

Multicomponent Behavioral Interventions for Weight Management in Children and Adolescents who are Overweight or with Obesity

A Systematic Evidence Review for the American Psychological Association

Appendixes

Appendix A. Detailed Methods

Appendix B. Excluded Studies

Appendix C. Included Studies

Appendix D. Evidence Tables

Appendix E. Detailed Results from Sensitivity Analyses Related to Contact Dose

Appendix A. Detailed Methods

Literature Search Strategies

CENTRAL

Issue 1 of 2

- #1 (obese or obesity or overweight or "over weight"):ti,ab,kw
- #2 screen*:ti,ab,kw
- #3 (body next mass next ind*):ti,ab,kw
- #4 (body next mass next abdominal next ind*):ti,ab,kw
- #5 (body next adiposity next ind*):ti,ab,kw
- #6 (bmi or bmai):ti,ab,kw
- #7 (skinfold or "skin fold"):ti,ab,kw
- #8 (waist next circumference*):ti,ab,kw
- #9 (waist near/3 ratio*):ti,ab,kw
- #10 "weight for height":ti,ab,kw
- #11 "weight for age":ti,ab,kw
- #12 "weight stature":ti,ab,kw
- #13 (adipos* near/2 measur*):ti,ab,kw
- #14 anthropometr*:ti,ab,kw
- #15 2-14
- #16 (child* or teen or teens or teenage* or adolescen* or youth or youths or young people or (young next adult*) or pediatric* or paediatric* or schoolchildren or school children or preschool* or (pre next school*) or toddler*):ti,ab,kw
- #17 #1 and #15 and #16 Publication Year from 2005 to 2015, in Trials
- #18 (obese or obesity or overweight or "over weight"):ti,ab,kw
- #19 (weight next gain*):ti,ab,kw or (weight next loss*):ti,ab,kw
- #20 (weight next change*):ti,ab,kw
- #21 (bmi or body mass index):ti,ab,kw near/2 (gain* or loss* or change*):ti,ab,kw
- #22 "weight maintenance":ti,ab,kw
- #23 "weight control":ti,ab,kw
- #24 "weight management":ti,ab,kw
- #25 or #18-#24
- #26 (psychological or behavior* or behaviour*):ti,ab,kw next (therap* or modif* or chang* or strateg* or intervention*):ti,ab,kw
- #27 (group or family or cognitive):ti,ab,kw next therap*:ti,ab,kw #28 cbt:ti,ab,kw
- #29 (lifestyle or "life style"):ti,ab,kw next (chang* or interven* or modif*):ti,ab,kw
- #30 counsel*:ti,ab,kw
- #31 (social* next support*):ti,ab,kw
- #32 (peer* near/2 support*):ti,ab,kw
- #33 (child* near/3 parent*):ti,ab,kw and therap*:ti,ab,kw
- #34 (family or parent*):ti,ab,kw next intervention*:ti,ab,kw
- #35 parent*:ti,ab,kw near/2 (behavior* or behaviour* or involv* or control* or attitude* or educat*):ti,ab,kw
- #36 health:ti,ab,kw next (education or promotion):ti,ab,kw
- #37 "patient education":ti,ab,kw
- #38 (nonpharmacologic or "non pharmacologic"):ti,ab,kw next intervention*:ti,ab,kw

#39 (self next regulat*):ti,ab,kw
 #40 school*:ti,ab,kw near/5 (intervention* or program*):ti,ab,kw
 #41 26-40
 #42 (exercise or "physical activity"):ti
 #43 fitness:ti,ab,kw next (class* or regime* or program*):ti
 #44 ("physical training" or "physical education"):ti
 #45 (sedentary next (behavior* or behaviour*)):ti,ab,kw near/3 (reduc* or mimim* or less*):ti,ab,kw

 #46 (exercise or "physical activity"):ti,ab,kw near/5 (intervention* or promot*):ti,ab,kw 4814
 #47 42-46
 #48 (diet or diets or dieting or dietary):ti
 #49 diet*:ti,ab,kw next (modif* or therap* or intervention* or strateg*):ti,ab,kw
 #50 ("low calorie" or (calorie next control*) or "healthy eating"):ti,ab,kw
 #51 (formula next diet*):ti,ab,kw
 #52 weightwatcher*:ti,ab,kw or (weight next watcher*):ti,ab,kw
 #53 48-52}
 #54 collaborat*:ti,ab,kw
 #55 (interdisciplinary or "inter disciplinary"):ti,ab,kw
 #56 (multidisciplinary or multi-disciplinary):ti,ab,kw
 #57 integrated:ti,ab,kw near/5 (healthcare or care):ti,ab,kw
 #58 (care or case):ti,ab,kw next manag*:ti,ab,kw
 #59 "cooperative care":ti,ab,kw
 #60 "patient centered care":ti,ab,kw
 #61 "stepped care":ti,ab,kw
 #62 "coordinated care":ti,ab,kw
 #63 or #54-#62
 #64 Orlistat:ti,ab,kw
 #65 tetrahydrolipstatin:ti,ab,kw
 #66 Xenical:ti,ab,kw
 #67 Alli:ti,ab,kw
 #68 metformin:ti,ab,kw
 #69 Glucophage:ti,ab,kw
 #70 dimethylbiguanidine:ti,ab,kw
 #71 dimethylguanylguanidine:ti,ab,kw
 #72 (dimethylbiguanide or dimethyl-biguanide):ti,ab,kw
 #73 64-`72
 #74 #41 or #47 or #53 or #63 or #73
 #75 #16 and #25 and #74 Publication Year from 2010 to 2015, in Trials
 #76 #17 or #75

ERIC

#	Query	Limiters/Expanders
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S17	S5 AND S16	Limiters - Date Published: 20050101-20151231 Search modes - Find all my search terms
S16	(S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15)	
S15	TI child* OR TI student* OR TI school*	
S14	DE "Nutrition Instruction"	
S13	DE "Child Caregivers" OR DE "Child Development Specialists" OR DE "Caregiver Role"	
S12	DE "Interdisciplinary Approach"	
S11	DE "Lesson Plans" OR DE "Integrated Curriculum" OR DE "Curriculum Implementation"	
S10	DE "School Policy" OR DE "School Role" OR DE "School Community Relationship" OR DE "School Involvement" OR DE "School Responsibility" OR DE "Teacher Role" OR DE "Teacher Responsibility"	
S9	DE "High School Freshmen" OR DE "High School Seniors" OR DE "High School Students" OR DE "High Schools" OR DE "Secondary School Teachers" OR DE "Secondary Schools"	
S8	DE "Middle School Students" OR DE "Middle School Teachers" OR DE "Middle Schools"	
S7	DE "Primary Education" OR DE "Kindergarten" OR DE "Grade 1" OR DE "Grade 2" OR DE "Grade 3" OR OR DE "Grade 4" OR DE "Grade 5" OR DE "Grade 6" OR DE "Grade 7" OR DE "Grade 8" OR DE "Grade 9" OR DE "Grade 10" OR DE "Grade 11" OR DE "Grade 12"	
S6	DE "Elementary School Students" OR DE "Elementary School Teachers" OR DE "Elementary Schools" OR DE "Elementary Secondary Education" OR DE "Elementary School Curriculum"	
S5	S1 OR S2 OR S3 OR S4	
S4	TI obesity OR TI obese OR TI overweight OR TI over weight	
S3	DE "Body Weight"	
S2	DE "Body Composition"	
S1	DE "Obesity"	

OID MEDLINE

Screening

Database: Ovid MEDLINE(R) <1946 to February Week 1 2015>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <February 09, 2015>, Ovid MEDLINE(R) Daily Update <February 09, 2015>

Search Strategy:

- 1 Obesity/
- 2 Obesity, Morbid/
- 3 Obesity, Abdominal/
- 4 Overweight/
- 5 Weight Gain/
- 6 obesity.ti,ab.
- 7 obese.ti,ab.
- 8 overweight.ti,ab.
- 9 over weight.ti,ab.
- 10 or/1-9
- 11 Child/ or Child, Preschool/ or Adolescent/ or Young Adult/
- 12 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or toddler\$).ti.
- 13 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or toddler\$).ti,ab.
- 14 limit 13 to ("in data review" or in process or "pubmed not medline")
- 15 10 and (11 or 12 or 14)
- 16 Pediatric Obesity/
- 17 15 or 16
- 18 Mass screening/
- 19 Body constitution/
- 20 "Body Weights and Measures"/
- 21 Body Fat Distribution/
- 22 Adiposity/
- 23 Body Mass Index/
- 24 Skinfold thickness/
- 25 Body height/ and Body weight/
- 26 Waist circumference/
- 27 Waist-height ratio/
- 28 Anthropometry/
- 29 screen\$.ti,ab.
- 30 body mass index\$.ti,ab.
- 31 body mass indices.ti,ab.
- 32 bmi.ti,ab.
- 33 body mass abdominal index\$.ti,ab.
- 34 body mass abdominal indices.ti,ab.
- 35 bmai.ti,ab.
- 36 body adiposity index\$.ti,ab.
- 37 body adiposity indices.ti,ab.
- 38 (skinfold or skin fold).ti,ab.
- 39 waist circumference\$.ti,ab.
- 40 waist to height ratio\$.ti,ab.
- 41 waist height ratio\$.ti,ab.
- 42 waist to hip ratio\$.ti,ab.
- 43 waist hip ratio\$.ti,ab.
- 44 weight for height.ti,ab.

