

Supplemental Table S1. Search strings for each database.

MEDLINE (Ovid) and Embase (Ovid)
(diabetes mellitus) OR (type 2 diabetes) OR T2D OR (noninsulin dependent diabetes mellitus) OR (glycaemic control) OR (glycemic control) OR (glucose control) OR (glycosylated haemoglobin) OR (glycated haemoglobin) OR (HbA1c) OR (insulin sensitivity) AND (resistance training) OR (strength training) OR (resistance exercis*) OR (muscle strengthening) OR (progressive resistance) AND (controlled clinical trial\$) OR (randomi\$ed controlled trial\$) OR (randomised controlled trial) OR intervention\$ OR (clinical trial\$)
CINAHL (Ebsco) and SPORTDiscus (Ebsco)
(diabetes mellitus) OR (type 2 diabetes) OR T2D OR (noninsulin dependent diabetes mellitus) OR (glycaemic control) OR (glycemic control) OR (glucose control) OR (glycosylated haemoglobin) OR (glycated haemoglobin) OR (HbA1c) OR (insulin sensitivity) AND (resistance training) OR (strength training) OR (resistance exercis*) OR (muscle strengthening) OR (progressive resistance) AND (controlled clinical trial#) OR (randomi#ed controlled trial#) OR (randomised controlled trial) OR (intervention#) OR (clinical trial#)
Scopus
(diabetes mellitus) OR (type 2 diabetes) OR T2D OR (noninsulin dependent diabetes mellitus) OR (glycaemic control) OR (glycemic control) OR (glucose control) OR (glycosylated haemoglobin) OR (glycated haemoglobin) OR (HbA1c) OR (insulin sensitivity) AND (resistance training) OR (strength training) OR (resistance exercis*) OR (muscle strengthening) OR (progressive resistance) AND (controlled clinical trial?) OR (randomi?ed controlled trial?) OR (intervention?) OR (clinical trial?)

		Risk of bias domains					
		D1	D2	D3	D4	D5	Overall
	Bacchi (2012)	+	-	+	+	-	-
	Baldi (2003)	-	X	+	+	-	X
	Baum (2007)	-	X	X	+	-	X
	Brooks (2006)	-	+	+	+	+	-
	Castaneda (2002)	-	-	+	+	-	-
	Cauza (2005)	-	-	+	+	-	-
	Chen (2019)	+	X	+	+	+	X
	Church (2010)	+	-	+	+	-	-
	de Olivera (2012)	-	-	+	+	-	-
	Dunstan (1998)	-	-	+	+	-	-
	Dunstan (2006)	-	-	+	+	-	-
	Hameed (2012)	-	-	+	+	-	-
	Hangping (2019)	+	X	+	+	-	X
	Hsieh (2018)	+	-	+	+	-	-
Study	Kadoglou (2012)	+	X	+	+	-	X
	Ku (2010)	-	X	+	+	-	X
	Kwon (2011)	-	X	X	+	-	X
	Mavros (2013)	+	X	X	+	+	X
	Moe (2011)	+	+	+	+	-	-
	Nadi (2019)	X	-	+	+	-	X
	Ng (2010)	+	-	+	+	-	-
	Plotnikoff (2010)	+	-	+	+	-	-
	Ranasighe (2020)	-	-	X	+	-	X
	Shenoy (2009)	-	-	+	+	-	-
	Sigal (2007)	+	-	+	+	-	-
	Sukala (2012)	-	X	X	+	-	X
	Teychenne (2015)	+	-	+	+	+	-
	Tuillang (2015)	X	X	X	+	-	X
	Yamamoto (2020)	+	-	X	+	+	X
	Yavari (2012)	-	X	X	+	-	X

Domains:
D1: Bias arising from the randomization process.
D2: Bias due to deviations from intended intervention.
D3: Bias due to missing outcome data.
D4: Bias in measurement of the outcome.
D5: Bias in selection of the reported result.

Judgement
X High
- Some concerns
+ Low

Supplemental Table S2. Risk of Bias of included studies.

Supplemental Table S3. Summary of included studies.

Study	Year	Country	Intervention duration	Total N	Age mean (SD)	Sex (n) M/F	Control/Comparison group	Exercise prescription	Intensity	Frequency (week)	Study adherence (%)	Retention (%)	HbA1c outcome
Arora et al*	2009	India	8 weeks	30	53.8 (8.8)	16/14	AE, C	Number of exercises: 7 Sets/repetitions: 3 x sets of 10 reps. Included exercises: Biceps, triceps, upper back, abdominals, knee flexors and extensors. Equipment used: Dumbbells, pulleys, lateral pull down and quadriceps table.	Training started at 60% of 1-RM and was progressed to 100% of 1-RM during the 8-week period.	2	NR	96.70 %	HbA1c levels decreased significantly ($p < 0.05$) in the RT group compared to the control group.
Bacchi et al	2012	Italy	16 weeks	40	57.2 (7.2) AE; 55.6 (7.6) RT	28/12	AE	Number of exercises: 9 Sets/repetitions: 3 x sets of 10 reps/ exercise. Included exercises: NR Equipment used: Weight machines and free weights	In the initial phase intensity was set at 30-50% 1-RM, then gradually increase to 70-80% 1-RM.	3	89% (RT); 93% (AE)	95%	HbA1c significantly ($p < 0.001$) decreased in both the AE (-0.4%, 95% CI, -0.61 to -0.18) and RT (0.35%, 95% CI, -0.59 to -0.10) group.
Baldi et al	2003	New Zealand	10 weeks	18	50.1 (3.9) C; 46.5 (6.3) RT	18/0	C	Number of exercises: 12 Sets/repetitions: 1 x set (week 1) and 2 x sets (week 2-10) of 12 reps. Targeted muscle groups: Upper and lower body, and core. Equipment used: NR	Initial workloads were established as the maximum amount of weight at which the subject could complete 10 (upper) or 15 (lower) repetitions for each exercise. Resistance was increased 5% when the subject successfully completed	3	89.6%	100%	No significant decrease in HbA1c in the RT group ($p = 0.057$) or the control group ($p = 0.64$).

									prescribed circuits and repetitions.				
Baum et al	2007	Germany	12 weeks	40	63.3 (5.9) Stretching; 62.9 (7.3) RT; 62.2 (4) Vibration	24/16	SH, Vibration	Number of exercises: 8 Sets/repetitions: 1 x set (week 1-6) and 2 x sets (week 7-9) of 12 reps, and 3 x sets (week 10-12) of 10 reps. Included exercises: Leg extensions, seated leg flexion, leg press, seated calf raises, lateral pull, horizontal chest press, butterfly, and rowing. Equipment used: Commercially available weight machines (Conex multiform).	During week 1-9, intensity was set at 70% 1-RM and increased in week 10-12 to 80% 1-RM.	3	NR	NR	There was no significant change ($p > 0.05$) in HbA1c across all groups.
Brooks et al	2006	USA	16 weeks	62	66 (11.1) RT; 66 (5.6) C	40/22	C	Number of exercises: 5 Sets/reps: 3 sets of 8 reps Included exercises: Upper back, chest press, leg press, knee extension and flexion. Equipment: Pneumatic machines	Training intensity during weeks 1-8 were 60-80% of baseline 1-RM, during week 10-14 were 70-80% of mid-study 1-RM	3	UC	UC	HbA1c was significantly reduced in the RT compared to the control group ($p < 0.001$).
Castaneda et al	2002	USA	16 weeks	62	66 (8)	22/40	C	Number of exercises: 5 Sets/repetitions: 3 x sets of 8 reps. Included exercises: Chest and leg press, upper back, knee extension and flexion Equipment used: Pneumatic resistance training machines (Keiser Sports Health Equipment, Fresno, CA).	Training intensities during weeks 1-8 were 60-90% of baseline 1-RM, whereas intensities during weeks 10-14 were 70-80% of mid study 1-RM. Intensity was 10% lower during weeks 9 and 15.	3	90 (10) %	96.80 %	HbA1c was significantly reduced in the RT compared to the control group [-12.6 (2) vs +1.2 (1) %, $p = 0.01$].

