111222/330 from the Norwegian Research Council and the University Hospital of Trondheim provided financial support for the employment of one of the instructors.

Oliveira et al. 2013	USA	RT = 22 ± 3 yrs CON = 23 ± 4 yrs Male Physically active	8 weeks 3 d per week	Supervised Isokinetic eccentric resistance exercise on weight machines 1-2 weeks: 2 sets of 8 reps 3-4 weeks: 4 sets of 8 reps 5-6 weeks: 6 sets of 8 reps 7-8 weeks: 3 sets of 8 reps	Continued with habitual activity	Baseline and 8 weeks	Supported by FAPESP and CNPq.
Olson 2006	Norway	RT = 38 ± 1 yrs CON = 38 ± 2 yrs Female Sedentary overweight	52 weeks 2 d per week	Supervised for the initial 16 weeks Free weights and weight machines 3 sets of 8–10 reps	Continued with habitual activity and provided with education material	Baseline and 52 weeks	Supported, in part, by the National Institutes of Health grant #:5R01DK060743-03, American Heart Association grant #:0410034Z and General Clinical Research Centre Program, NCRR/NIH #:M01-RR00400.
Panton et al. 1990	South Africa	RT = 72.2 ± 2.5 yrs Walk/jog = 71.8 ± 1.9 yrs CON = 72.1 ± 3 yrs Male and female Healthy sedentary	26 weeks 3 d per week	Supervised Weight machines 1 set of 8-12 reps	Continued with habitual activity	Baseline and 26 weeks	Not reported
Parr et al. 2009	Spain	RT Upper = 66 ± 13 yrs Conventional Exercise Rehab = 57 ± 14 yrs CON = 62 ± 10 yrs Male and female Peripheral artery disease	6 weeks 3 d per week	Supervised Free weights and weight machines 15-30 reps	Continued with habitual activity and advised to walk at home	Baseline and 6 weeks	Not reported
Perez-Gomez et al. 2013	Canada	RT = 22 ± 1.2 yrs ET = 21.8 ± 1 yrs CON = 23.3 ± 2.5 yrs Male Physically active	10 weeks	Supervised Free weights and weight machines 50-90% of 1RM	Not reported	Baseline and 10 weeks	Not reported
Plotnikoff et al. 2010	USA	RT = 55 ± 12 yrs CON = 54 ± 12 yrs Male and female Type 2 diabetes	16 weeks 3 d per week	Supervision tapered Free weights and weight machines Week 1: 2 sets of 10–12 reps at 50–60% 1RM Week 2: 3 sets of 10-12 reps at 50-60% 1RM 3-8 weeks: 3 sets of 10-12 reps, intensity progressively increase to 70-80% 1RM	Continued with habitual activity	Baseline and 16 weeks	Funded by the Canadian Institutes of Health Research, Strategic Initiative in Excellence, Innovation and Advancement for the Study of Obesity and Healthy Body Weight.

				Week 9: 2 sets of 10–12 reps at 70% 1RM 10-15 weeks: 3 sets of 8–10 reps at 70–85% 1RM Week 16: 2 sets of 8–10 reps at 80% 1RM.			
Poehlman et al. 2000	USA	RT = 28 ± 3 yrs AT = 29 ± 5 yrs CON = 28 ± 4 yrs Female Healthy sedentary	24 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets of 10 reps	Not reported	Baseline and 6 week	Grant from the Department of Defence (DE-950226), a post-doctoral fellowship from the American Heart Association, Maine/New Hampshire/Vermont affiliate, a grant from the Medical Research Council of Canada, and General Clinical Research Centre Grant RR-109.
Poehlman et al. 2002	USA	RT = 28 ± 3 yrs AT = 28 ± 4 yrs CON = 28 ± 4 yrs Female Healthy sedentary	24 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3 sets of 10 reps	Not reported	Baseline and 6 weeks	Not reported
Pollock et al. 1991	USA	RT = 72.2 ± 2.5 yrs Walk/Jog = 71.8 ± 1.9 yrs CON = 72.1 ± 3 yrs Male and female Healthy elderly	26 weeks 3 d per week	Supervision not reported Weight machines 1 set of 10-12 reps	Not reported	Baseline and 26 weeks	Not reported
Prabhakaran et al. 1999	USA	RT = 28 ± 6 yrs CON = 26 ± 6 yrs Female Healthy sedentary	14 weeks 3 d per week	Supervised Free weights and weight machines 85% 1RM	Continued with habitual activity	Baseline and 24 weeks	Funded by the Yamanaka Fund.