45 height for weight.ti,ab.
 46 weight for age.ti,ab.
 47 weight stature.ti,ab.
 48 (adiposity adj2 measur\$.ti,ab.
 49 anthropometr\$.ti,ab.
 50 or/18-49
 51 17 and 50
 52 Pediatric Obesity/di [Diagnosis]
 53 Obesity/di
 54 Obesity, Morbid/di
 55 Obesity, Abdominal/di
 56 Overweight/di
 57 53 or 54 or 55 or 56
 58 57 and (11 or 12 or 14)
 59 51 or 52 or 58
 60 clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/
 or meta-analysis as topic/
 61 (clinical trial or controlled clinical trial or meta analysis or randomized controlled trial).pt.
 62 Random\$.ti,ab.
 63 control groups/ or double-blind method/ or single-blind method/
 64 clinical trial\$.ti,ab.
 65 controlled trial\$.ti,ab.
 66 meta analy\$.ti,ab.
 67 or/60-66
 68 59 and 67
 69 limit 68 to (english language and yr="2005 -Current")
 70 remove duplicates from 69

OVID MEDLINE

Treatment trials

Database: Ovid MEDLINE(R) <1946 to February Week 1 2015>, Ovid MEDLINE(R) In-Process & Other
 Non-Indexed Citations <February 09, 2015>, Ovid MEDLINE(R) Daily Update <February 09, 2015>
 Search Strategy:

 1 Obesity/
 2 Obesity, Morbid/
 3 Obesity, Abdominal/
 4 Overweight/
 5 Weight Gain/
 6 Weight Loss/
 7 obesity.ti,ab.
 8 obese.ti,ab.
 9 overweight.ti,ab.
 10 over weight.ti,ab.
 11 (weight gain\$ or weight loss\$.ti,ab.
 12 weight change\$.ti,ab.

13 ((bmi or body mass ind\$) adj2 (gain\$ or loss\$ or change\$)).ti,ab.
 14 weight maintenance.ti,ab.
 15 weight control.ti,ab.
 16 weight manag\$.ti,ab.
 17 or/1-16
 18 Child/ or Child, Preschool/ or Adolescent/ or Young Adult/
 19 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young
 adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or
 toddler\$).ti.
 20 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young
 adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or
 toddler\$).ti,ab.
 21 limit 20 to ("in data review" or in process or "pubmed not medline")
 22 17 and (18 or 19 or 21)
 23 Pediatric Obesity/ (
 24 22 or 23
 25 Counseling/
 26 Directive Counseling/
 27 Behavior therapy/
 28 Aversive therapy/
 29 Biofeedback, Psychology/
 30 Feedback, Psychological/
 31 Cognitive therapy/
 32 "Acceptance and commitment therapy"/
 33 Mindfulness/
 34 Desensitization, psychologic/
 35 Relaxation therapy/
 36 Meditation/
 37 Social Support/
 38 Psychotherapy, Group/
 39 Family Therapy/
 40 Persuasive Communication/
 41 Risk Reduction Behavior/
 42 Health Education/
 43 Health Promotion/
 44 Patient Education as Topic/
 45 "Early Intervention (Education)"/
 46 ((psychological or behavio?r\$) adj (therap\$ or modif\$ or chang\$ or strateg\$ or
 intervention\$)).ti,ab.
 47 (group therap\$ or family therap\$ or cognitive therap\$).ti,ab.
 48 cbt.ti,ab.
 49 ((lifestyle or life style) adj (chang\$ or interven\$ or modif\$)).ti,ab.
 50 counsel?ing.ti,ab.
 51 social\$ support\$.ti,ab.
 52 (peer\$ adj2 support\$).ti,ab.
 53 ((child\$ adj3 parent\$) and therap\$).ti,ab.
 54 (family intervention\$ or parent\$ intervention\$).ti,ab.
 55 (parent\$ adj2 (behavio?r\$ or involv\$ or control\$ or attitude\$ or educat\$)).ti,ab.

56 health education.ti,ab.
 57 health promotion.ti,ab.
 58 patient education.ti,ab.
 59 nonpharmacologic intervention\$.ti,ab.
 60 non pharmacologic intervention\$.ti,ab.
 61 self regulat\$.ti,ab.
 62 (school\$ adj5 (intervention\$ or program\$)).ti,ab.
 63 or/25-62
 64 Exercise/
 65 Physical Conditioning, Human/
 66 (exercise or physical activity).ti.
 67 aerobic\$.ti.
 68 (fitness adj (class\$ or regime\$ or program\$)).ti.
 69 (physical training or physical education).ti.
 70 (sedentary behavior?r\$ adj3 reduc\$).ti,ab.
 71 ((exercise or physical activity) adj5 (intervention\$ or promot\$)).ti,ab.
 72 or/64-71
 73 Diet-Fat-Restricted/
 74 Diet-Reducing/
 75 Diet, Carbohydrate-Restricted/
 76 Diet-Therapy/
 77 Caloric Restriction/
 78 Food Habits/
 79 (diet or diets or dieting or dietary).ti.
 80 (diet\$ adj (modif\$ or therap\$ or intervention\$ or strateg\$)).ti,ab.
 81 (low calorie or calorie control\$ or healthy eating).ti,ab.
 82 formula diet\$.ti,ab.
 83 (weightwatcher\$ or weight watcher\$).ti,ab.
 84 or/73-83
 85 Case management/
 86 Patient care team/
 87 Cooperative behavior/
 88 Interprofessional Relations/
 89 Continuity of patient care/
 90 Patient-centered care/
 91 Patient care management/
 92 Delivery of Health Care, Integrated/
 93 collaborat\$.ti,ab.
 94 (interdisciplinary or inter disciplinary).ti,ab.
 95 (multidisciplinary or multi disciplinary).ti,ab.
 96 (integrated adj5 (healthcare or care)).ti,ab.
 97 care manag\$.ti,ab.
 98 case manag\$.ti,ab.
 99 cooperative care.ti,ab.
 100 coordinated care.ti,ab.
 101 patient centered care.ti,ab.
 102 stepped care.ti,ab.
 103 or/85-102

104 Anti-Obesity Agents/
 105 Metformin/
 106 Lactones/
 107 Orlistat.ti,ab.
 108 tetrahydrolipstatin.ti,ab.
 109 Xenical.ti,ab.
 110 Alli.ti,ab.
 111 metformin.ti,ab.
 112 Glucophage.ti,ab.
 113 dimethylbiguanidine.ti,ab.
 114 dimethylguanylguanidine.ti,ab.
 115 (dimethylbiguanide or dimethyl-biguanide).ti,ab.
 116 or/104-115
 117 Weight Reduction Programs/
 118 ((weight loss or weight reduction) adj3 (intervention\$ or promot\$)).ti,ab.
 119 24 and (63 or 72 or 84 or 103 or 116 or 117 or 118)
 120 Pediatric Obesity/dh, dt, pc, rh, th [Diet Therapy, Drug Therapy, Prevention & Control,
 Rehabilitation, Therapy]
 121 Obesity/dh, dt, pc, rh, th
 122 Obesity, Morbid/dh, dt, pc, rh, th
 123 Obesity, Abdominal/dh, dt, pc, rh, th
 124 Overweight/dh, dt, pc, rh, th
 125 or/121-124
 126 125 and (18 or 19 or 21)
 127 119 or 120 or 126
 128 clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/
 or meta-analysis as topic/
 129 (clinical trial or controlled clinical trial or meta analysis or randomized controlled trial).pt.
 130 Random\$.ti,ab.
 131 control groups/ or double-blind method/ or single-blind method/
 132 clinical trial\$.ti,ab.
 133 controlled trial\$.ti,ab.
 134 meta analy\$.ti,ab.
 135 or/128-134
 136 127 and 135
 137 limit 136 to (english language and yr="2010 -Current")
 138 remove duplicates from 137