Cauza et al	2005	Austria	16 weeks	43	56.2 (7.2)	22/21	AE	<p>Number of exercises: 10</p> <p>Sets/repetitions: Week 1-2 unclear. Week 3-16, 3 x sets increasing to 6 x sets per muscle group/ week. Each set consisted of 10-15 reps.</p> <p>Included exercises: bench press, chest cross, shoulder press, pull downs, biceps curls, triceps extensions, situps, leg press, calf raises, and leg extensions.</p> <p>Equipment used: NR.</p>	<p>Week 1-2: Weights were kept to a minimum in order for participants to learn the exercise techniques, adapt their muscles to training and prevent muscle soreness.</p> <p>Week 3-16: training load was increased when participants could successfully complete more than 15 repetitions at a given weight. The new weight was determined by the amount which permitted the participant to complete approximately 10 reps.</p>	3	NR	90.70 %	HbA1c was significantly reduced in the RT group compared to the AE group ($p = 0.04$). The within group reductions in HbA1c were also significant for the RT group ($p < 0.001$), but not for the AE group ($p < 0.05$).
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Chen et al	2019	Taiwan	12 weeks	70	65.2 (2.9) Dynamic 65.0 (3.1) Isometric	29/31	RT	Dynamic group Number of exercises: 10 Sets/repetitions: 5 x sets of 10 reps Included exercises: hip joint abduction/adduction, flexion/extension, external/internal rotation, knee joint flexion/extension and ankle joint plantar/dorsiflexion Equipment used: Seated and open chain exercises Isometric group: similar exercise movements but performed with elastic band. Additional active joint ROM exercises with free body weight and isometric contraction exercises	Used a lighter elastic band for first two weeks, exercise progressed by adding greater stretch to the band to create greater resistance.	3	83% (RT), 88% (ISO)	85.70 %	No significant changes in HbA1c in either the dynamic group ($p = 0.21$, $d = 0.18$) or the isometric group ($p = 0.29$, $d = 0.17$). There were also no significant between group difference of $p = 0.46$.
Church et al	2010	USA	9 months	262	55.8 (8.7)	97/165	AE, COMB, C	Number of exercises: 9 Sets/repetitions: 2 x sets of 10-12 reps of upper body and core exercises, and 3 x sets of 10-12 reps of lower body exercises. Included exercises: Bench press, seated row, shoulder press, pull down, leg press, extension and flexion, crunches and back extensions. Equipment used: NR.	The prescribed weight was increased when the participant was able to perform 12 x repetitions for each set of exercises on two consecutive exercises sessions.	3	13% adhered to <70%	93.50 %	Compared with the control group, there was a significant difference in HbA1c for the COMB group (-0.34%; 95% CI, -0.64% to -0.03%; $p = 0.03$), but not for the RT (-0.16%; 95% CI, -0.46% to 0.15%, $p = 0.32$) or the AE groups (-0.24%; 95% CI, -0.55% to 0.07%; $p = 0.14$).

de Olivera et al	2012	Brazil	12 weeks	48	53.42 (9.82) C; 52.09 (8.71) AE; 54.10 (8.94) RT; 57.9 (9.82) COMB	17/26	AE, COMB, C	Number of exercises: 7 Sets/repetitions: 2 x sets of 10 reps (week 1-2), and 4 x sets of 8-12 reps (week 3-12) Included exercises: Leg press, bench press, lateral pull down, seated rowing, shoulder press, abdominal curls, knee curl. Equipment used: NR	During week 1-2 workload was set at 50% of 1-RM. Week 3-4, loadings were constantly corrected so that all sets were sustained until exhaustion.	3	NR	89.60 %	There was a significant reduction in HbA1c in the RT group compared to the control group ($p < 0.05$).
Dunstan et al	1998	Australia	8 weeks	27	50.3 (6.6) RT; 51.1 (7.0) C	17/10	C	Number of exercises: 10. Sets/repetitions: 2-3 x sets of circuits for 60 minutes, 10-15 reps within 30s for each exercise Included exercises: leg extension, bench press, leg curl, dumbbell biceps curls, behind neck pulldown, calf raise, dumbbell overhead press, seated rowing, forearm extension using pulley (triceps), and abdominal curls Equipment: Weight machines and free weights	During the first 6 exercise sessions, two sets of circuit of 50-55% 1-RM. After the initial 2 weeks, an additional set was included. The format (2 sets followed by 3 sets) was repeated for the remaining 12 sessions after strength testing midway with the adjusted workload.	3	UC	77.80 %	There were no significant changes in HbA1c between the RT and control group ($p > 0.05$).
Dunstan et al	2006	Australia	14 months	60	40 - 80 years	33/27	C	Number of exercises: 9 Sets/repetitions: 3 x sets of 8 reps Included exercises: bench press, leg extension, upright row, lateral pull down, standing leg curl (ankle weights), dumbbell seated shoulder press, dumbbell seated biceps curl, dumbbell triceps kickback and abdominal curls Equipment: Weight machines and free weights	Week 1: resistance set at 50-60% 1-RM. Then progressed with a goal to achieve between 75-85% of 1-RM.	2	68.1 (25) % (C), 67.1 (27.1) % (H)	87.70 %	The centre group showed a significant reduction in HbA1c at both 2- and 14 months (-0.4%; 95% CI -0.6 to -0.2, $p < 0.05$). No significant changes were observed in HbA1c for the home group at 14

													months (-0.1%; 95% CI, -0.4 to 0.3, $p > 0.05$). No between-group differences were observed at each time point.
Gordon et al**	2006	USA	16 weeks	30	67 (7)	15/15	C	Number of exercises: 5 Sets/reps: 3 x sets of 8 reps Included exercises: Knee extension, chest press, leg curl, upper back and leg press Equipment: Exercises were performed on Keiser pneumatic variable resistance equipment.	Training began at 60-65% of 1-RM and progressed to 75-80% of 1-RM by the end of the first 4 weeks. The 1-RM was reassessed at weeks 8 and 16, and workload adjusted accordingly.	3	90 (3) %	100%	HbA1c significantly ($p < 0.01$) declined in the RT group [8.7 (0.5) to 7.7 (0.4) %] while no change was observed in the control group [8.0 (0.4) to 8.3 (0.4) %].
Hameed et al	2012	India	8 weeks	48	44.7 (4.2)	35/13	C	Number of exercises: 5 Sets/repetitions: 3 x sets of 10 reps Included exercises: supine bench press, leg press, lateral pull, leg extension, seated biceps curls Equipment: NR	Week 1-4: 65% of 1-RM Week 4-8: 70% of 1-RM.	2 to 3	85%	85.40 %	Significant ($p < 0.001$) reductions in HbA1c in the RT compared to the control group (0.6 (0.5) %).
Hangping et al	2019	China	6 months	300	65.66 (8.6) PRT; 66.7 (6.7) C	122/143	C	Number of exercises: 4 Sets/ repetitions: NR Included exercises: Chest press, leg press, core pull, and vertical list performed at maximal contraction for 5 seconds. Performed the isometric exercises on BioDensity resistance training equipment. Equipment: Biodensity machine, provides resistance up to multiples of body weight	Increased over the intervention period. No mention of how.	1	UC	88.30 %	There was no significant ($p > 0.05$) difference in HbA1c between the RT and the control group.