Rana et al. 2008	USA	RT = 20.6 ± 1.9 yrs RT Low Velocity = 19.4 ± 1.3 yrs AT = 22.3 ± 3.9 yrs CON = 22.9 ± 2.4 yrs Female Healthy sedentary	6 weeks week 1 - 2 sessions weeks 2-6 - 3 days a week	Supervised Weight machines 3 sets at 6-10RM	Not reported	Baseline and 6 weeks	Not reported
Roberts et al. 2013	Sweden	Only report 18-35 yrs Male Sedentary obese	12 weeks 3 d per week	Supervised Free weights, weight machines and body weight 1–2 weeks: 2 sets of 12–15 reps 100% 12-15RM	Continued habitual activity	Baseline and 12 weeks	Supported by the American Heart Association (BGIA # 0765139Y), the National Heart, Lung and Blood

				3–7 weeks: 3 sets of 8–12 reps at 100% 8–12RM 8–12 weeks: 6–8 reps at 100% 6–8RM			Institute (P50 HL105188), the National Institute of Diabetes and Digestive and Kidney Diseases (DK090406) and the National Centre for Advancing Translational Sciences through UCLA CTSI Grant UL1TR000124.
Rodriguez-Miguel et al. 2014	Spain	RT = 69.1 ± 1.1 yrs CON = 70 ± 0.9 yrs Male and female Healthy elderly	8 weeks 2 d per week	Supervision not reported Weight machines Week 1: 3 sets of 8 reps at 60% 1RM Week 2: 3 sets of 10 reps at 60% 1RM Week 3: 3 sets of 12 reps at 60% 1RM Week 4: 3 sets of 8 reps at 70% 1RM Week 5: 3 sets of 10 reps at 70% 1RM Week 6: 3 sets of 12 reps at 70% 1RM Week 7: 3 sets of 8 reps at 80% 1RM Week 8: 3 sets of 10 reps at 80% 1RM	Continued with habitual activity	Baseline and 10 weeks	Supported by Plan Nacional I+D+I DEP2010-17574, Spain.
Romero-Areanas et al. 2007	Finland	High RT Circuit = 62.1 ± 6.3 yrs Traditional RT = 64.8 ± 4.5 yrs CON = 58 ± 5 yrs Male and female Healthy elderly	12 weeks 2 d per week	Supervised Weight machines High RT Circuit: 1-3 sets Traditional RT: 3 sets of 6-12 reps at 50-100% 6RM	Not reported	Baseline and 12 weeks	Grant 07/UPR20/10 from the Consejo Superior de Deportes.
Sallinen et al. 2007	USA	RT = 57.9 ± 6.6 yrs CON = 58.2 ± 6.1 yrs Male Healthy elderly	21 weeks 1-3 d per week	Supervised Free weights, weight machines and body weight 3-6 sets of 5-10 reps at 40-80% 1RM	Continued with habitual activity	Baseline, 21 and 42 weeks	Not reported
Sawyer et al. 2014	Germany	Total cohort = 20.6 ± 2 yrs Male Physically active	8 weeks 3 d per week	Supervision not reported Free weights, weight machines and body weight 3 sets at 8RM	Not reported	Baseline and 8 weeks	Not reported

Schiffer et al. 2011	Denmark	Total cohort = 22.6 ± 1.6 yrs Sex not reported Physically active	12 weeks 3 d per week	Supervised Weight machines 3 sets of 8-10 reps at 70-80% 1RM	Not reported	Baseline and 12 weeks	Supported by the World Anti-Doping Agency.
Schmidt et al. 2014	USA	RT = 69.1 ± 3.1 yrs Football = 68 ± 4 yrs CON = 67.4 ± 2.7 yrs Male Healthy elderly	52 weeks 2 d per week	Supervised Free weights, weight machines and body weight 1-4 weeks: 4 sets of 16-20RM 5-8 weeks: 4 sets of 12RM 9-12 weeks: 4 sets of 10RM 13-52 weeks: 4 sets of 8RM	Continued with habitual activity	Baseline, 12 and 52 weeks	Supported by Nordea-fonden, FIFA Medical Assessment and Research Centre, Preben and Anna Simonsen fonden, and The Danish Ministry of Culture.