OVID MEDLINE **Drug Treatment Harms**

Database: Ovid MEDLINE(R) <1946 to February Week 1 2015>, Ovid MEDLINE(R) In-Process & Other
 Non-Indexed Citations <February 09, 2015>, Ovid MEDLINE(R) Daily Update <February 09, 2015>
 Search Strategy:

 1 Obesity/
 2 Obesity, Morbid/

3 Obesity, Abdominal/
 4 Overweight/
 5 Weight Gain/
 6 Weight Loss/
 7 obesity.ti,ab.
 8 obese.ti,ab.
 9 overweight.ti,ab.
 10 over weight.ti,ab.
 11 (weight gain\$ or weight loss\$).ti,ab.
 12 weight change\$.ti,ab.
 13 ((bmi or body mass ind\$) adj2 (gain\$ or loss\$ or change\$)).ti,ab.
 14 weight maintenance.ti,ab.
 15 weight control.ti,ab.
 16 weight manag\$.ti,ab.
 17 or/1-16
 18 Child/ or Child, Preschool/ or Adolescent/ or Young Adult/
 19 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young
 adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or
 toddler\$).ti.
 20 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young
 adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or
 toddler\$).ti,ab.
 21 limit 20 to ("in data review" or in process or "pubmed not medline")
 22 17 and (18 or 19 or 21)
 23 Pediatric Obesity/
 24 22 or 23
 25 Anti-Obesity Agents/
 26 Metformin/
 27 Lactones/
 28 Orlistat.ti,ab.
 29 tetrahydrolipstatin.ti,ab.
 30 Xenical.ti,ab.
 31 Alli.ti,ab.
 32 metformin.ti,ab.
 33 Glucophage.ti,ab.
 34 dimethylbiguanidine.ti,ab.
 35 dimethylguanylguanidine.ti,ab.
 36 (dimethylbiguanide or dimethyl-biguanide).ti,ab.
 37 or/25-36
 38 24 and 37
 39 Pediatric Obesity/dt
 40 Obesity/dt
 41 Obesity, Morbid/dt
 42 Obesity, Abdominal/dt
 43 Overweight/dt
 44 40 or 41 or 42 or 43
 45 44 and (18 or 19 or 21)
 46 38 or 39 or 45

47 "Drug-Related Side Effects and Adverse Reactions"/
 48 safety.ti,ab.
 49 harm\$.ti,ab.
 50 mortality.ti,ab.
 51 toxicity.ti,ab.
 52 complication\$.ti,ab.
 53 (death or deaths).ti,ab.
 54 (adverse adj2 (interaction\$ or response\$ or effect\$ or event\$ or reaction\$ or outcome\$)).ti,ab.
 55 adverse effects.fs.
 56 toxicity.fs.
 57 mortality.fs.
 58 poisoning.fs.
 59 quality of life/
 60 depression/
 61 depressive disorder
 62 (depression or depressed).ti,ab.
 63 stress, psychological/
 64 adaptation, psychological/
 65 anxiety/
 66 (anxiety or anxious).ti,ab.
 67 suicide/
 68 (suicide\$ or suicidal).ti,ab.
 69 self concept/
 70 self esteem.ti,ab.
 71 body image/
 72 social isolation/
 73 False Positive Reactions/
 74 Social stigma/
 75 stigma\$.ti,ab.
 76 (label or labeled or labeling).ti,ab.
 77 Patient Compliance/
 78 Patient Acceptance of Health Care/
 79 Patient Participation/
 80 Treatment Refusal/
 81 Patient Dropouts/
 82 Eating Disorders/
 83 Anorexia/
 84 Anorexia Nervosa/
 85 Bulimia/
 86 Bulimia Nervosa/
 87 eating disorder\$.ti,ab.
 88 disordered eating.ti,ab.
 89 (anorexic or anorexia).ti,ab.
 90 (bulimic or bulimia).ti,ab.
 91 weight cycling.ti,ab.
 92 weight fluctuat\$.ti,ab.
 93 fasting/
 94 laxative\$.ti,ab.

95 (overweight adj4 concern\$).ti,ab.
 96 (weight adj4 concern\$).ti,ab.
 97 ((stunt\$ or suppress\$) adj2 growth).ti,ab.
 98 Nausea/
 99 Vomiting/
 100 (nausea\$ or nauseous or vomit\$).ti,ab.
 101 Diarrhea/
 102 diarrh?ea.ti,ab.
 103 Malnutrition/
 104 (malnourished or malnutrition).ti,ab.
 105 nutritional defici\$.ti,ab.
 106 or/47-105
 107 46 and 106
 108 limit 107 to (english language and yr="2010 -Current")
 109 remove duplicates from 108

PSYCINFO

Screening

Database: PsycINFO <1806 to February Week 1 2015>

Search Strategy:

1 Obesity/
 2 Overweight/
 3 Weight gain/
 4 obesity.ti,ab,id.
 5 obese.ti,ab,id.
 6 overweight.ti,ab,id.
 7 over weight.ti,ab,id.
 8 weight gain.ti,ab,id.
 9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
 10 limit 9 to (100 childhood <birth to age 12 yrs> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
 11 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or toddler\$).ti,ab,id.
 12 9 and 11
 13 10 or 12
 14 Screening/
 15 Health screening/
 16 Body mass index/
 17 Body fat/
 18 Body weight/
 19 Anthropometry/
 20 screen\$.ti,ab,id.
 21 body mass index\$.ti,ab,id.
 22 body mass indices.ti,ab,id.
 23 bmi.ti,ab,id.
 24 body mass abdominal index\$.ti,ab,id.

25 body mass abdominal indices.ti,ab,id.
 26 bmai.ti,ab,id.
 27 body adiposity index\$.ti,ab,id.
 28 body adiposity indices.ti,ab,id.
 29 (skinfold or skin fold).ti,ab,id.
 30 waist circumference\$.ti,ab,id.
 31 waist to height ratio\$.ti,ab,id.
 32 waist height ratio\$.ti,ab,id.
 33 waist to hip ratio\$.ti,ab,id.
 34 waist hip ratio\$.ti,ab,id.
 35 weight for height.ti,ab,id.
 36 height for weight.ti,ab,id.
 37 weight for age.ti,ab,id.
 38 weight stature.ti,ab,id.
 39 (adiposity adj2 measur\$).ti,ab,id.
 40 anthropometr\$.ti,ab,id.
 41 or/14-40
 42 13 and 41
 43 random\$.ti,ab,id,hw.
 44 placebo\$.ti,ab,hw,id.
 45 controlled trial\$.ti,ab,id,hw.
 46 clinical trial\$.ti,ab,id,hw.
 47 meta analy\$.ti,ab,hw,id.
 48 treatment outcome clinical trial.md.
 49 43 or 44 or 45 or 46 or 47 or 48
 50 42 and 49
 51 limit 50 to (english language and yr="2005 -Current")

PSYCINFO

Treatment

Database: PsycINFO <1806 to February Week 1 2015>

Search Strategy:

 1 Obesity/
 2 Overweight/
 3 Weight gain/
 4 Weight Control/
 5 Weight Loss/
 6 obesity.ti,ab,id.
 7 obese.ti,ab,id.
 8 overweight.ti,ab,id.
 9 over weight.ti,ab,id.
 10 weight gain.ti,ab,id.
 11 weight loss.ti,ab,id.
 12 weight maintenance.ti,ab,id.
 13 weight control.ti,ab,id.
 14 (weight adj3 manag\$).ti,ab,id.
 15 weight change\$.ti,ab,id.

