

Combined Diet and Physical Activity Promotion Programs to Prevent Type 2 Diabetes Among People at Increased Risk

Intervention Characteristics of Comparative Studies of Combined Diet & Physical Activity vs. Control

Intervention Details

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
Ackermann 2008 18779029	5-7% reduction	16 sessions 1-1.5 h 4-5 mo	16 sessions 16-24 h 14 mo	No	Yes	No	No	No	Yes	No	No
Admiraal 2013 23894322	NR	6-8 sessions NR 6 mo	8-10 sessions NR 12 mo	Yes	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes
Bhopal 2014 24622752	None	15 sessions NR 36 mo	15 sessions NR 36 mo	No	No	No	No	Yes	No	Yes	Yes
Cezaretto 2012 21538199	≥5% reduction	6 sessions NR 3 mo	13 sessions NR 9 mo	Yes	Yes	No	No	Yes	Yes	No	No

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
Costa 2012 22322921	NR	4-6 sessions 6 h 48 mo	4-6 sessions 6 h 48 mo	Yes	Yes	No	No	Yes	Yes	No	No
De la Rosa 2008 No PMID	NR	18 sessions NR 18 mo	18 sessions NR 18 mo	Yes	No	Yes	No	Yes	No	Yes	Yes
Eriksson 1991 1778354	NR	48 sessions 48 h 6 mo	48 sessions 52 h 18 mo	No	Yes	Yes	Yes	No	No	No	No
Gillison 2015 25592314	5% reduction	4 session 2 h 1 mo	9 sessions 13.5 h 9 mo	No	Yes	Yes	Yes	No	Yes	No	Yes
Iqbal Hydrie 2012 22888411	≥5% reduction	9 sessions NR 18 mo	9 sessions NR 18 mo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Islam 2014 24852392	None	6 sessions 12 h 5 mo	6 sessions 12 h 5 mo	No	Yes	No	Yes	No	Yes	No	Yes

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
Janus 2012 22929458	5% reduction	5 sessions 7.5 h 2.5 mo	6 sessions 9 h 10 mo	Unclear	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes
Kanaya 2012 22698027	NR	17 sessions NR 6 mo	19 sessions NR 12 mo	Yes	Yes	No	No	Yes	Yes	No	No
Knowler 2002 11832527	≥7% reduction	16 sessions NR 6 mo	16 sessions NR 34 mo	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Knowler 2009 19878986	≥7% reduction	16 sessions 8-16 h 6 mo	36 sessions 13-31 h 48 mo	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Kulzer 2009 19509014	NR	8 sessions 12 h 12 mo	12 sessions 18 h 12 mo	No	Yes	No	No	No	Yes	No	No
Ma 2013 23229846	More intensive : 7% reduction	12 sessions 18-24 h 3 mo	24 sessions NR 15 mo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
	Less intensive : 7% reduction	12 sessions 18-24 h 3 mo	12 sessions NR 15 mo	Yes	No	No	No	Yes	No	No	No
Moore 2011 20945253	NR	7 sessions 15 h 6 mo	7 sessions 15 h 6 mo	Yes	Yes	No	No	Yes	Yes	No	No
Ockene 2012 22390448	NR	16 sessions 14.5 h 12 mo	16 sessions 14.5 h 12 mo	Yes	Yes	No	No	Yes	Yes	Yes	No
Oldroyd 2006 16297488	BMI <25 kg/m ²	6 sessions 2 h 6 mo	12 sessions 4 h 24 mo	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Pan 1997 9096977	BMI ≤23 kg/m ²	8 sessions NR 4 mo	30 sessions NR 72 mo	Yes	Yes	No	No	Yes	Yes	Yes	No
Patrick 2013 23759410	More intensive : "Weight loss"	36 sessions 24 h 12 mo	36 sessions 24 h 12 mo	Yes	Yes	Unclear	No	Yes	Yes	Unclear	Unclear