Hsieh	2018	Taiwan	12 weeks	30	70.6 (4.2) RT; 71.8 (4.5) C	11/19	C	<p>Number of exercises: 8</p> <p>Sets/reps: 3 x sets of 8-12 reps</p> <p>Included exercises: Chest press, shoulder press, biceps curl, hip abduction, standing hip flexion, leg press, standing calf raise, and abdominal crunch</p> <p>Equipment: Free weights and body weight</p>	The 1-RM test of the upper and lower body was administered at week 0, week 6, and week 12. The training intensity started at 40% to 50% 1-RM (for the chest press and leg press) or at 12 to 13 on the Borg scale (for the shoulder press, biceps curl, hip abduction, standing hip flexion, standing calf raise, and abdominal crunch).	3	87% completed more than 80% of sessions	100%	There was no significant decrease in HbA1c between the RT and control group (time by group effect $p = 0.227$; time effect $p = 0.579$; group effect $p = -0.407$)
Kadoglou et al	2012	Greece	3 months	52	61.3 (2.1)	12/35	C	<p>Number of exercises: 8</p> <p>Sets/reps: 2-3 x sets of 6-8 reps</p> <p>Included exercises: Machine weights (seated leg press, knee extension, knee flexion, chest press, lateral pulldown, overhead press, bicep curls and triceps extension)</p> <p>Equipment: Machine weights</p>	60-80% of 1-RM. 1-RM was adapted within the first 4wks of training.	3	91 (4) %	94%	Significant reductions in HbA1c ($p = 0.002$) was observed in the RT compared to the control group (HbA1c decreased from 7.4 (0.4) to 7.1 (0.6) ($p = 0.043$) in RT group, in control group [7.5 (0.5) to 7.7 (0.6)], $p = 0.252$)

Ku et al	2010	South Korea	12 weeks	44	57.8 (8.1) C; 55.7 (6.2) RT; 55.7 (7.0) AE	0/44	AE, C	Number of exercises: 10 Sets/reps: 3 x sets of 15-20 reps Included exercises: Bicep curl, triceps extension, upright row, shoulder chest press, trunk side bending, seated row, leg flexion and leg extension. Equipment: Elastic band	40 - 50% of maximal exercise capacity	5 (3x gym, 2x home)	UC	UC	There was no significant ($p > 0.05$) change in HbA1c between the groups.
Kwon et al	2011	Korea	12 weeks	40	57 (6.8)	0/40	AE, C	Number of exercises: 11 Sets/ reps: 3 x sets of 10-15 reps. Included exercises: Bicep curls, triceps extensions, upright rows, shoulder chest press, seated rows, trunk side bends, leg press, hip flexions, leg flexions, and leg extensions. Equipment: Resistance bands	Resistance was set at its minimum setting for the first two weeks, and strength was gradually increased by up to 40-50% over the 12-week study period.	3	UC	UC	There was no significant difference in HbA1c between the groups ($p = 0.122$).
Mavros	2013	Australia	12 months	100	68.1 (5.5)	50/50	C	Number of exercises: 7 Sets/reps: 3 x sets of 8 reps. Included exercises: Seated row, chest press, leg press, knee extension, hip flexion, hip extension, and hip abduction. Equipment: Pneumatic resistance equipment	80% of the most recently determined 1-RM, reassessed every 4 weeks. When 1-RM testing was not feasible, resistances were increased by targeting a Borg scale rating of perceived exertion between 15 and 18.	3	UC	UC	There was no significant between-group difference in HbA1c for the RT group compared to the sham exercise group ($p > 0.05$).
Moe et al	2011	Norway	12 weeks	26	57.0 (8)	26/0	AE	Number of exercises: 5 Sets/repetitions: 3 x sets of 8 reps Included exercises: Leg press, chest press, horizontal row, leg extension, and leg	Initially performed 60% of baseline 1-RM. When they successfully performed 3x	3	RT 34 (2); AE 35 (1) (sessions)	UC	Both training groups experienced significant improvements in HbA1c: AE group

								curl Equipment used: Pneumatic resistance training machines (Keiser Sports Health Equipment, Fresno, CA).	sets of 8 reps with correct technique, the resistance was increased in steps suited to the individual (usually 2.5kgs)					saw a decrease in absolute values from 7.10 (0.97)% to 6.55 (0.74)% ($p = 0.001$) and the RT group from 7.21 (1.8)% to 6.85 (0.66)% ($p = 0.024$).
Nadi et al	2019	Iran	12 weeks	45	55.5 (3.1)	0/45	Exercise for peripheral neuropathy (EPN), C	Number of exercises: 9 Sets/repetitions: NR Included exercises: Leg press, arm curls, military press, push ups, knee extensions, heel raises, back extensions, knee sit ups and upright rowing. Equipment: NR	30% of 1-RM	3	UC	UC	There was a significant within-group reduction in HbA1c in both the RT ($p < 0.001$) and the EPN groups ($p < 0.001$), and a significant reduction in HbA1c between groups ($p < 0.001$)	
Ng et al	2010	Singapore	8 weeks	60	57 (7) RT; 59 (7) AE	19/41	AE	Number of exercises: 9 Sets/repetitions: 3x sets of 10 reps Included exercises: Seated leg press, straight leg raises, hamstring curl machine, bicep curls, triceps curls, lateral raises, front raises, hip abduction, hip extension Equipment: Dumbbells, hamstring curls machine, seated leg press machine, gluteal machine	Week 1-4: 65% of the 1-RM. Then progressed to 70% of their predicted 1-RM.	2-3	82%	81.70%	There was no significant difference in HbA1c between the RT and the AE (-0.1%; 95% CI -0.5 to 0.3, $p > 0.05$).	

Plotnikoff et al	2010	Australia	16 weeks	48	55 (12) RT; 54 (12) C	16/32	C	<p>Number of exercises: 8</p> <p>Sets/repetitions: Week 1: 2 x sets of 10-12 reps; Week 2: 3 x sets of each exercise; Week 9: 2 x sets 8-10 reps; Week 10: 3x sets of 8-10 reps; Week 16 x 2 sets of 8-10 reps</p> <p>Included exercises: Squats, seated row, chest press, shoulder press, lunges, lateral pull-down, standing triceps extensions, standing pulley abdominal twists, biceps curls, triceps press, reverse rhomboid flies, lateral pulley deltoid raise and pulley abdominal curls</p> <p>Equipment: Weight machines and dumbbells</p>	1-RM testing was performed at the start of weeks 2 and 10 to allow exercise intensity to be accurately prescribed. Week 3-8: 70-80% 1-RM. Week 9: 70% of 1-RM Week 10-15: 70-85% of 1-RM. Week 16 70% of 1-RM.	3	71 (22) %	85.40 %	No significant reduction in HbA1c levels were observed between the RT and the control groups (0.3; 95% CI, 0.1 to 0.4, $p = 0.27$)
Ranasinghe et al	2021	Sri Lanka	12 weeks	86	50.1 (8.7)	40/46	AE, C	<p>Number of exercises: 7</p> <p>Sets/repetitions: 3 x sets of 8-10 reps</p> <p>Included exercises: Shoulder press, lateral pull down, biceps curl, leg press/squat, leg extension, heel lifts, abdominal crunches)</p> <p>Equipment: Body resistance, free weights and machine weights</p>	Initial resistance for each exercise was determined by 1-RM. Intensity was set at 50-60% 1-RM and progressed every 2-weeks according to the individual's capacity/was increased from 5% of the previous intensity while maintaining 8 x 3 repetitions.	2	In the RT group, n=17 participants missed >2 sessions in a row.	81.10 %	There was no significant ($p > 0.05$) change HbA1c in the RT compared to the control group. A subgroup ($n = 32$) analysis limited to participants with a high baseline HbA1c ($>7.5\%$) found significant reductions in HbA1c in the RT compared to the control group (-0.57% ; 95% CI, 1.3% to 0.6%, $p = 0.03$).