Schmitz et al. 2002	USA	RT = 41 ± 6 yrs CON = 42 ± 6 yrs Female Healthy sedentary	15 weeks 2 d per week	Supervised Free weights and weight machines 3 sets of 8-10 reps	Continued with habitual activity	Baseline and 15 weeks Follow up at 39 weeks	Supported by a Minnesota Obesity Centre Pilot and Feasibility Grant, NIH Grant DK50456 from the National Institute of Diabetes and Digestive and Kidney Diseases, University of Minnesota General Clinical Research Centre Grant M01-R00400, Tickle Family Fund for Breast Cancer Research, and Public Health Service Cancer Centre Support Grant P30 CA77398.
Schmitz et al. 2005	Canada	RT = 53.3 ± 8.7 yrs CON = 52.8 ± 7.6 yrs Female Breast cancer	26 weeks 2 d per week	Supervised for initial 13 weeks Free weights and weight machines 3 sets	Usual care of attending clinic appointments and taking medications and continued with habitual activity	Baseline, 24 and 52 weeks	S.G. Komen Foundation grant BCTR0100442 and NIH grants M01-RR00400 and T32 CA09607-15.
Segal et al. 2009	Iran	RT = 66.4 ± 7.6 yrs AT = 66.2 ± 6.8 yrs CON = 66.3 ± 7 yrs Male Prostate cancer	24 weeks 3 d per week	Supervised Free weights and weight machines 2 sets of 8-12 reps at 60-70% 1RM	Usual care of attending clinic appointments and taking medications and continued with habitual activity	Baseline and 24 weeks	Grant 013232 from the Canadian Prostate Cancer Research Fund.
Shamsoddini et al. 2015	South Africa	RT = 45.9 ± 7.3 yrs AT = 39.7 ± 6.3 yrs CON = 45.8 ± 7.3 yrs Males Non-alcoholic fatty liver disease	8 weeks 3 d per week	Supervised Free weights, weight machines and body weight 1-2 weeks: 2 sets of 10 reps at 50% 1RM	Continued with habitual activity	Baseline and 8 weeks	Supported by Exercise Physiology Research Centre and Research Centre for Gastroenterology and Liver Disease in

				3-4 weeks: 2 sets of 10 reps at 60% 1RM 5-6 weeks: 3 sets of 10 reps at 60% 1RM 7-8 weeks: 3 sets of 10 reps at 70% 1RM			Baqiyatallah University of Medical Sciences, Tehran, IR Iran.
Shaw & Shaw 2005	India	Mean age = 28 yrs Male Healthy sedentary	8 weeks 3 d per week	Supervision not reported Free weights, weight machines and body weight 3 sets of 15 reps at 60% 1RM	Continued with habitual activity	Baseline and 8 weeks	Not reported
Shenoy et al. 2009	Canada	RT = 49.6 ± 5.2 yrs AT = 52.2 ± 9.3 yrs CON = 58.4 ± 1.8 yrs Male and female Type 2 diabetes	16 weeks 2 d per week	Supervision not reported Free weights, weight machines and body weight 3 sets of 10 reps	Usual care of continuing with habitual activity and medications	Baseline and 16 weeks	Grant from the University Grants Commission, New Delhi, India.
Sigal et al. 2009	Finland	RT = 54.7 ± 7.5 yrs AT = 53.9 ± 6.6 yrs Combined = 53.5 ± 7.3 yrs CON = 54.8 ± 7.2 yrs Male and female Type 2 diabetes	22 weeks 3 d per week	Supervised Weight machines 2-3 sets of 7-9 reps	Continued with habitual activity	Baseline, 12 and 24 weeks	Grants from the Canadian Institutes of Health Research (grant MCT-44155), the Canadian Diabetes Association, a New Investigator Award from the Canadian Institutes of Health Research, Career Scientist Award from the Ontario Ministry of Health and Long Term Care, a Postgraduate Scholarship from the National Sciences and Engineering Research Council, a New Investigator Award from the Heart and Stroke Foundation, Doctoral Research Award from the Social Sciences and Humanities Research Council and an Ontario Graduate Scholarship.