16 ((bmi or body mass ind\$) adj2 (gain\$ or loss\$ or change\$)).ti,ab,id.
 17 or/1-16
 18 limit 17 to (100 childhood <birth to age 12 yrs> or 160 preschool age <age 2 to 5 yrs> or 180 school
 age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>)
 19 (child\$ or teen or teens or teenage\$ or adolescen\$ or youth or youths or young people or young
 adult\$ or pediatric\$ or paediatric\$ or schoolchildren or school children or preschool\$ or pre school\$ or
 toddler\$).ti,ab,id.
 20 17 and 19
 21 18 or 20
 22 Counseling/
 23 Behavior Therapy/
 24 Cognitive Behavior Therapy/
 25 Cognitive Therapy/
 26 Cognitive Techniques/
 27 Behavior Modification/
 28 Behavior Change/
 29 Lifestyle Changes/
 30 Lifestyle/
 31 School Counseling/
 32 Psychotherapeutic Counseling/
 33 Peer Counseling/
 34 Group Counseling/
 35 Community Counseling/
 36 School Counseling/
 37 Motivational Interviewing/
 38 Feedback/
 39 Biofeedback/
 40 Health Education/
 41 Health Promotion/
 42 Client Education/
 43 Self Regulation/
 44 Intervention/
 45 School Based Intervention/
 46 Family Intervention/
 47 Early Intervention/
 48 ((psychological or behavio?r\$) adj (therap\$ or modif\$ or chang\$ or strateg\$ or
 intervention\$)).ti,ab,id.
 49 (group therap\$ or family therap\$ or cognitive therap\$).ti,ab,id.
 50 cbt.ti,ab,id.
 51 ((lifestyle or life style) adj (chang\$ or interven\$ or modifi\$)).ti,ab,id.
 52 counsel\$.ti,ab,id.
 53 social\$ support\$.ti,ab,id.
 54 (peer adj2 support).ti,ab,id.
 55 ((child\$ adj3 parent\$) and therapy).ti,ab,id.
 56 (family intervention\$ or parent\$ intervention\$).ti,ab,id.
 57 (parent\$ adj2 (behavio?r\$ or involv\$ or control\$ or attitude\$ or educat\$)).ti,ab.
 58 health education.ti,ab,id.
 59 health promotion.ti,ab,id.

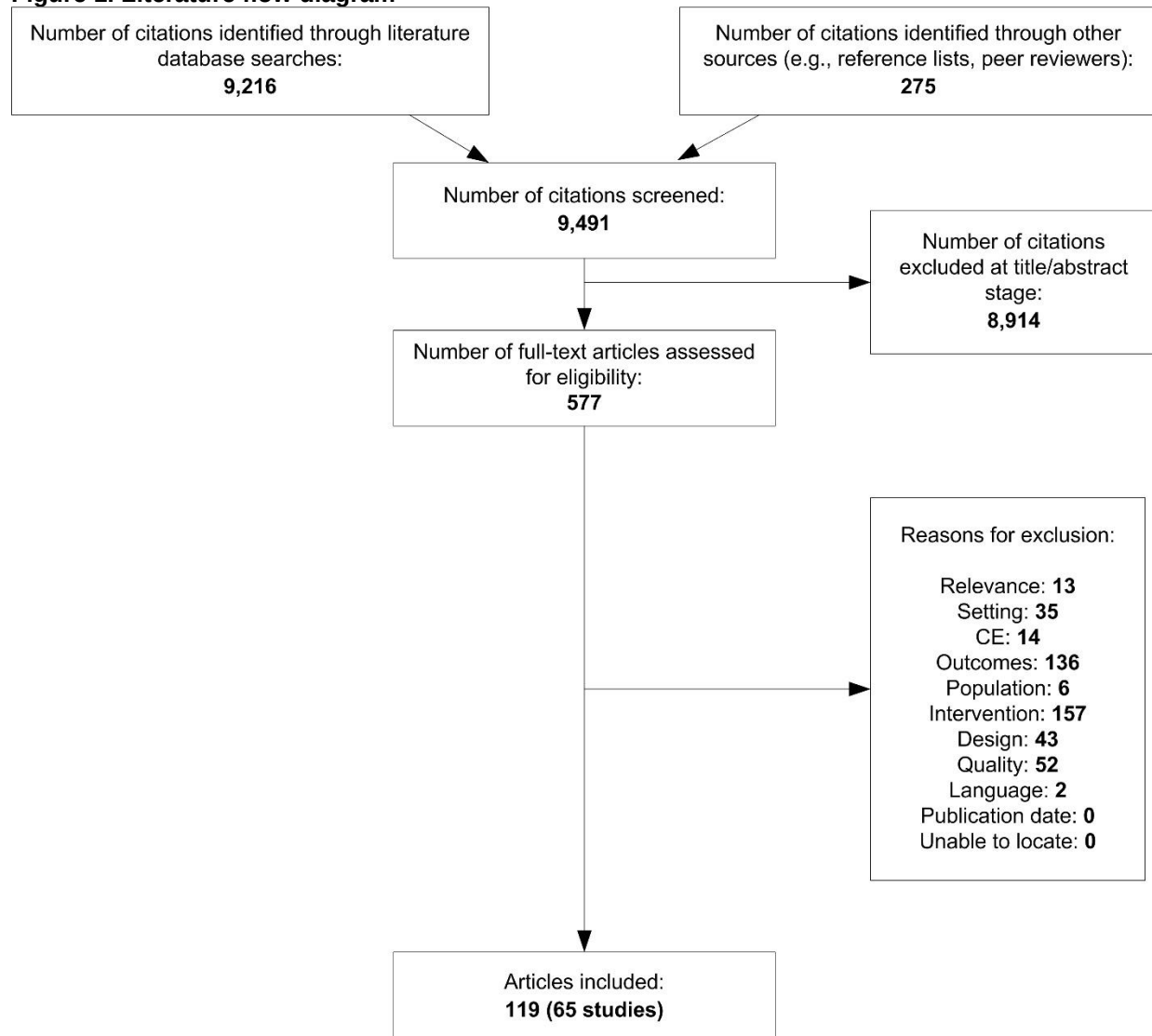
60 patient education.ti,ab,id.
61 nonpharmacologic intervention\$.ti,ab,id.
62 non pharmacologic intervention\$.ti,ab,id.
63 self regulat\$.ti,ab,id.
64 (school\$ adj5 (intervention\$ or program\$)).ti,ab,id.
65 or/22-64
66 Physical Activity/
67 Physical Fitness/
68 Exercise/
69 Aerobic Exercise/
70 Active Living/
71 (exercise or physical activity).ti.
72 aerobic\$.ti.
73 (fitness adj (class\$ or regime\$ or program\$)).ti.
74 (physical training or physical education).ti.
75 (sedentary behavio?r\$ adj3 reduc\$).ti,ab,id.
76 ((exercise or physical activity) adj5 (intervention\$ or promot\$)).ti,ab,id.
77 or/66-76
78 Diets/
79 Dietary Restraint/
80 Food Intake/
81 Eating Behavior/
82 (diet or diets or dieting or dietary).ti.
83 (diet\$ adj (modif\$ or therapy or intervention\$ or strateg\$)).ti,ab,id.
84 (low calorie or calorie control\$ or healthy eating).ti,ab,id.
85 formula diet\$.ti,ab,id.
86 (weightwatcher\$ or weight watcher\$).ti,ab,id.
87 or/78-86
88 Interdisciplinary Treatment Approach/
89 Collaboration/
90 Cooperation/
91 Case Management/
92 Work Teams/
93 Community Mental Health Services/
94 Health Care Delivery/
95 Community Psychology/
96 Community Psychiatry/
97 collaborat\$.ti,ab,id.
98 (interdisciplinary or inter disciplinary).ti,ab,id.
99 (multidisciplinary or multi disciplinary).ti,ab,id.
100 (integrated adj5 (healthcare or care)).ti,ab,id.
101 care manag\$.ti,ab,id.
102 case manag\$.ti,ab,id.
103 cooperative care.ti,ab,id.
104 coordinated care.ti,ab,id.
105 patient centered care.ti,ab,id.
106 or/88-105

107 ((weight loss or weight reduction or weight control or weight maintenance or weight managment)
 adj3 (intervention\$ or promot\$)).ti,ab,id.
 108 21 and (65 or 77 or 87 or 106 or 107)
 109 random\$.ti,ab,id,hw.
 110 placebo\$.ti,ab,hw,id.
 111 controlled trial\$.ti,ab,id,hw.
 112 clinical trial\$.ti,ab,id,hw.
 113 meta analy\$.ti,ab,hw,id.
 114 treatment outcome clinical trial.md.
 115 or/109-114
 116 108 and 115
 117 Orlistat.ti,ab,id.
 118 tetrahydrolipstatin.ti,ab,id.
 119 Xenical.ti,ab,id.
 120 Alli.ti,ab,id.
 121 metformin.ti,ab,id.
 122 Glucophage.ti,ab,id.
 123 dimethylbiguanidine.ti,ab,id.
 124 dimethylguanylguanidine.ti,ab,id.
 125 (dimethylbiguanide or dimethyl-biguanide).ti,ab,id.
 126 or/117-125
 127 21 and 126
 128 116 or 127
 129 limit 128 to (english language and yr="2010 -Current")