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
	Less Intensive 1: "Weight loss"	NA (3 text messages/week and access to web-tutorials) NA 12 mo	NA NA 12 mo	web tutorials; could communicate via text message if they had questions	No	Unclear	No	web tutorials; could communicate via text message if they had questions	No	Unclear	No
	Less Intensive 2: "Weight loss"	NA (weekly emails and access to web-tutorials) NA 12 mo	NA NA 12 mo	web tutorials	No	Unclear	No	web tutorials	No	Unclear	No
Penn 2009 19758428	BMI <25 kg/m ²	24 sessions 12 h 60 mo	24 sessions 12 h 60 mo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ramachandran 2006 16391903	NR	9 sessions NR 36 mo	9 sessions NR 36 mo	No	No	No	No	Yes	No	Yes	No

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
Ramachandran 2013 24622367	None	NA (text messages at "frequent intervals") NA NA	NA NA 24 mo	No	No	No	No	No	No	No "Personalized education"	No
Roumen 2008 18445174	5-7% reduction	14 sessions NR 12 mo	14 sessions NR 36-72 mo	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sakane 2011 21235825	≥5% reduction	4 sessions 8-12 h 6 mo	10 sessions 10-16 h 36 mo	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Savoye 2014 24062325	NR	52 sessions 61 h 6 mo	52 sessions 61 h 6 mo	No	Yes	No	Yes	No	Yes	No	Yes
Tate 2003 12684363	NR	4 sessions NR 12 mo	4 sessions NR 12 mo	Yes	No	No	No	Yes	No	No	No
Tuomilehto 2001 11333990	5% reduction	7 sessions NR 12 mo	15 sessions NR 36 mo	Yes	No	Yes	Yes	Yes	No	Yes	Yes

Author, Year, PMID*	Weight loss goal	Core: # sessions contact time (h) duration (mo)	Total: # sessions contact time (h) duration (mo)	Exercise: individual sessions	Exercise: group sessions	Customized exercise program	Trainer supervision	Diet: individual sessions	Diet: group sessions	Customized diet program	Meetings with dietician
Vermunt 2011 21775759	≥5% reduction	5 sessions 5 h 18 mo	5 sessions 5 h 18 mo	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

* Of primary study.

Intervention Goals

Author, Year, PMID*	Exercise goal	Diet goal	Calories	Carbohydrates (of daily energy consumed)	Fat (of daily energy consumed)	Fiber (per day)
Ackermann, 2008, 18779029	Moderate-level physical activity similar to brisk walking 150 min/wk	None	NR	NR	NR	NR
Bhopal, 2014, 24622752	None	None	NR	NR	NR	NR
Cezaretto, 2012, 21538199	Moderate physical activity ≥150 min/wk	None	NR	NR	≤10%	≥20g/d
Costa, 2012, 22322921	Moderate physical activity ≥30 min/d	30 min/d	30 min/d	30 min/d	<30% (saturated fat <10%)	15g/1000kcal
De la Rosa, 2008, No PMID	None	None	NR	NR	NR	NR
Eriksson, 1991, 1778354	None	None	NR	NR	NR	NR
Gillison, 2015, 25592314	None (self-regulatory)	Healthy eating	NR	NR	NR	NR