Sillanpaa et al. 2012 <i>Sillanpaa et al. 2009</i>	USA	RT = 54.2 ± 8.1 yrs AT = 53.7 ± 8.2 yrs Combined = 53.9 ± 8 yrs CON = 54.5 ± 9.1 yrs Male and female	21 weeks Endurance and strength - 2 d a week;	Supervised Free weights, weight machines and body weight 3-4 sets 1-7 weeks: 15-20 reps at 40-60% 1RM	Not reported	Baseline and 21 weeks	Supported, in part, by a grant from the Ministry of Education, Finland, the Central Finland Health Care District, Jyväskylä Finland, Juho Vainio

Sillanpaa et al. 2009		<p>Healthy elderly</p> <p>RT = 54.1 ± 6 yrs AT = 52.6 ± 7.9 yrs Combined = 56.3 ± 6.8 yrs CON = 53.8 ± 7.7 yrs Males</p> <p>RT = 50.8 ± 7.9 yrs AT = 51.7 ± 6.9 yrs Combined = 48.9 ± 6.8 yrs CON = 51.4 ± 7.8 yrs Female Healthy sedentary</p>	Combined 4 d a week	<p>8-14 weeks: 10-12 reps at 60-80% 1RM 15-21 weeks: 6-8 reps at 70-80% 1RM</p>			Foundation, Finland, Sport Institute Foundation, Finland and Yrjö Jahnesson Foundation, Finland.
Simons & Andel 2006	Canada	<p>RT = 84.6 ± 4.5 yrs Walking = 81.6 ± 3.3 yrs CON = 84 ± 3.3 yrs Male and female Healthy elderly</p>	16 weeks 2 d per week	Supervised Weight machines 1 set of 10 reps at 75% 1RM	Not reported	Baseline and 16 weeks	Not reported
Simpson et al. 1992	Korea	<p>RT = 73 ± 4.8 yrs CON = 70 ± 5.7 yrs Male and female Chronic airflow limitation</p>	8 weeks 3 d per week	Supervised Free weights and weight machines 3 sets of 10 reps at 50-85% 1RM	Not reported	Baseline and 8 weeks	Grants from the Medical Research Council of Canada, the Heart and Stroke Foundation of Ontario, and the Ontario Thoracic Society.
Song & Sohng 2012	Brazil	<p>RT = 52.1 ± 12.4 yrs CON = 54.6 ± 10.1 yrs Male and female Haemodialysis</p>	12 weeks 3 d per week	Supervised Free weights and elastic resistance bands 3 sets of 10-15 reps	Not reported	Baseline and 12 weeks	Not reported
Souza et al. 2013	UK	<p>RT = 25.9 ± 6.4 yrs Interval Training = 24 ± 7.5 yrs CON = 22.5 ± 3.9 yrs Male Physically active</p>	8 weeks 2 d a week	Supervision not reported Weight machines 1-2 weeks: 3 sets at 12RM 3-4 weeks: 4 sets at 8-10RM 5-6 weeks: 5 sets at 6-8RM 7-8 weeks: 3 sets at 10-12RM	Not reported	Baseline and 8 weeks	Grants from Fundação de Amparo à Pesquisa do Estado de São Paulo - 2007/02738-6, 2010/51428-2, 2009/03143-1 and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) - 152658/2011-4, 470207/2008-6 and 303162/2008-2.

Stebbing et al. 2013	Belgium	RT = 19 ± 3 yrs CON = 23 ± 2.4 yrs Male and female Physically active	8 weeks (4 weeks of detraining) 3 d per week	Supervision of 2 sessions a week Weight machines and body weight 3 sets of 10 reps at 80% 1RM	Continued with habitual activity	Baseline, 8, 10 and 12 weeks	Not reported
Stegen et al. 2015	Norway	RT = 54.8 ± 7.6 yrs AT = 54 ± 6.6 yrs CON = 54.6 ± 7.1 yrs Combined = 53.6 ± 7.2 yrs Male and female Type 2 diabetes	24 weeks 3 d per week	Supervised Biweekly supervision after week 4 Weight machines 2-3 sets if 7-9 reps	Continued with habitual activity and had the same level of contact from the research team as the exercise group	Baseline and 24 weeks	Grants from the Research Foundation- Flanders (FWO G.0243.11 and G.0352), Canadian Institutes of Health Research (Grant MCT-44155), the Canadian Diabetes Association, a Health Senior Scholar Award from Alberta Innovates-Health Solutions and a Research Chair from the University of Ottawa.
Stensvold et al. 2010	Norway	RT = 50.9 ± 7.6 yrs AT = 49.9 ± 10.1 yrs Combined = 52.9 ± 10.4 yrs CON = 47.3 ± 10.2 yrs Male and female Metabolic syndrome	12 weeks 3 d per week	Supervised Week 1: 60% 1RM 2-13 weeks: 3 sets of 8-12 reps at 80% 1RM	Continued with habitual activity	Baseline and 12 weeks	Supported by the Liaison Committee between the Central Norway Regional Health Authority and the Norwegian University of Science and Technology.