Shenoy et al	2009	India	16 weeks	30	49.6 (5.2) RT; 52.2 (9.3) AE; 58.4 (1.8) C	16/14	AE, C	<p>Number of exercises: 7</p> <p>Sets/reps: 3 x sets of 10 reps</p> <p>Included exercises: Biceps Curls, Triceps Curls, Front lateral pull down, back lateral pull down, Knee extension exercises on quadriceps table, Hamstring curls using quadriceps table and Abdominal curl</p> <p>Equipment: Weights, lateral pull machine and quadriceps table</p>	60% of 1-RM at the start and then progressed to 100% during first 8 weeks. Retested 1-RM again after 8 weeks and exercises again progressed from 60% to 100% of new 1-RM for the remainder 8-weeks.	2	97%	UC	HbA1c levels decreased significantly in the RT [7.57 (1.4) to 5.74 (0.8)] and in AE group [8.11 (0.9) to 6.78 (1.3)], ($p = 0.002$).
Sigal et al	2007	Canada	6 months	251	53.5 (7.3) COMB ; 53.9 (6.6) AE; 54.7 (7.5) RT; 54.8 (7.2) C	160/91	AE, COMB, C	<p>Number of exercises: 7</p> <p>Sets/repetitions: 2-3 x sets of 7-9 reps</p> <p>Included exercises: Abdominal crunches, seated row, seated biceps curls, supine bench press, leg press, shoulder press, leg extension, lateral pulldown, triceps pushdown, sitting chest press, upright row, and leg curls.</p> <p>Equipment: Weight machines</p>	Weight and resistance increased by 5-10 pounds when participants could perform more than 8 repetitions of an exercise while maintaining proper form.	3	85%	88.10 %	The absolute change in HbA1c in the exercise groups compared with the control group was (-0.51 percentage points; 95% CI, -0.87 to -0.14, $p = 0.007$) in the AE group and (-0.38 percentage points, 95% CI, -0.72 to -0.22, $p = 0.038$) in the RT group. Combined exercise training resulted in an additional change in the HbA1c value of (-0.46 percentage point, CI, -0.83 to -0.09, $p = 0.014$) compared with AE alone and (-0.59 percentage points; CI, -0.95 to -0.23, $p = 0.001$) compared with RT alone.

Sukala et al	2012	New Zealand	16 weeks	26	49.3 (5.3)	5/13	AE	Number of exercises: 8 Sets/repetitions: 2-3 x sets Included exercises: Seated leg press, knee extension, knee flexion, chest press, lateral pulldown, overhead press, biceps curls, and triceps extension Equipment: Machine weights	Loads increased by 5% when participants could perform 10 reps. Program gradually progressed from 65-85% of their HR reserve during the first two weeks of training.	3	67 (18) %	69.20 %	No significant ($p > 0.05$) change in HbA1c was noted within or between groups after the 16-week intervention period.
Teychenne et al	2015	Australia	12 months	318	55.5 (8.6) Standard; 56.3 (8.7) Enhanced	131/187	RT	Number of exercises: NR Sets/repetitions: NR Included exercises: NR Equipment: Isotonic RT equipment (pin weighted machines and free weights)	12 months trial consisting of 6-month adoption phase followed by 6-month maintenance phase. Participants in standard training group followed an initial eight-week Lift for Life Program. Participants in the enhanced training also followed similar program but with additional motivationally tailored behavioural counselling and print information. There is an emphasis on continual progressive overload (increments of 2-10%)	2-3	40% completed 3 sessions a week. At 12 months n=47 maintained 3 sessions/week (n = 15 Standard group, and n = 32 Enhanced group).	86.50 %	For participants with T2DM, the enhanced group showed significant reduction in HbA1c at 6- and 12 months. The adjusted between group differences was -0.3% ($p < 0.05$) at 6-months and -0.4% ($p < 0.05$) at 12 months.

Tuillang et al	2015	Spain	12 weeks (6 weeks training and 6 weeks detraining)	30	48.1 (1.7)	9/21	AE	Number of exercises: 8 Sets/repetitions: 1 x 2 x 3 protocol (max reps for 1 min, 2 min rest, for 3x series) Included exercises: Elbow flexors and extensors, wrist flexors and extensors, knee flexors and extensors and ankle flexors and extensors Equipment: NR	NR	3	21% completed less than 70%	UC	HbA1c significantly ($p < 0.05$) decreased from 7.2 (0.6) to 6.7 (0.7) in the RT group ($d = -0.72$) and from 6.7 (3.1) to 6.3 (0.8) in the AE group ($d = -0.79$).
Yamamoto et al	2020	Japan	48 weeks	53	72.9 (2.4)	28/25	C	Number of exercises: 6 Sets/repetitions: 20 repetitions of each exercise Included exercises: Tube fly, front raise, hammer curl, leg extension, calf raises, squat Equipment: Elastic bands	Load increased when participants could comfortably complete the 20 repetitions.	Daily	87.8% (self-reported)	88.30%	There was no significant improvement in HbA1c when comparing the RT group and the control group ($p > 0.05$).
Yavari et al	2012	Iran	52 weeks	80	50.5 (8.45)	37/43	AE, COMB, C	Number of exercises: 10 Sets/reps: 1-2 x sets (first month); then 3 x sets of 8-10 reps Included exercises: Bench press, seated row, shoulder press, chest press, lateral pulldown, abdominal crunches, leg press, leg extension, triceps pushdown and seated bicep curls Equipment: Weight machine	Week 1-2 60% 1-RM and progressed to 75-80% 1-RM.	2-3	UC	75%	HbA1c was significantly reduced across the three exercise groups: AE group -1.33 (1.08) ($p < 0.001$), RT group -0.55 (0.47) ($p < 0.001$), Combined group -1.74 (0.97) ($p < 0.001$). No significant change in the control group.

C = Control group; COMB = Combined group; AE = Aerobic group; RT = Resistance group. 1 RM = 1-Repetition maximum

Supplemental Table S4. Duration of diabetes, cardiovascular disease risk factors and medication usage among studies.

Author	Year	Duration of diabetes, years (mean, SD/SEM)	CVD risk factors	Medications (lipid medications and glycaemic control medications)
Bacchi	2012	AE: 10.7 (SD = 6.3) RT: 9.7 (SD = 7.6)	AE group, mean (SD): - BMI, kg/m ² : 29.5 (4.9) - Waist circumference, cm: 99.0 (11.6) - Fat mass, %: 31.2 (6.3) - Systolic BP, mmHg: 136 (16.5) - Diastolic BP, mmHg: 82 (8.0) RT group, mean (SD): - BMI, kg/m ² : 29.2 (4.5) - Waist circumference, cm: 99.2 (12.1) - Fat mass, %: 30.3 (8.0) - Systolic BP, mmHg: 128 (15.7) - Diastolic BP, mmHg: 78 (8.9)	AE group, n (%): - Diet only: 1 (5) - Metformin: 17 (85) - Thiazolidinediones 3 (5) - Sulfonylureas 6 (30) - Meglitinides 1 (5) RT group, n (%): - Diet only: 2 (10) - Metformin: 16 (80) - Thiazolidinediones 0 (0) - Sulfonylureas 5 (25) - Meglitinides 4 (20) Insulin use was not recorded in this study.
Baldi	2003	All subjects had been diagnosed with T2DM for > 3 years. Did not specify duration	RT group, mean (SEM) - BMI, kg/m ² : 34.3 (3.2) - Body fat %: 32.4 (1.1) - Total cholesterol: 5.7 (0.3) - Total/HDL cholesterol: 4.9 (0.7) - Triglycerides: 1.8 (0.3) - Free fatty acids: 0.6 (0.1) CON group, mean (SEM) - BMI, kg/m ² : 36.4 (3.1) - Body fat: 30.7 (2.2) - Total cholesterol: 5.4 (0.4) - Total HDL cholesterol: 4.9 (0.2) - Triglycerides: 2.0 (0.3) - Free fatty acids: 0.9 (0.1)	RT group, n: - Biguanides: 7 - Sulfonylureas: 3 CON group, n: - Biguanides: 5 - Sulfonylureas: 4 No participants were taking insulin.
Baum	2007	NR	Stretching group, mean (SD): - Systolic BP, mmHg: 136 (13.8) - Diastolic BP, mmHg: 83 (7.0) RT group, mean (SD): - Systolic BP, mmHg: 142 (16.2)	All patients used oral medications but did not use insulin. The types of medications were NR.