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Exercise goal	Diet goal	Calories	Carbohydrates (of daily energy consumed)	Fat (of daily energy consumed)	Fiber (per day)
Iqbal Hydrie, 2012, 22888411	Moderate exercise ≥30 min/d	None	NR	NR	<30%	15g/1000kcal
Islam, 2014, 24852392	None	None	NR	NR	NR	NR
Kanaya, 2012, 22698027	Self-selected and attainable goal-setting and action plans	None	NR	NR	NR	NR
Knowler, 2002, 11832527	150 min/wk	Lower fat and calorie intake	NR	NR	NR	NR
Knowler, 2009, 19878986	150 min/wk	Lower fat and calorie intake	NR	NR	If weight 120-170 lbs, 1,200 kcal/day If 175-215 lbs, 1,500 kcal/day If 200-245 lbs, 1,800 kcal/day If ≥250 lbs, 2,000 kcal/ day	NR
Kulzer, 2009, 19509014	None	None	NR	NR	NR	NR
Moore, 2011, 20945253	None	None	NR	NR	NR	NR
Ockene, 2012, 22390448	Increase overall physical activity by 4000 steps/d	None	NR	Decrease intake	NR	NR
Oldroyd, 2006, 16297488	20–30 min of aerobic activity ≥1x/wk	None	NR	50%	≤30% (polysaturated to saturated fat at a ratio ≥1.0)	≥20g/4.2MJ
Pan, 1997, 9096977	1-2 units/d 1 exercise unit: 30 min mild, 20 min moderate, 10 min strenuous, 5 min very strenuous	Gradually lose weight at a rate of 0.5-1.0 kg/mo until they achieved a BMI of 23 kg/m ²	If BMI >25, reduce calories If BMI <25 then 25-30 kcal/kg body weight	If BMI <25, 55-65% If BMI >25, NR	If BMI <25, 25-30% If BMI >25, NR	NR

Diabetes Prevention and Control: Combined Diet & Physical Activity Programs– Evidence Table, Combined vs. Control

Author, Year, PMID*	Exercise goal	Diet goal	Calories	Carbohydrates (of daily energy consumed)	Fat (of daily energy consumed)	Fiber (per day)
Patrick, 2013, 23759410	More intensive: NR	NR	NR	NR	NR	NR
	Less intensive 1: NR	NR	NR	NR	NR	NR
	Less intensive 2: NR	NR	NR	NR	NR	NR
Penn, 2009, 19758428	Moderate aerobic physical activity 30 min/d	None	NR	>50%	<30%	Increased
Ramachandran, 2006, 16391903	Walk or cycle ≥30min/d	None	NR	NR	NR	NR
Ramachandran, 2013, 24622367	Brisk walk for a minimum of 30 min per day (or equivalent), as a realistic goal with proven effectiveness	Avoidance of simple sugars and refined carbohydrates; Reduce total fat intake; Restrict use of saturated fat, Include more fibre-rich food	NR	NR	<20 g/d	NR
Roumen, 2008, 18445174	Moderate physical activity	None	Very low calorie diet	55%	30-35%	>3g/MJ
Sakane, 2011, 21235825	Leisure time physical activity of 700 kcal/week	None	Proper amount	NR	<25%	NR
Savoie, 2014, 24062325	Each 50-min session consisted of a warm-up, high-intensity, and cool down period. High-intensity exercises consisted of typical children's games that were modified to increase heart rate. Once per month there were special exercise activities such as martial arts, dance-off contests, Zumba,	Nondiet, healthy food-choice approach that emphasized low-fat foods of moderate portions. Smart Moves Workbook. Topics included "Determining Portion Sizes," "Better Food Choices: A Non-Diet Approach," "Making Sense of a Food Label," and "Bag It! The Pros to Bringing Lunch to School."	NR	NR	NR	NR

Author, Year, PMID*	Exercise goal	Diet goal	Calories	Carbohydrates (of daily energy consumed)	Fat (of daily energy consumed)	Fiber (per day)
	and the use of Just Dance (Ubisoft Entertainment, Brittany, France).					
Tate, 2003, 12684363	None	None	NR	NR	NR	NR
Tuomilehto, 2001, 11333990	Moderate exercise ≥30 min/d	None			<30% (saturated fat <10%)	≥15g/1000kcal
Vermunt, 2011, 21775759	None	None	NR	NR	<30%	3.4 g/MJ

* Of primary study.

Abbreviations

- BMI, body mass index
- cal, calorie
- d, day
- h, hour
- kcal, kilocalories
- kg, kilogram
- lbs, pounds
- m, meter
- MET; metabolic equivalent
- mg, milligram
- min, minute
- MJ, megajoule
- mo, month
- NR, not reported
- wk, week