Stensvold et al. 2012	Norway	RT = 50.9 ± 7.6 yrs AT = 49.9 ± 10.1 yrs CON = 47.3 ± 10.2 yrs Male and female Metabolic syndrome	13 weeks 4 d per week	Supervised Week 1: 60% 1RM 2-13 weeks: 3 sets of 8-12 reps at 80% 1RM	Not reported	1 and 12 weeks	Grants from Raagholt's Foundation.
Strasser et al. 2009	Norway	RT = 74 ± 5 yrs AT = 76 ± 5 yrs CON = 74 ± 5 yrs Male and female Healthy elderly	24 weeks 3 d per week	Supervised Free weights, weight machines and body weight 3-6 sets (per week) of 10-15	Continued with habitual activity	Baseline and 24 weeks	Not reported
Tanimoto et al. 2009	Turkey	RT Low intensity = 19.0 ± 0.2 yrs RT High intensity = 19.5 ± 0.1 yrs CON = 19.8 ± 0.2 yrs Male Physically active	13 weeks 2 d per week	Supervision not reported RT Low intensity: 3 sets at 55-60% 1RM) RT High intensity: 3 sets at 85-90% 1RM	Continue with habitual activity	Baseline and 13 weeks	Not reported
Thabitha et al. 2012	India	Chronic obstructive pulmonary disease	3 d per week	Supervised Free weights and weight machines		Baseline and	Not reported

				1-3 sets of 10 reps		endpoint (unknown)	
Tsutsumi et al. 1997	USA	RT high intensity/low volume = 67.8 ± 4.9 yrs RT low intensity/high volume = 68.9 ± 7.5 yrs CON = 69.8 ± 4.6 yrs Male Healthy elderly	12 weeks 3 d per week	Supervised RT high intensity/low volume: 8-12 reps at 75-85% 1RM RT low intensity/high volume: 12-16 reps at 55-65% 1RM	Continued with habitual activity	Baseline and 12 weeks	Not reported
Van de Rest et al. 2014	Netherlands	Placebo: RT = 79.2 ± 6.3 yrs CON = 81.2 ± 7.4 yrs Protein: RT = 77.7 ± 8.8 yrs CON = 77.9 ± 8.1 yrs Male and female Healthy elderly	24 weeks 2 d per week	Supervised Weight machines 3-4 sets of 8-15 reps at 50-75% 1RM	Not reported	Baseline and 24 weeks	Funded by Top Institute Food and Nutrition and co-financed by the Dutch Dairy Association (NZO) and the European Union's Seventh Framework Program under Grant Agreement No. 266486.
Vatani et al. 2011	Iran	Moderate intensity = 20.8 ± 1.5 yrs High intensity = 19.9 ± 0.7 yrs CON = 20.9 ± 1.1 yrs Male Healthy sedentary	6 weeks 3 d per week	Supervision not reported Weight machines MI- 45-55% 1RM in 3 sets with 10-12 reps per set HI - 80-90% 1RM in 3 sets with 4-6 reps per set		Baseline and 6 weeks	Not reported
Venojarvi et al. 2013 Venojarvi et al. 2013	Finland	RT = 54 ± 6.1 yrs Nordic walking = 55 ± 6.2 yrs CON = 54 ± 7.2 yrs RT = 54 ± 1.1 yrs Nordic walking = 55 ± 1 yrs CON = 54 ± 1 yrs Male Sedentary obese	13 weeks 4 d per week 12 weeks 3 d per week	Supervised Free weights and weight machines 5RM	Continued with habitual activity	Baseline and 12 weeks	Grants from the Research Council for Physical Education and Sports, the Finnish Ministry of Education, and Turku University of Applied Sciences R&D program. Grants from the Research Council for Physical Education and Sports, of the Finnish Ministry of Education, Turku University of Applied Sciences R&D program and the COST action CM1001.

Vincent et al. 2002 <i>Vincent et al. 2003</i> <i>Vincent et al. 2003</i>	USA	LEX = 67.6 ± 6.3 yrs HEX = 66.6 ± 6.7 yrs CON = 71 ± 4.7 yrs LEX = 67.4 ± 7 yrs HEX = 66.5 ± 7 yrs CON = 71.1 ± 5 yrs LEX = 67.6 ± 6 yrs HEX = 66.6 ± 7 yrs CON = 71.1 ± 5 yrs Male and female Healthy elderly	24 weeks 3 d per week	Supervised Weight machines LEX – 1 set of 13 reps at 50% 1RM HEX – 1 set of 8 reps at 80% 1RM <i>Supervision not reported</i>	Continued with habitual activity	Baseline and 24 weeks	Not reported
Vincent et al. 2006	USA	Normal weight: RT = 68.1 ± 1.5 yrs CON = 70.9 ± 1.4 yrs Overweight/obese: RT = 66.5 ± 1.2 yrs CON = 71.2 ± 2.1 yrs Male and female Sedentary obese	24 weeks 3 d per week	Supervision not reported Weight machines 1 set of 8-13 reps at 50-80% 1RM	Continued with habitual activity	Baseline and 24 weeks	Supported, in part, by Grants T32-AT00052 and K30-AT-00,060 from the National Centre for Complementary and Alternative Medicine.