PUBMED, publisher-supplied

Search	Query
#7	#4 OR #6
#6	#1 AND #2 AND #5 AND publisher[sb] AND English[Language]] AND ("2010"[Date - Publication] : "3000"[Date - Publication]))
#5	Orlistat[tiab] OR tetrahydrolipstatin[tiab] OR Xenical[tiab] OR Alli[tiab] OR metformin[tiab] OR Glucophage[tiab] OR dimethylbiguanidine[tiab] OR dimethylguanylguanidine[tiab] OR dimethylbiguanide[tiab] OR dimethyl-biguanide[tiab]
#4	#1 AND #2 AND #3 AND publisher[sb] AND English[Language] AND ("2005"[Date - Publication] : "3000"[Date - Publication])
#3	(random*[tiab] OR trial*[tiab])
#2	(child*[title] OR adolescen*[title] OR teen*[title] OR boy*[title] OR girl*[title] OR youth*[title] OR young[title] OR school*[title] preschool*[title] OR OR pediatric*[title] OR paediatric*[title] OR toddler*[title])
#1	obese[title] OR obesity[title] OR overweight[title] OR weight[title] OR bmi[title] OR body mass index[title]

Figure 1. Literature flow diagram



Abbreviations: CE = comparative effectiveness

*Excluded comparative effectiveness studies may have not contained a multi-component intervention or compared one dietary pattern to another (e.g., low fat vs. low carbohydrate) or compared one physical activity regimen to another (e.g., resistance training vs. aerobics)

†Excluded studies for quality include those that had high or differential attrition or other quality issues including when a study did not have enough information to assess quality (e.g., conference abstract of results only)

Table 1. Inclusion and exclusion criteria

Category	Include	Exclude
Condition Definition	Studies identifying children who are overweight or have obesity according to sex- and age-specific criteria using methods such as BMI, BMI percentile, BMI z-score, or weight adjusted for height (percent ideal weight, percent overweight).	Studies using waist circumference, skin fold, bioimpedance, or other adiposity measures without also using age/sex-specific BMI measures.
Aim	Studies that include a weight reduction focus (primary aim may be targeting a comorbidity using weight reduction).	
Population	Age 2-18 years.. Either: (a) the entire sample has an age- and sex-specific BMI $\geq$ 85th percentile or meets other similar criteria for overweight based on ideal body weight, or (b) $\geq$ 50% of the sample has an age- and sex-specific BMI $\geq$ 85th percentile and $\geq$ 80% have risk factors for overweight (e.g., children of overweight parents; Hispanic, Black, or American Indian/Alaska Native ethnicity) or obesity-related medical problems (e.g., diabetes, metabolic syndrome, hypertension, lipid abnormalities, or other cardiovascular-related disorders).	<ul style="list-style-type: none"> • Average age < 2 years or > 18 years • Population limited to youth who: <ol style="list-style-type: none"> (1) have an eating disorder, (2) are pregnant or postpartum, (3) are overweight or have obesity secondary to a genetic or medical condition (e.g., polycystic ovarian syndrome, hypothyroidism, Cushing's Syndrome, growth hormone deficiency, insulinoma, hypothalamic disorders (e.g., Froelich's syndrome), Bardet-Biedl syndrome, Prader-Willi syndrome) or medication use (e.g., antipsychotics), (4) are in college
Intervention	<ul style="list-style-type: none"> • Behavioral interventions that involve parents or caregivers in some way and include a minimum of 3 components: <ul style="list-style-type: none"> ◦ Focus on increase in physical activity or decrease in sedentary behavior ◦ Focus on dietary change ◦ Behavioral component in support of 1 and/or 2 • May include complementary and alternative medicine approaches if 3 minimum components above are present • Intervention may target parents alone or in combination with the child • Mode of delivery must involve an interventionist and may include individual, group, family, multidisciplinary, internet, telephone, mailings, social media 	<ul style="list-style-type: none"> • Primary prevention in normal weight children • Pharmacological interventions • Surgical interventions • Self-help intervention (must be interventionist) • Provides all or most of participants' food
Comparator	Any comparison of behaviorally-based components Agreed on 2-step approach focusing on efficacy as first step. Studies with an active comparator (comparative effectiveness studies) will be identified and examined in the second step to see how they might be interpreted in light of the efficacy studies. The results of Step 1 will be reviewed by the panel and decisions about what to examine in Step 2 will be made in conjunction with the APA and the panel.	Active comparator if no efficacy established through review.
Outcomes	Studies must report BMI or weight adjusted for height or a similar measure (e.g. age- and sex-specific zBMI, BMI percentile, percent overweight)	Population changes in BMI or other adiposity measures in mixed primary prevention (normal weight) and populations that are overweight or have obesity.
Timing of Outcome Assessment	Total duration of intervention plus initial assessment $\geq$ 12 months.	

Category	Include	Exclude
Setting	All outpatient settings (e.g., primary care, clinic, psychological services center, community, after school, virtual [technologically-delivered]).	Residential/Inpatient Classroom-based
Study Design	RCT, CCT.	All other study designs.
Country	Economically developed countries, defined as OECD member countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.	Non-OECD member countries.
Publication Type	Peer-reviewed manuscripts and reports. (We will do tests for publication bias where we have an adequate number of studies for the statistical test or plotting approach.)	Non-peer-reviewed publications, book chapters, editorials, letters, non-systematic reviews, opinions, meeting abstracts
Language	English.	Languages other than English.
Publication Date	1985 - present	
Study Quality	Fair or good, according to design-specific criteria.	Poor, according to design-specific criteria.

Abbreviations: BMI = body mass index; CCT = clinical controlled trial; e.g. = for example; OECD = Organization of Economic Cooperation and Development; RCT = randomized controlled trial; USPSTF = U.S. Preventive Services Task Force

Table 2. Quality assessment

Study Design	Adapted Quality Criteria
Randomized and non-randomized controlled trials, adapted from the U.S. Preventive Services Task Force methods ⁵⁸	<ul style="list-style-type: none">• Valid random assignment? (NA for non-randomized controlled trials)• Was allocation concealed?• Was eligibility criteria specified?• Were groups similar at baseline?• Were outcome assessors blinded?• Were measurements equal, valid and reliable?• Was there intervention fidelity?• Was there adequate adherence to the intervention?• Were the statistical methods acceptable?• Was the handling of missing data appropriate?• Was there acceptable followup?• Was there evidence of selective reporting of outcomes?• Was there risk of contamination?

Good quality studies generally meet all quality criteria. Fair quality studies do not meet all the criteria but do not have critical limitations that could invalidate study findings. Poor quality studies have a single fatal flaw or multiple important limitations that could invalidate study findings. Critical appraisal of studies using *a priori* quality criteria are conducted independently by at least two reviewers. Disagreements in final quality assessment are resolved by consensus, and, if needed, consultation with a third independent reviewer.

Table 3. Calculations of contact hours of highest intensity intervention only

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Banks, 2012 ⁸⁰ Fair	5	NR	2.5	5 appointments @ 30 minutes = 2.5 hours
Bathrellou, 2010 ¹¹⁹ Fair	19 (child w/ parent), 2 (parent)	60	21	21x60 = 21 hours
Berkowitz, 2012 ⁸¹ Fair	6 (family clinic), 17 (group child), 17 (group parent)	45 (clinic)	38.5	6 clinic visits @ 45 minutes + 17 child group @ 60 minutes + 17 parent group @ 60 minutes = 38.5
Berry, 2014 ⁹² Fair	21	105	36.75	21x105 = 2205 = 36.75 hrs
Bocca, 2012 ⁹³ Fair	25	30-120	30	6 x 30 mins dietician=180; 12 X 60 mins PA sessions=720; 6 x 120 behavior therapy=720. Note=this is 27 hours; however article directly reports that intervention was 25 session of 30 hours, so this is what was abstracted. Perhaps 3-hr introductory session?
Broccoli, 2016 ⁹⁴ Good	5	30-60	3.75	(45 x 5) = 225 = 3.75
Bryant, 2011 ⁹⁵ Fair	16 (individual family), 16 (group PA)	30 (individual, parent), 60 (group PA)	24	30x16 + 60x16 = 8 hr + 16 hr = 24 hours
Coppins, 2011 ⁹⁶ Fair	2 (workshops), 76 (PA sessions)	480 (total workshops), 30 (PA sessions)	48	2 workshops @ 8 hours total + 2 PA sessions/week for 38 weeks @ 30 mins each=46 hours (assuming school term is 9 months=38 weeks)