			<ul style="list-style-type: none"> - Diastolic BP, mmHg: 87 (10.4) <p>Vibration, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 137 (15.1) - Diastolic BP, mmHg: 79 (7.3) 	
Brooks	2007	RT: 8 (SE = 1) CON: 11 (SE = 1)	<p>RT group, mean (SE):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 30.9 (SE = 1.1) - Waist circumference, cm: 99.7 (SE = 2.3) - Fat mass, kg: 35.0 (SE = 2.2) <p>CON group, mean (SE):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 31.2 (SE = 1.0) - Waist circumference, cm: 100.1 (SE = 2.6) - Fat mass, kg: 33.7 (SE = 2.4) 	<p>RT group, n:</p> <ul style="list-style-type: none"> - Insulin Therapy: 15 <p>CON group, n:</p> <ul style="list-style-type: none"> - Insulin Therapy: 5
Castaneda	2002	RT group: 8 (SE = 1) CON group: 11 (SE = 1)	<p>RT group, mean (SE):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 30.9 (SE = 1.1) - Hypertension >130/85 mmHg: 14 (4) [48% (14)] - Cardiovascular disease: 17 (5) [55% (17%)] - Current smoker: 0 (0%) <p>CON group, mean (SE):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 31.2 (SE = 1.0) - Hypertension >130/85 mmHg: 21 (6) [69% (20%)] - Cardiovascular disease: 19 (6) [64% (20%)] - Current smoker: 2 (0) [7% (2%)] 	<p>RT group, n (%):</p> <ul style="list-style-type: none"> - Insulin use: 5 (17, 5) - Sulfonylureas: 18 (61, 19) - Biguanides: 10 (34, 10) - Troglitazone: 3 (10, 3) <p>CON group, n (%):</p> <ul style="list-style-type: none"> - Insulin use: 15 (48, 15) - Sulfonylureas: 16 (52, 16) - Biguanides: 16 (52, 15) - Troglitazone: 3 (10, 3) <p>31 participants each group</p>
Cauza	2005	RT: 8.83 (SE = 3.5) AE: 9.2 (SE = 1.71)	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 141 (SE = 5) - Diastolic BP, mmHg: 87 (SE = 2) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 138 (SE = 3) - Diastolic BP, mmHg: 84 (SE = 2) 	<p>AE group, n:</p> <ul style="list-style-type: none"> - Metformin: 13 - Sulfonylureas: 11 - Insulin therapy: 3 - Statins: 7 <p>RT group, n:</p> <ul style="list-style-type: none"> - Metformin: 15 - Sulfonylureas: 11 - Insulin therapy: 4

				- Statins: 8
Chen	2020	Dynamic group: 9.13 (SD = 7.40) Isometric group: 11.46 (SD = 7.77)	Dynamic group, mean (SD): - BMI, kg/m ² : 26.68 (4.17) Isometric group, mean (SD): - BMI, kg/m ² : 28.11 (4.93)	NR
Church	2010	AE group: 7.4 (SD = 6.0) RT group: 7.2 (SD = 5.5) CON group: 7.2 (SD = 5.2)	AE group, mean (SD): - Current smoker, n (%): 2 (2.8) - Former smoker, n (%): 21 (29.2) - BMI, kg/m ² : 34.7 (6.1) - Waist circumference, cm: 111.3 (14.2) - Fat mass, kg: 35.7 (10.1) - Body fat, %: 37.1 (7.7) RT group, mean (SD): - Current smoker, n (%): 3 (4.1) - Former smoker, n (%): 25 (34.3) - BMI, kg/m ² : 34.1 (5.4) - Waist circumference, cm: 110.9 (12.2) - Fat mass, kg: 36.1 (10.1) - Body fat, %: 37.0 (7.6) CON group, mean (SD): - Current smoker, n (%): 2 (4.9) - Former smoker, n (%): 13 (31.7) - BMI, kg/m ² : 34.8 (6.2) - Waist circumference, cm: 110.6 (14.4) - Fat mass, kg: 37.9 (11.8) - Body fat, %: 38.5 (7.0)	AE group, n (%): - Biguanide: 48 (66.7) - Thiazolidinediones: 14 (19.4) - Sulfonylurea: 17 (23.6) - Incretin mimetics: 6 (8.3) - DPP-4 inhibitors: 4 (5.6) - Meglitinides: 1 (1.4) - Insulin: 15 (20.8) - Combination drugs: 9 (12.5) RT group, n (%): - Biguanide: 46 (63.0) - Thiazolidinediones: 11 (15.1) - Sulfonylurea: 18 (24.7) - Incretin mimetics: 10 (13.7) - DPP-4 inhibitors: 6 (8.2) - Meglitinides: 3 (4.1) - Insulin: 9 (12.3) - Combination drugs: 14 (19.2) CON group, n (%): - Biguanide: 23 (56.1) - Thiazolidinediones: 10 (24.4) - Sulfonylurea: 11 (26.8) - Incretin mimetics: 3 (7.3) - DPP-4 inhibitors: 1 (2.4) - Meglitinides: 2 (4.9) - Insulin: 7 (17.1) - Combination drugs: 8 (19.5)
de Olivera	2012	AE group: 5.45 (SD = 4.12) RT group: 7.70 (SD = 3.90)	AE group, mean (SD): - Waist circumference, cm: 96.17 (10.42) - BMI, kg/m ² : 29.30 (2.09)	AE group, n: - Sulfonylurea: 5 - Metformin: 10 - Sulfonylurea and metformin: 5

		<p>CON group: 5.25 (SD = 3.52)</p>	<ul style="list-style-type: none"> - Body fat, %: 37.12 (16.32) - Waist-to-hip ratio: 1.01 (0.06) - Systolic BP, mmHg: 141.10 (13.60) - Diastolic BP, mmHg: 88.80 (12.60) - HDL-Chl (mg dL-1): 47.15 (9.54) - LDL-Chl (mg dL-1): 107.93 (21.77) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - Waist circumference, cm: 95.63 (7.90) - BMI, kg/m²: 31.29 (4.08) - Body fat, %: 36.41 (10.21) - Waist-to-hip ratio: 0.85 (0.13) - Systolic BP, mmHg: 135.00 (20.00) - Diastolic BP, mmHg: 83.70 (14.00) - HDL-Chl (mg dL-1): 39.38 (7.28) - LDL-Chl (mg dL-1): 89.29 (31.07) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - Waist circumference, cm: 92.20 (13.12) - BMI, kg/m²: 30.03 (4.90) - Body fat, %: 36.45 (16.41) - Waist-to-hip ratio: 0.98 (0.07) - Systolic BP, mmHg: 135.80 (16.20) - Diastolic BP, mmHg: 85.0 (6.70) - HDL-Chl(mg dL-1): 45.13 (8.53) - LDL-Chl (mg dL-1): 93.58 (36.88) 	<ul style="list-style-type: none"> - DPP-4 inhibitors: 0 - Lipid-lowering drug therapy: 3 - Antihypertensive: 7 <p>RT group, n:</p> <ul style="list-style-type: none"> - Sulfonylurea: 7 - Metformin: 8 - Sulfonylurea and metformin: 5 - DPP-4 inhibitors: 0 - Lipid-lowering drug therapy: 3 - Antihypertensive: 8 <p>CON group, n:</p> <ul style="list-style-type: none"> - Sulfonylurea: 2 - Metformin: 7 - Sulfonylurea and metformin: 2 - DPP-4 inhibitors: 0 - Lipid-lowering drug therapy: 1 - Antihypertensive: 4 <p>Insulin use NR.</p>
Dunstan	1998	<p>RT group: 5.3 (SE = 1.4)</p> <p>CON group: 5.1 (SE = 1.2)</p>	<p>RT group:</p> <ul style="list-style-type: none"> - BMI, kg/m²: 28.3 (SE = 0.8) - Waist-to-hip ratio: 0.98 (SE = 0.01) - Systolic BP, mmHg: 126 (SE = 3.0) - Diastolic BP, mmHg: 73 (SE = 2.0) - Resting heart rate, beats/min: 77 (SE = 3.0) <p>CON group:</p> <ul style="list-style-type: none"> - BMI, kg/m²: 30.1 (SE = 1.1) - Waist-to-hip ratio: 1.03 (SE = 0.1) - Systolic BP, mmHg: 130 (SE = 4.0) 	<p>RT group, n:</p> <ul style="list-style-type: none"> - Oral hypoglycaemic medication: 7 - No medication: 4 <p>CON group, n:</p> <ul style="list-style-type: none"> - Oral hypoglycaemic medication: 8 - No medication: 2