Vona et al. 2009	Switzerland	RT = 57 ± 8 yrs AT = 56 ± 6 yrs Combined = 55 ± 9 yrs CON = 58 ± 7 yrs Male and female Cardiac rehabilitation	4 weeks 4 d per week	Supervision not reported Free weights and elastic resistance bands 4 sets of 10-12 reps at 60% 1RM	Continued with habitual activity	Baseline and 4 weeks	Not reported
Wanderley et al. 2013	Portugal	RT = 67.3 ± 4.9 yrs AT = 69.9 ± 5.7 yrs CON = 67.8 ± 5.5 yrs Male and female Healthy elderly	32 weeks 3 d per week	Supervised Weight machines 2 sets of 12-15 reps at 50-60%1RM progressing to 80% 1RM at week 4	Continued with habitual activity	Baseline and 32 weeks	Supported by the Portuguese Foundation for Science and Technology (grant numbers, PTDC/DES/108780/2008 and SFRH/BD/33124/2007).
Weiser & Haber 2007	Austria	RT = 76.1 ± 2.9 yrs CON = not reported Male and female Healthy elderly	12 weeks 2 d per week	Supervision not reported Free weights, weight machines and body weight 1-4 weeks: 1 set of 10-15 reps 5-8 weeks: 3 sets of 10-15 reps 9-12 weeks: 4 sets of 10-15 reps	Not reported	Baseline and 12 weeks	Not reported
Wiles et al. 2010	UK	18-34 years Male Physically active	8 weeks 3 d per week	Supervision not reported Isometric exercise 75% and 95% peak heart rate	Not reported	Baseline, 4 and 8 weeks	Not reported

Yavari et al. 2012	Iran	RT = 51.5 ± 6.3 yrs AT = 48.2 ± 9.2 yrs Combined = 50.9 ± 9.8 yrs CON = 51.5 ± 8.5 yrs Sex not reported Type 2 diabetes	52 weeks 2-3 d per week	Supervised Weight machines 1-4 weeks: 1-2 sets of 8-10 reps at 60% 1RM 4-52 weeks: 3 sets of 8-10 reps at 75-80% 1RM	Continued with habitual activity	Baseline and 52 weeks	Grant from the Tabriz University of Medical Sciences and with a co-operation of Endocrinology Research Centre of Emam Reza hospital (Tabriz University of Medical Sciences).
Yoshizawa et al. 2009	Japan	RT = 47 ± 2 yrs AET = 47 ± 2 yrs CON = 49 ± 3 yrs Female Healthy sedentary	12 weeks 2 d per week	Supervision not reported Weight machines 3 sets of 10 reps at 60% 1RM.	Not reported	Baseline and 12 weeks	Supported by a Grant for Scientific Research from the Ministry of Education, Culture, Sports, Science and Technology of Japan (18300215, 18650186, 21970), and Health and Labour Sciences Research Grants from the Ministry of Health, Labour and Welfare, Japan.
Zambom-Ferraresi et al. 2015	Spain	RT = 68 ± 7 yrs RT + AT = 68 ± 7 yrs CON = 69 ± 5 yrs Male Chronic obstructive pulmonary disease	6 weeks 2 d per week	Supervision not reported Weight machines 3-4 sets of 6-12 reps at 50-70% 1RM	Not reported	Baseline and 6 weeks	Support from the Spanish Ministry of Education and Science (Plan Nacional + D + i 2004-2007 Strategic action: "Sport and physical education" Ref: DEP2007-73220), Health Sciences Department of Government of Navarre. F and a pre-doctoral fellowship from the Public University of Navarre.
Zavanela et al. 2012	Brazil	Age not reported Male Healthy sedentary	24 weeks 3-4 d per week	Supervised Free weights and weight machines 3 sets of 10–12 reps at 10–12RM	Continued with habitual activity	Baseline and 24 weeks	Not reported