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Davis, 2012 ¹¹⁷ Fair	14	15 (phone), 90 (group)	16	(8 sessions x 90 minutes) + (4 phone sessions x 15 minutes) = 720 + 60 = 780 minutes for youth; 2 x 90 = 180 minutes for parents; 780+180=960 minutes total = 16 hours
de Niet, 2012 ¹²⁰ Fair	11 (child), 6 (parent)	150 (group)	47.5	Text messages not counted in intensity; Individual sessions also not counted--not described, may be part of followup group sessions 11 x 2.5 hrs=32.5 hrs + 6 x 2.5 hrs=15 15+32.5=47.5
DeBar, 2012 ⁶⁹ Good	16 (child group), 12 (parent group), 2 (PCP)	90 (group), NR, est 15 min (PCP)	36.5	child: (90 x 16) = 24 hours, parent 12x60=12 hrs, 15 x 2 = 0.5 hrs, PCP visit
Epstein, 1985a ⁸² Fair	18 (child group), 18 (parent group, included individual family meeting), 18 (calls), 24 (exercise)	NR	66.5	18x2x60 (parent + child group) + 8x15 (individ family) + 18x15 (calls) + 6x3x60 (child exercise) + 6x60 (parent exercise) = 2160 + 390 + 1080 + 360 = 3990 = 66.5 Did not count parent/child unsupervised walks
Epstein, 1985b ⁸³ Fair	15 (child: 10 morning, 5 evening), 5 (parent), 1 intro sessions 9 (maintenance)	4.5h (Child morning sessions); NR(other sessions)	64	5x4.5hx2 (child morning) + 5x1hr (child evening) + 5x1hr (parent evening) + 9x1hr (family) = 64 hours
Epstein, 1994 ⁸⁴ Good	32 (parent group + indiv family), 32 (child group)	NR	64	32x60x2 = 64 hours Even though no mention of separate child sessions, assume there are, as in all other Epstein family-based lifestyle intervention studies. Seems reasonable groups wouldn't discuss parenting w children in room.

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Epstein, 1995 ⁸⁵ Fair	18 (indiv family + parent group), 18 (child group)	NR	40.5	$18 \times 15 + 18 \times 60 \times 2 = 270 + 2160 = 2430 = 40.5 \text{ hours}$
Epstein, 2000a ¹²¹ Good	20 (Parent group + family indiv), 20 (child)	15-30 (family), 30 (child/parent)	30	Epstein interventions are usually ~60 min/session (30m child and parent separate, 30m together): $30 \times 20 + 30 \times 20 \times 2 = 30 \text{ hours}$
Epstein, 2000b ¹²² Fair	20 (parent group + family indiv), 20 (child)	15-30 (family), 30 (child/parent)	30	Epstein interventions are usually ~60 min/session (30m child and parent separate, 30m together): $30 \times 20 + 30 \times 20 \times 2 = 30 \text{ hours}$
Epstein, 2004 ¹²³ Good	20 (parent group, family indiv), 20 (child group)	15-30 (family), 30 (child/parent)	30	Epstein interventions are usually ~60 min/session (30m child and parent separate, 30m together): $30 \times 20 + 30 \times 20 \times 2 = 30 \text{ hours}$
Epstein, 2008b ¹²⁴ Fair	13 (parent group, indiv family), 13 (child group)	90	32.5	Assessment mtgs not counted. Assume 30min for family mtg, 1 hr group meetings $13 \times .5 \text{ (family)} + 13 \times 1 \times 2 \text{ (group for parents and kids)} = 6.5 + 26 = 32.5 \text{ hours}$
Epstein, 2014 ¹²⁵ Fair	15 (parent group, small family groups), 15 (child groups)	15-20 (small-group), 45-50 (large group, parents and kids)	26.25	$15 \times .25 \text{ (small group)} + 15 \times .75 \times 2 \text{ (large group, parents and kids)} = 3.75 + 22.5 = 26.25 \text{ hours}$
Estabrooks, 2009 ¹²⁶ Fair	2 (group), 10 (IVR calls, not added to total sessions)	60 (group), NR (calls)	4	$120 \times 2 = 4 \text{ hours}$
Garipagaoglu, 2009 ¹²⁷ Fair	7	90	10.5	$7 \times 90 = 10.5$
Gerards, 2015 ⁹⁷ Fair	10 (group), 4 (telephone)	90 (group), 15-30 (telephone)	16.5	10 group sessions @ 90 minutes = 900 min; 4 calls @ 22 minutes = 88 minutes = 988 minutes

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Goldfield, 2001 ¹²⁸ Fair	13 (child), 13 (parent), 13 (individual)	15-20 (individual), 40 (group)	21.67	$13 \times 40 \times 2 + 20 \times 13 = 1040 + 260 = 1300 = 21.67 \text{ hours}$
Golley, 2007 ⁷⁰ Fair	4 (group parenting), 7 (calls), 7 (group lifestyle), 7 (PA)	2 hours (group parenting), 15-20 minutes (calls)	23.75	4 group parenting sessions @ 2 hours; 7 calls at 0.25 hours; 7 group lifestyle parent sessions @ 1 hour (assumed); 7 child PA @ 1 hour (assumed)=23.75
Grey, 2004 ⁸⁶ Fair	16 (nutrition + CST), 32 (exercise), 12 (calls)	45 (sessions) NR (phone calls)	39	$48 \times 45 + 12 \times 15 = 2160 + 180 = 2340 = 39 \text{ hours}$
Hughes, 2008 ⁹⁸ Fair	8	NR	5	Reported total contact time in text
Hystad, 2013 ¹²⁹ Fair	15 (parent group), 15 (child), 10 (family)	120 (group), 30 (family)	65	$30 \times 120 = 60 \text{ hrs}$, $10 \times 30 = 5 \text{ hours}$, total 65 hours
Israel, 1985 ⁸⁷ Fair	2 (parent skills), 9 (child group), 9 (parent group), 6 (family), 20 (phone calls)	60 (parent skills), 90 (child/parent sessions) brief problem solving and phone calls (NR)	35.5	$(9 \times 90) + (9 \times 90) + (20 \times 15 \text{ brief calls}) + (6 \times 15 \text{ brief problem solving}) = 2010 = 33.5 \text{ hours} + 2 \text{ hours} = 35.5$
Johnston, 2010 ¹³⁰ Fair	66 (child), 6 (parent)	35-40 (child)	47.25	$37.5 \times 66 + 6 \times 60 = 2475 + 360 = 2835 = 47.25 \text{ hours}$
Johnston, 2013 ¹³¹ Fair	66 (child), 6 (parent)	35-40 (child)	47.25	$37.5 \times 66 + 6 \times 60 = 2475 + 360 = 2835 = 47.25 \text{ hours}$
Kalarchian, 2009 ⁷¹ Fair	20 (child), 20 (parent), 6 (booster, 3 group, 3 calls)	60 (sessions)	43.75	20 adult group @ 1 hour; 20 child group @ 1 hour; 3 group boosted @ 1 hour; 3 calls @ 0.25=43.75
Kalavainen, 2007 ⁹⁹ Fair	14 (child), 14 (parent), 1 (family)	90	43.5	29 sessions @ 90 minutes=2610 mins=43.5 hours
Larsen, 2015 ⁸⁸ Fair	3 (group), 18 (GP visit)	180 (educational program), NR (GP visits)	18	$18 \times 30 + 3 \times 180 = 1080 \text{ min} = 18 \text{ hours}$

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Magarey, 2011 ⁸⁹ Fair	12 (group session), 4 (calls), 12 (child PA sessions)	90-120 (group session, assume PPP=120min, HL=90min); 60 (assume, child PA)	33	$4 \times 120 + 8 \times 90 + 4 \times 15 + 12 \times 60 = 480 + 720 + 60 + 720 = 33 \text{ hrs}$
McCallum, 2007 ⁷² Good	4	"Brief"	1	4 sessions @ 15 mins = 1 hour
Nemet, 2005 ¹⁰⁰ Fair	6 (dietician), 24 (exercise), 4 (lectures)	45 (dietician), 60 (exercise and lectures)	32.5	$6 \times 45 = 270 \text{ min}$, 4 lectures $\times 60 \text{ min} = 240$, $2 \times 12 \times 60 \text{ min}$ for PA = 1440 min; total 32.5 hrs
Nguyen, 2012 ¹³² Fair	7 (parent), 7 (child), 7 (booster - child only), 14 (telephone)	75 (parent/child), 60 (booster), 10 (telephone)	26.8	Emails/SMS not counted; $75 \times 14 + 60 \times 7 + 10 \times 14 = 1050 + 420 + 140 = 1610 = 26.8 \text{ hrs}$
Norman, 2015 ⁷³ Fair	27	NR	11.5	Weighted based step completion: 1 MD brief counseling (15 mins) + 4 in-person health ed (30 mins each) + 8 biweekly phone (15 mins each) + 2 in-person health ed (30 mins each) + 8 biweekly phone (15 mins each) + 4 monthly phone (15 min each). See hard copy
Nowicka, 2008 ¹⁰¹ Fair	4	240 (including 10 min individual PCP session)	16	(4 session $\times 4 \text{ hr}$) = 16 hours - although parents and child met separately for part of some meetings, this was not double counted
Patrick, 2013 ¹⁰² Fair	12 (group), 6 (phone calls)	90 (group sessions); 20 (phone calls)	38	$90 \times 2 \times 12 = 2160 = 36 \text{ hrs}$, $6 \times 20 = 120 = 2 \text{ hrs}$
Quattrin, 2014 ⁷⁴ Fair	16 (parent group + individual), 13 (calls), 16 (child PA)	60 (group), "brief" (individual) NR (phone calls)	39.25	$16 \times 60 \text{ (group)} + 16 \times 15 \text{ (indiv)} + 13 \times 15 \text{ (phone)} + 16 \times 60 \text{ (child PA)} = 960 + 240 + 195 + 960 = 2355 = 39.25$
Raynor, 2012b ¹⁰³ Fair	8	45	6	8 sessions @ 45 minutes = 360 min = 6 hours