			<ul style="list-style-type: none"> - Diastolic BP, mmHg: 72 (SE = 2.0) - Resting heart rate, beats/min: 78 (SE = 3.7) 	
Dunstan	2006	NR	NR	NR
Hameed	2012	NR	<p>RT group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.1 (4.7) - Systolic BP, mmHg: 125.7 (11.0) - Diastolic BP, mmHg: 79.0 (5.7) - Waist circumference, cm: 91.3 (12.1) - Total cholesterol, mmol/L: 5.5 (1.4) - Triglycerides, mmol/L: 2.4 (1.1) - HDL-C, mmol/L: 1.2 (0.2) - LDL-C, mmol/L: 3.0 (1.1) <p>CON group:</p> <ul style="list-style-type: none"> - BMI, kg/m²: 24.5 (4.9) - Systolic BP, mmHg: 134.4 (9.9) - Diastolic BP, mmHg: 79.6 (6.4) - Waist circumference, cm: 92.1 (11.4) - Total cholesterol, mmol/L: 5.0 (0.7) - Triglycerides, mmol/L: 1.8 (0.6) - HDL-C, mmol/L: 1.4 (0.2) - LDL-C, mmol/L: 2.7 (0.7) 	<p>RT group, n:</p> <ul style="list-style-type: none"> - Biguanide: 16 - Sulfonylurea: 8 <p>CON group, n:</p> <ul style="list-style-type: none"> - Biguanide: 18 - Sulfonylurea: 6 <p>Insulin use NR.</p>
Hangping	2019	<p>RT group, n (median 25%, 75%): 9 (3, 15)</p> <p>CON group, n (median 25%, 75%): 8 (4, 12)</p>	<p>RT group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25.04 (3.32) - Waist-to-height ratio: 0.90 (0.06) - Systolic BP, mmHg: 128.10 (14.24) - Diastolic BP, mmHg: 78.29 (8.56) - HDL-C, mmol/L: 1.25 (0.32) - LDL-C, mmol/L: 3.22 (0.93) - Total cholesterol, mmol/L: 4.95 (1.23) - Triglycerides, mmol/L (median 25%, 75%): 1.38 (0.95, 1.99) <p>CON group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25.31 (3.31) - Waist-to-height ratio: 0.89 (0.07) - Systolic BP, mmHg: 124.52 (15.03) 	NR

			<ul style="list-style-type: none"> - Diastolic BP, mmHg: 78.82 (8.75) - HDL-C, mmol/L: 1.25 (0.30) - LDL-C, mmol/L: 3.28 (0.87) - Total cholesterol, mmol/L: 4.99 (1.16) - Triglycerides, mmol/L (median 25%, 75%): 1.42 (0.92, 2.04) 	
Hsieh	2018	<p>RT group: 11.1 (SD = 7.8)</p> <p>CON group: 13.9 (SD = 6.7)</p>	<p>RT group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25.6 (2.6) - Systolic BP, mmHg: 127.3 (13.0) - Diastolic BP, mmHg: 67.1 (9.0) - Waist circumference, cm: 90.1 (8.4) - Body fat, %: 34.7 (10.0) <p>CON group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25.4 (3.4) - Systolic BP, mmHg: 132.4 (11.6) - Diastolic BP, mmHg: 70.3 (10.2) - Waist circumference, cm: 89.9 (8.2) - Body fat, %: 33.5 (12.0) 	NR
Kadoglou	2012	<p>RT group: 6.0 (SD = 2.8)</p> <p>CON group: 5.6 (SD = 1.9)</p>	<p>RT group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 32.74 (4.05) - Systolic BP, mmHg: 121.0 (9.0) - Diastolic BP, mmHg: 71.0 (9.0) - Body fat, %: 36.5 (8.1) - Waist-to-hip ratio: 0.992 (0.099) - HDL-C, mmol/L: 51 (15) - LDL-C, mmol/L: 155 (26) - Total cholesterol, mmol/L: 238 (24.0) - Triglycerides, mmol/L: 159.0 (60.0) - Smokers: 6 (26.1%) <p>CON group:</p> <ul style="list-style-type: none"> - BMI, kg/m²: 31.58 (5.71) - Systolic BP, mmHg: 144.0 (16.0) - Diastolic BP, mmHg: 81.0 (9.0) - Body fat, %: 34.2 (6.9) - Waist-to-hip ratio: 0.956 (0.103) - HDL-C, mmol/L: 52.0 (12.0) - LDL-C, mmol/L: 148.0 (51.0) 	<p>RT group, n:</p> <ul style="list-style-type: none"> - Sulfonylurea: 2 - Metformin: 4 - Sulfonylurea and metformin: 12 - DPP-4 inhibitors and Metformin: 5 - Statins: 14 <p>CON group, n:</p> <ul style="list-style-type: none"> - Sulfonylurea: 2 - Metformin: 6 - Sulfonylurea and metformin: 10 - DPP-4 inhibitors and Metformin: 6 - Statins 13

			<ul style="list-style-type: none"> - Total cholesterol, mmol/L: 239.0 (49.0) - Triglycerides, mmol/L: 195.0 (52.0) - Smokers: 7 (29.2%) 	
Ku	2010	<p>AE group: 6.6 (SD = 5.3)</p> <p>RT group: 5.7 (SD = 4.8)</p> <p>CON group: 5.8 (SD = 6.1)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.1 (2.4) - Waist circumference, cm: 89.0 (5.0) - Systolic BP, mmHg: 122.0 (18.0) - Diastolic BP, mmHg: 73.0 (20.0) - Total cholesterol, mmol/L: 157.0 (38.0) - Triglycerides, mmol/L: 126.0 (73.0) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.1 (2.3) - Waist circumference, cm: 90.0 (5.0) - Systolic BP, mmHg: 133.0 (19.0) - Diastolic BP, mmHg: 86.0 (11.0) - Total cholesterol, mmol/L: 156.0 (25.0) - Triglycerides, mmol/L: 185.0 (113.0) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.4 (2.8) - Waist circumference, cm: 90.0 (12.0) - Systolic BP, mmHg: 125.0 (19.0) - Diastolic BP, mmHg: 80.0 (12.0) - Total cholesterol, mmol/L: 156.0 (38.0) - Triglycerides, mmol/L: 174.0 (153.0) 	<p>All patients had taken > 1g/day metformin for > 3 months previously and were on a stable antidiabetic regimen (sulphonylurea and metformin).</p> <p>Patients receiving insulin were excluded.</p>
Kwon	2011	<p>AE group: 6.6 (SD = 6.7)</p> <p>RT group: 4.6 (SD = 2.7)</p> <p>CON group: 4.9 (SD = 4.7)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 26.7 (2.6) - Waist circumference, cm: 88.4 (6.0) - HDL-C, mmol/L: 42.6 (9.8) - LDL-C, mmol/L: 114.8 (41.1) - Total cholesterol, mmol/L: 171.8 (45.3) - Triglycerides, mmol/L: 145.2 (65.9) <p>RT group, mean (SD):</p>	<p>Only subjects who were taking over 1000mg metformin per day were selected. Insulin use was NR.</p>

			<ul style="list-style-type: none"> - BMI, kg/m²: 27.4 (2.1) - Waist circumference, cm: 90.8 (4.8) - HDL-C, mmol/L: 42.8 (8.5) - LDL-C, mmol/L: 89.7 (26.8) - Total cholesterol, mmol/L: 157.8 (25.4) - Triglycerides, mmol/L: 193.0 (114.3) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.0 (2.3) - Waist circumference, cm: 90.4 (5.5) - HDL-C, mmol/L: 44.4 (18.6) - LDL-C, mmol/L: 102.1 (40.2) - Total cholesterol, mmol/L: 173.1 (51.0) - Triglycerides, mmol/L: 168.0 (161.0) 	
Mavros	2012	RT group: 7.0 (SD = 5.0) SHAM group: 9.0 (SD = 7.0)	<p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 31.0 (4.6) - Total fat mass: 31.4 (10.6) - VAT, cm²: 215 (81.8) <p>SHAM group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 31.6 (6.1) - Total fat mass: 31.4 (10.6) - VAT, cm²: 211.3 (93.9) 	<p>RT group, n:</p> <ul style="list-style-type: none"> - Insulin: 7 - Metformin: 36 <p>SHAM group, n:</p> <ul style="list-style-type: none"> - Insulin: 9 - Metformin: 48
Moe	2011	AE group: 4.69 (SD = 3.85) RT group: 4.85 (SD = 4.25)	<p>AE group:</p> <ul style="list-style-type: none"> - BMI, kg/m², mean (SD): 30.75(3.34) - Daily smoker, n (%): 2 (15.4) - Daily user of snuff/chewing tobacco, n (%): 1 (7.7) <p>RT group:</p> <ul style="list-style-type: none"> - BMI, kg/m², mean (SD): 29.33 (4.01) - Daily smoker, n (%): 0 (0.0) - Daily user of snuff/chewing tobacco, n (%): 1 (7.7) 	<p>AE group, n (%):</p> <ul style="list-style-type: none"> - Metformin: 7 (53.85) <p>RT group, n (%):</p> <ul style="list-style-type: none"> - Metformin: 10 (76.92) <p>Metformin was the only anti-diabetic medication taken by participants.</p>
Nadi	2019	RT group: 11.20 (SD = 1.89) CON group: 11.20 (SD = 3.21)	<p>RT group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 30.41 (0.12) - Heart rate, beats/min: 73.0 (10.10) - Systolic BP, mmHg: 142.0 (16.01) 	NR

			<p>CON group, n (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.21 (2.61) - Heart rate, beats/min: 74.0 (11.10) - Systolic BP, mmHg: 139.0 (16.10) 	
Ng	2010	<p>AE group: 12 (SD = 9.0) RT group: 11 (SD = 9.0)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.8 (5.2) - Body fat, %: 33.9 (5.2) - Waist circumference, cm: 91.9 (11.6) - Waist-to-hip ratio: 0.91 (0.06) - HDL-C, mmol/L: 1.4 (0.4) - LDL-C, mmol/L: 2.8 (0.9) - Total cholesterol, mmol/L: 5.1 (0.9) - Triglycerides, mmol/L: 1.8 (0.8) - Systolic BP, mmHg: 133 (14) - Diastolic BP, mmHg: 78 (11) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27.4 (4.7) - Body fat, %: 33.1 (6.2) - Waist circumference, cm: 90.8 (11.2) - Waist-to-hip ratio: 0.92 (0.08) - HDL-C, mmol/L: 1.3 (0.4) - LDL-C, mmol/L: 3.1 (1.5) - Total cholesterol, mmol/L: 5.4 (1.6) - Triglycerides, mmol/L: 3.1 (3.6) - Systolic BP, mmHg: 123 (12) - Diastolic BP, mmHg: 76 (9) 	<p>AE group, n (%):</p> <ul style="list-style-type: none"> - Sulfonylurea: 18 (60) - Metformin: 25 (83) - Glitazone: 8 (27) - Alpha glucosidase: 7 (23) - Combination of oral hypoglycaemic agent and insulin: 8 (27) <p>RT group, n (%):</p> <ul style="list-style-type: none"> - Sulfonylurea: 15 (50) - Metformin: 24 (80) - Glitazone: 10 (33) - Alpha glucosidase: 5 (17) - Combination of oral hypoglycaemic agent and insulin: 8 (27)
Plotnikoff	2010	NR	<p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 35.3 (8.5) - Body fat, %: 41.9 (6.7) - Waist circumference, cm: 110.0 (16.6) - Hip circumference, cm: 118.2 (16.1) - Cholesterol ratio: 4.2 (1.5) - Waist-to-hip ratio: 0.9 (0.1) - HDL-C, mmol/L: 1.20 (0.4) - LDL-C, mmol/L: 2.64 (0.9) - Triglycerides, mmol/L: 1.92 (1.3) 	

			<ul style="list-style-type: none"> - Systolic BP, mmHg: 125.1 (12.7) - Diastolic BP, mmHg: 75.3 (8.1) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 35.9 (5.2) - Body fat, %: 41.5 (7.4) - Waist circumference, cm: 115.4 (14.1) - Hip circumference, cm: 121.1 (14.8) - Cholesterol ratio: 4.2 (1.1) - Waist-to-hip ratio: 1.0 (0.1) - HDL-C, mmol/L: 1.17 (0.2) - LDL-C, mmol/L: 2.62 (0.8) - Triglycerides, mmol/L: 2.14 (1.4) - Systolic BP, mmHg: 127.0 (12.6) - Diastolic BP, mmHg: 75.0 (8.9) 	
Ranasinghe	2021	<p>AE group: 6.3 (SD = 3.7)</p> <p>RT group: 6.0 (SD = 5.1)</p> <p>CON group: 5.4 (SD = 4.4)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 26.77 (SE = 0.8) - Body fat, %: 36.8 (SE = 1.5) - Waist circumference, cm: 91.4 (SE = 1.8) - Systolic BP, mmHg: 129 (SE = 2.8) - Diastolic BP, mmHg: 79 (SE = 1.6) - Triglycerides, mmol/L: 108.9 (SE = 10.1) - Total cholesterol, mmol/L: 167.5 (SE = 7.8) - HDL-C, mmol/L: 51.4 (SE = 2.2) - LDL-C, mmol/L: 93.8 (SE = 7.1) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 26.86 (0.8) - Body fat, %: 37.3 (1.5) - Waist circumference, cm: 91.6 (1.9) - Systolic BP, mmHg: 126 (2.7) - Diastolic BP, mmHg: 77 (1.4) - Triglycerides, mmol/L: 106.1 (9.9) - Total cholesterol, mmol/L: 155.0 (7.7) - HDL-C, mmol/L: 49.0 (2.2) 	<p>AE group, n (%):</p> <ul style="list-style-type: none"> - Biguanides: 19 (67.9%) - Sulfonylurea: 10 (35.7) - Dipeptidyl Peptidase-4 Inhibitor C: 9 (32.1) - Other: 1 (3.6) <p>RT group, n (%):</p> <ul style="list-style-type: none"> - Biguanides: 15 (54) - Sulfonylurea: 10 (35.7) - Dipeptidyl Peptidase-4 Inhibitor C: 6 (21.4) - Other: 0 (0) <p>CON group, n (%):</p> <ul style="list-style-type: none"> - Biguanides: 19 (63.3) - Sulfonylurea: 10 (33.3) - Dipeptidyl Peptidase-4 Inhibitor C: 4 (13.3) - Other: 0

			<ul style="list-style-type: none"> - LDL-C, mmol/L: 84.5 (7.0) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25.85 (0.8) - Body fat, %: 36.0 (1.6) - Waist circumference, cm: 91.2 (1.9) - Systolic BP, mmHg: 121 (3.7) - Diastolic BP, mmHg: 80 (2.2) - Triglycerides, mmol/L: 134.2 (9.9) - Total cholesterol, mmol/L: 184.2 (8.6) - HDL-C, mmol/L: 49.2 (2.2) - LDL-C, mmol/L: 108.4 (7.0) 	
Shenoy	2009	<p>AE group: 4.7 (SD = 1.7)</p> <p>RT group: 5.4 (SD = 1.5)</p> <p>CON group: 5.2 (SD = 2.9)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 26.2 (3.2) - Systolic BP, mmHg: 132 (8.5) - Diastolic BP, mmHg: 84 (5.3) - HDL (mg/dL): 51 (10.2) - Total cholesterol, mg/dL: 183 (25.2) - Triglycerides, mg/dL: 160 (28.2) - Heart rate (beats/min): 87 (6.8) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 27 (4.1) - Systolic BP, mmHg: 126 (6.8) - Diastolic BP, mmHg: 82 (3.6) - HDL (mg/dL): 53 (9.9) - Total cholesterol, mg/dL: 188 (16.6) - Triglycerides, mg/dL: 179 (50.3) - Heart rate (beats/min): 90 (8.3) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 25 (3) - Systolic BP, mmHg: 131 (6.4) - Diastolic BP, mmHg: 84 (4.4) - HDL (mg/dL): 52 (13.5) - Total cholesterol, mg/dL: 188 (19.4) - Triglycerides, mg/dL: 179 (41.4) - Heart rate (beats/min): 84 (5.3) 	<p>AE group, n:</p> <ul style="list-style-type: none"> - Diet only: 4 - Oral drugs: 6 <p>RT group, n:</p> <ul style="list-style-type: none"> - Diet only: - Oral drugs: 8 <p>CON group, n:</p> <ul style="list-style-type: none"> - Diet only: - Oral drugs: 10 <p>Only participants not taking insulin were included in the study.</p>
Sigal	2007	AE group: 5.1 (SD = 3.5)	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 134 (22) 	<p>AE group, n (%):</p> <ul style="list-style-type: none"> - Metformin: 42 (70)