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Reinehr, 2006 ¹⁰⁴ Fair	6 (child group), 9 (parent group), 6 (indiv family), 52 (PA)	90 (group sessions), 30 (indiv family), 60 (PA)	77.5	6x2x90=1080 parent and child group sessions, 3x90=270 parent "talk rounds", 6x30=180 individual family therapy, 52x60=3120 PA sessions = 4650 = 77.5 hrs
Reinehr, 2009 ¹⁰⁵ Fair	6 (child group), 9 (parent group), 6 (indiv family), 52 (PA)	90 (group sessions), 30 (family), 60 (PA)	77.5	6x2x90=1080 parent and child group sessions, 3x90=270 parent "talk rounds", 6x30=180 individual family therapy, 52x60=3120 PA sessions = 4650 = 77.5 hrs
Resnick, 2009 ⁷⁵ Fair	≥ 1 (mean, 3.4)	NR	1.7	30 x 3.4 = 1.7 hours
Resnicow, 2005 ⁹⁰ Fair	20-26 (child group sessions), 1 (retreat), 4-6 (calls), 12 (parent)	Calls (20-30); others NR	45.5	23 child group sessions @ 60 mins + 1 retreat @ 8 hrs + 5 calls @ 30 mins + 12 parent sessions @ 30 mins = 45.5
Resnicow, 2015 ⁷⁶ Fair	10	NR	2.5	Assume session length 15 mins as trial title indicates "brief" MI: 15*10=150 mins
Saelens, 2013 ¹³³ Fair	20 (family), 20 (child), 20 (parent)	20-30 (individual family), 40-50 (group child, group parent)	40	20 individual family sessions @ 30 mins + 20 parent group sessions @ 45 mins + 20 child group sessions @ 45 mins=40 hrs
Savoye, 2007 ¹⁰⁶ Fair	64	40 (diet+ behavioral), 50 (PA, 1st 6m), 100 (PA, 2nd 6m)	82.33	26x90 minutes (50 PE + 40 bx) + 26x50 (PE only, 1st 6m) + 13*100 (PE only, 2nd 6m) = 2340 + 1300 + 1300 = 4940 minutes = 82.33 hrs. Total sessions = 26x2 + 13 = 65 sessions. Did not count the encouraged 3 extra exercise sessions per week in 2nd 6 months.

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Stark, 2011 ¹⁰⁷ Fair	9 (clinic), 9 (in-home)	90 (clinic), 60-90 (in-home)	38.25	Phase I (intensive): Parent: $6 \times 90 = 540 = 9$ hrs; Child-clinic: $6 \times 90 = 540 = 9$ hrs; home: $6 \times 75 = 450 = 7.5$ hrs; Phase II (maintenance): Parent-clinic: $3 \times 90 = 270 = 4.5$ hrs, child-clinic: $3 \times 90 = 270 = 4.5$ hrs; in-home = $3 \times 75 = 225 = 3.75$ hrs
Stark, 2014 ¹⁰⁸ Fair	10 (child), 10 (parent)	90	30	$10 \times 2 \times 90 = 1800 = 30$ hrs
Steele, 2012 ¹³⁴ Fair	10 (child), 10 (parent), 10 (family)	80 (child group, parent group), 10 (family goal setting)	28.3	10 child group sessions @ 80 minutes + 10 parent group sessions @ 80 minutes + 10 family goal setting sessions @ 10 minutes = 1700 minutes
Stettler, 2014 ¹⁰⁹ Fair	12	15-25	4	$12 \times 20 = 240 = 4$ hours
Taveras, 2011 ¹¹⁰ Good	8	15-25	2.67	4×25 mins = 100; $3 \times 15 = 45$; assume 1 well-child visit during the year $\times 15$ mins = 15; 160 mins
Taveras, 2015 ¹¹¹ Good	5	75	1.25	1 visit with PCP + 4 phone sessions = 5 sessions 15 minute visit with PCP + (4 x 15 minute phone sessions) = 75 minutes/60 = 1.25 hours

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Taylor, 2015 ¹¹² Good	1 (multidisc), 11 (year 1), 3 (year 2)	60-120 (multidisc consult), 30-40 (in-person visits), 5-10 (phone calls)	7.2	90 (multidisc) + 7 (in-person)x35min + 6(phone)x7.5 = 90 + 245 + 45 = 380/60=6.3 (Since total sessions=14, assuming 1 multidisc consult, 7 in-person visits, 6 phone calls) 1st 12m: subtract 2 face-to-face and 1 phone, or 380-70-7.5=302.5/60=5.0hr
Toruner, 2010 ⁷⁷ Fair	7 (child group), 2 (parent group), 1 (parent individual)	40-70 (child group), 30-50 (parent individual)	9.75	7 child group sessions @ 60 minutes + 2 parent group sessions @ 60 minutes (assumed) + 1 individual parent counseling @ 45 minutes (midpoint rounded to quarter-hour)=9.75 hours
Van Grieken, 2013 ⁷⁸ Fair	4	NR, average duration of first additional session, 24.76 (range, 0-60)	2	# sessions: well child visit + 3 additional sessions offered; Intensity: 4@30=120 (though the well-child visit conceivably briefer, though not described that way)
Vos, 2011 ¹¹³ Fair	7 (child, one of these joint w parent), 5 (parent), 2(individual), 5 (booster)	150 (group) 180-270 (individual)	46.25	13 x 150 = 1950 group, 5 booster x 150 = 750, 180+270=450, total=3150/60=52.5 [1st 12m: 1950 + 300 (2 boosters) + 450=2700/60=45]
Wake, 2009 ⁷⁹ Good	4	"Brief"	1	4 sessions @ 15 minutes = 1 hour
Wake, 2013 ¹¹⁴ Good	1 (specialist), 1 (long GP), 4 (standard GP, using mean attended)	60 (specialist), 20-40 (long GP), 6-20 (standard GP)	2.5	(1 specialist session @ 60 min) + (1 GP long session @ 30 min) + (4 standard GP, using mean @ 15 min) = 2.5 hours

Author Year & Quality	Number of Sessions	Length of Sessions	Estimated Contact Hours	Calculation
Weigel, 2008 ¹¹⁵ Fair	104 (child), 12 (parent)	45-60 (child), 120 (parent)	114.1	Child: (52 weeks x 2 sessions) = 104 sessions x 52 minutes = 5408 minutes = 90.1 hours Parent: (12 months x 1 sessions) = 12 sessions x 2 hours = 24 hours
Wilfley, 2007 ¹¹⁸ Good	36 (parent), 36 (child), 36 (family, not separate from parent and child sessions)	20 (family), 40 (parent/child)	60	$20 \times 36 + 40 \times 2 \times 36 = 720 + 2880 = 3600 = 60 \text{ hours}$
Williamson, 2006 ¹¹⁶ Fair	4	60	4	Counseling emails not counted

Appendix B. Excluded Studies

Reason for Exclusion
E1. Study Relevance a. Not a trial of childhood overweight screening or treatment b. Other
E2. Setting: Community/university research laboratories or other nonmedical centers; college setting; mental health clinics (unless recruitment is through primary care); correctional facilities; school classrooms; worksites; inpatient/residential facilities; emergency departments. a. Countries that are not a member of the OECD
E3. Comparative Effectiveness a. Diet b. Physical activity
E4. No weight outcomes b. Timing of outcome assessment <6 months after baseline c. Timing of outcome assessment <12 months after baseline
E5. Population a. Limited to average age younger than 2 or older than 18 years b. Limited exclusively to youth who: have an eating disorder, are pregnant or postpartum, are overweight or have obesity secondary to a genetic or medical condition, are in college
E6. Intervention a. Primary prevention in children who are normal weight b. Surgical interventions c. Studies that include elements that cannot be implemented in a health care setting (e.g., changes to the physical/built environment, legislation) d. Complementary and alternative medicine approaches e. Studies that provide all or most of participants' food f. Pharmacological intervention g. Not a multicomponent intervention (missing diet, PA, and/or behavioral component) h. Child-only, not family-based
E7. Study Design: Not an RCT or CCT
E8. Study Quality a. High or differential attrition b. Other quality issue or not enough information to assess quality
E9. Non-English
E10. Published in 1966 or earlier
E11. Unable to locate article