		<p>RT group: 6.1 (SD = 4.7) CON group: 5.0 (SD = 4.5)</p>	<ul style="list-style-type: none"> - Diastolic BP, mmHg: 82 (14) - Triglycerides, mmol/L: 1.78 (1.55) - Non-HDL cholesterol, mmol/L: 4.07 (1.70) - HDL-C, mmol/L: 1.09 (0.39) - LDL-C, mmol/L: 3.24 (1.46) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 136 (22) - Diastolic BP, mmHg: 80 (13) - Triglycerides, mmol/L: 1.83 (1.52) - Non-HDL cholesterol, mmol/L: 3.97 (1.60) - HDL-C, mmol/L: 1.11 (0.40) - LDL-C, mmol/L: 3.03 (1.43) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - Systolic BP, mmHg: 133 (20) - Diastolic BP, mmHg: 80 (12) - Triglycerides, mmol/L: 1.88 (1.51) - Non-HDL cholesterol, mmol/L: 3.98 (1.51) - HDL-C, mmol/L: 1.06 (0.32) - LDL-C, mmol/L: 2.99 (1.34) 	<ul style="list-style-type: none"> - Sulfonylurea: 33 (55) - Meglitinide: 2 (3) - Alpha glucosidase: 1 (2) - Thiazolidinediones: 13 (22) - Statins: 17 (28) <p>RT group, n (%):</p> <ul style="list-style-type: none"> - Metformin: 41 (64) - Sulfonylurea: 28 (44) - Meglitinide: 4 (6) - Alpha glucosidase: 2 (3) - Thiazolidinediones: 15 (23) - Statins: 26 (41) <p>CON group, n (%):</p> <ul style="list-style-type: none"> - Metformin: 43 (68) - Sulfonylurea: 32 (51) - Meglitinide: 4 (6) - Alpha glucosidase: 1 (2) - Thiazolidinediones: 7 (11) - Statins: 24 (38)
Sukala	2012	<p>AE group: 3.9 (SD = 4.3) RT group: 2.6 (SD = 1.8)</p>	<p>AE group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 45.0 (6.5) - Waist circumference, cm: 131.9 (13.5) - Systolic BP, mmHg: 147.3 (16.1) - Diastolic BP, mmHg: 90.4 (5.7) - Body fat (%): 49.6 (5.2) - Current smoker: 2 - Total cholesterol: 4.5 (0.4) - HDL cholesterol: 1.1 (0.2) - LDL cholesterol: 2.6 (0.6) - Triglycerides: 1.6 (0.5) <p>RT group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 42.7 (12.1) - Waist circumference, cm: 125.4 	<p>AE group, n:</p> <ul style="list-style-type: none"> - Diet only: 2 - Oral hypoglycaemics: 6 - Oral hypoglycaemics and insulin: 1 <p>RT group, n:</p> <ul style="list-style-type: none"> - Diet only: 1 - Oral hypoglycaemics: 7 - Oral hypoglycaemics and insulin: 1

			(23.2) <ul style="list-style-type: none"> - Systolic BP, mmHg: 123.2 (19.4) - Diastolic BP, mmHg: 85.7 (13.8) - Body fat (%): 50.2 (7.6) - Current smoker: 3 - Total cholesterol: 4.9 (1.5) - HDL cholesterol: 1.3 (0.4) - LDL cholesterol: 2.7 (1.4) - Triglycerides: 2.2 (1.2) 	
Teychenne	2015	Include a mixture of T2DM patients and non-diabetics	(Most CVD risk factors were reported together with non-T2DM patients) Standard <ul style="list-style-type: none"> - Current smokers, n (%): 5 (3) - BMI: 33.2 (5.4) Enhanced <ul style="list-style-type: none"> - Current smokers, n (%): 8 (5) - BMI: 33.7 (6.7) 	Standard <ul style="list-style-type: none"> - Oral hypoglycaemic medication use, n (%): 21 (14) - Insulin use, n (%): 2 (1) Enhanced <ul style="list-style-type: none"> - Oral hypoglycaemic medication use, n (%): 43 (27) - Insulin use, n (%): 2 (1)
Tuillang	2015	All participants were diagnosed with T2DM for at least 2 years	AE group, mean, (SD): <ul style="list-style-type: none"> - BMI, kg/m²: 27.2 (2.2) - Triglycerides, mg/dL: 133.5 (55.9) - HDL-C, mg/dL: 37.6 (7.7) - LDL-C, mg/dL: 147.5 (39.3) - Total cholesterol, mg/dL: 213.0 (39.0) RT group, mean, (SD): <ul style="list-style-type: none"> - BMI, kg/m²: 24.9 (1.2) - Triglycerides, mg/dL: 153.5 (56.6) - HDL-C, mg/dL: 40.1 (8.6) - LDL-C, mg/dL: 130.3 (27.4) - Total cholesterol, mg/dL: 197.1 (33.0) 	Participants included were not using any pharmacological treatment
Yamamoto	2020	RT: 17.6 (SD = 10.0) CON: 17.3 (SD = 9.6)	RT group, mean, (SD): <ul style="list-style-type: none"> - BMI, kg/m²: 23.8 (3.0) - Fat mass (kg): 18.0 (5.8) CON group, mean, (SD): <ul style="list-style-type: none"> - BMI, kg/m²: 24.4 (4.7) - Fat mass (kg): 17.7 (6.7) 	Not recorded
Yavari	2012	All participants had an established T2DM	AE group, mean, (SD): <ul style="list-style-type: none"> - BMI, kg/m²: 29.4 (5.7) 	Participants included in the study were only treated with oral hypoglycaemic agents (not

		diagnosis for more than 1 year duration	<ul style="list-style-type: none"> - HDL-C, mg/dL: 47.7 (8.9) - LDL-C, mg/dL: 101.6 (40.8) - Triglycerides, mg/dL: 182.0 (76.7) - Total cholesterol, mg/dL: 178.0 (45.3) - Body fat (%): 40.0 (5.9) - Visceral fat (%): 8.4 (2.4) - Systolic BP, mmHg: 131.5 (18.3) - Diastolic BP, mmHg: 79.9 (9.0) - HR (bpm): 86.8 (16.8) <p>RT group, mean, (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 30.3 (4.0) - HDL-C, mg/dL: 40.6 (9.6) - LDL-C, mg/dL: 89.5 (40.1) - Triglycerides, mg/dL: 185.1 (53.7) - Total cholesterol, mg/dL: 166.8 (38.8) - Body fat (%): 32.7 (9.6) - Visceral fat (%): 12.8 (3.8) - Systolic BP, mmHg: 129.7 (15.5) - Diastolic BP, mmHg: 82.6 (9.5) - HR (bpm): 85.3 (12.8) <p>CON group, mean (SD):</p> <ul style="list-style-type: none"> - BMI, kg/m²: 32.0 (4.9) - HDL-C, mg/dL: 44.2 (8.7) - LDL-C, mg/dL: 88.1 (41.1) - Triglycerides, mg/dL: 171.3 (78.5) - Total cholesterol, mg/dL: 167.5 (44.4) - Body fat (%): 42.1 (11.3) - Visceral fat (%): 11.2 (2.8) - Systolic BP, mmHg: 122.3 (16.9) - Diastolic BP, mmHg: 74.9 (14.4) - HR (bpm): 80.3 (13.8) 	taking insulin)
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Information in the Supplemental Table S4 is reported as per each study. SD = Standard deviations; SE/SEM = Standard Error. AE = Aerobic; RT = Resistance training; CON: control