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|---|--|
| <p>1. Book Series Helps Girls Fight Obesity. Curriculum Review. 2009;48(5):7. PMID: None. E7.</p> <p>2. Adams A, LaRowe T, Cronin KA, et al. Healthy children, strong families: Results of a randomized trial of obesity prevention for preschool American Indian children and their families. Obesity (Silver Spring, Md). 2011;19:S110. PMID: None. E6a</p> <p>3. Adams AK, LaRowe TL, Cronin KA, et al. The Healthy Children, Strong Families intervention: design and community participation. Journal of Primary Prevention. 2012;33(4):175-85. PMID: 22956296. E6a.</p> <p>4. Adeyemo MA, McDuffie JR, Kozlosky M, et al. Effects of metformin on energy intake and satiety in obese children. Diabetes Obes Metab. 2015;17(4):363-70. PMID: 25483291. E6f.</p> | <p>5. Aguilera A, Torre A, Kaiser L. Changes in food consumption patterns of mexican-heritage children during a nutrition intervention. Exp Biol. 2015;29(1). PMID: None. E6a.</p> <p>6. Alberga AS, Goldfield GS, Kenny GP, et al. Healthy Eating, Aerobic and Resistance Training in Youth (HEARTY): study rationale, design and methods. Contemporary Clinical Trials. 2012;33(4):839-47. PMID: 22548962. E4c.</p> <p>7. Alexy U, Reinehr T, Sichert-Hellert W, et al. Positive changes of dietary habits after an outpatient training program for overweight children. Nutr Res. 2006;26(5):202-8. PMID: None. E7.</p> <p>8. Amador M, Ramos LT, Morono M, et al. Growth rate reduction during energy restriction in obese adolescents. Exp Clin Endocrinol. 1990;96(1):73-82. PMID: 2279528. E2a.</p> |
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9. Anderson JD, Newby R, Kehm R, et al. Taking Steps Together: A Family- and Community-Based Obesity Intervention for Urban, Multiethnic Children. Health education & behavior : the official publication of the Society for Public Health Education. 2015;42(2):194-201. PMID: None. **E7.**
10. Anderson LM, Symoniak ED, Epstein LH. A randomized pilot trial of an integrated school-worksite weight control program. Health Psychology. 2014;33(11):1421-5. PMID: 23895201. **E2.**
11. Andre N, Beguier S. Using motivational interviewing as a supplement to physical activity program in obese adolescents: a RCT study. Eat Weight Disord. 2015;20(4):519-23. PMID: None. **E6g.**
12. Antal H, Buckloh L, Lochrie A, et al. Family-based intervention for overweight youth: Effects on health-related quality of life and measurements of physical health. 2010. PMID: None. **E8a.**
13. Armstrong B, Lim CS, Janicke DM. Park density impacts weight change in a behavioral intervention for overweight rural youth. Behav Med. 2015;41(3):123-30. PMID: 26332930. **E4b.**
14. Atabek ME, Pirgon O. Use of metformin in obese adolescents with hyperinsulinemia: a 6-month, randomized, double-blind, placebo-controlled clinical trial. J Pediatr Endocrinol Metab. 2008;21(4):339-48. PMID: 18556965. **E6f.**
15. Azad A, Gharakhanlou R, Niknam A, et al. Effects of aerobic exercise on lung function in overweight and obese students. Tanaffos. 2011;10(3):24-31. PMID: 25191372. **E2a.**
16. Backlund C, Sundelin G, Larsson C. Effect of a 1-year lifestyle intervention on physical activity in overweight and obese children. Adv Physiother. 2011;13(3):87-96. PMID: None. **E8b.**
17. Backlund C, Sundelin G, Larsson C. Effects of a 2-year lifestyle intervention on physical activity in overweight and obese children. Adv Physiother. 2011;13(3):97-109. PMID: None. **E8b.**
18. Backlund C, Sundelin G, Larsson C. Evaluation of a 2-year family-based lifestyle intervention regarding physical activity among children with overweight and obesity. Physiotherapy (United Kingdom). 2011;97:eS94-eS5. PMID: None. **E8b.**
19. Balagopal P, Bayne E, Sager B, et al. Effect of lifestyle changes on whole-body protein turnover in obese adolescents. Int J Obes Relat Metab Disord. 2003;27(10):1250-7. PMID: 14513074. **E4b.**
20. Balagopal P, George D, Patton N, et al. Lifestyle-only intervention attenuates the inflammatory state associated with obesity: a randomized controlled study in adolescents. J Pediatr. 2005;146(3):342-8. PMID: 15756217. **E4b.**
21. Ball GD, Ambler KA, Keaschuk RA, et al. Parents as agents of change (PAC) in pediatric weight management: the protocol for the PAC randomized clinical trial. BMC Pediatrics. 2012;12:114. PMID: 22866998. **E4, X7.**
22. Ball GD, Mackenzie-Rife KA, Newton MS, et al. One-on-one lifestyle coaching for managing adolescent obesity: Findings from a pilot, randomized controlled trial in a real-world, clinical setting. Paediatr child health. 2011;16(6):345-50. PMID: 22654546. **E4b.**
23. Barkin SL, Gesell SB, Poe EK, et al. Changing overweight Latino preadolescent body mass index: the effect of the parent-child dyad. Clin Pediatr (Phila). 2011;50(1):29-36. PMID: 20837625. **E8b.**
24. Bauer S, de Niet J, Timman R, et al. Enhancement of care through self-monitoring and tailored feedback via text messaging and their use in the treatment of childhood overweight. Patient Educ Couns. 2010;79(3):315-9. PMID: 20418046. **E7.**
25. Bean MK, Mazzeo SE, Stern M, et al. A values-based Motivational Interviewing (MI) intervention for pediatric obesity: study design and methods for MI Values. Contemp Clin Trials. 2011;32(5):667-74. PMID: 21554994. **E4c.**
26. Bean MK, Powell P, Quinoy A, et al. Motivational interviewing targeting diet and physical activity improves adherence to paediatric obesity treatment: results from the MI Values randomized controlled trial. Pediatr Obes. 2014. PMID: 24729537. **E4c.**
27. Bean MK, Wilson DB, Thornton LM, et al. Dietary intake in a randomized-controlled pilot of NOURISH: a parent intervention for overweight children. Prev Med. 2012;55(3):224-7. PMID: 22735041. **E4.**
28. Becque MD, Katch VL, Rocchini AP, et al. Coronary risk incidence of obese adolescents: reduction by exercise plus diet intervention. Pediatrics. 1988;81(5):605-12. PMID: 3357722. **E4b.**

29. Benestad B, Lekhal S, Hertel JK, et al. Long-term effectiveness of two family based life style intervention programs on childhood obesity. A 2-years randomized controlled pragmatic trial. *Obes Facts*. 2014;7:131. PMID: None. **E2**.
30. Berkowitz RI, Fujioka K, Daniels SR, et al. Effects of sibutramine treatment in obese adolescents: a randomized trial. *Ann Intern Med*. 2006;145(2):81-90. PMID: 16847290. **E6f**.
31. Berkowitz RI, Wadden TA, Gehrman CA, et al. Meal replacements in the treatment of adolescent obesity: a randomized controlled trial. *Obesity*. 2011;19(6):1193-9. PMID: 21151016. **E3a**.
32. Berkowitz RI, Wadden TA, Tershakovec AM, et al. Behavior therapy and sibutramine for the treatment of adolescent obesity: a randomized controlled trial. *JAMA*. 2003;289(14):1805-12. PMID: 12684359. **E6f**.
33. Bernardita Prado A, Veronica Gaete P, Francisca Corona H, et al. Metabolic effect of metformin in obese adolescents at risk of diabetes mellitus type 2. *Revista Chilena de Pediatría*. 2012;83(1):48-57. PMID: None. **E9**.
34. Berner N, Jay M, Lewis K, et al. Comparison of parent and child versus child-only weight management interventions in the patient-centered medical home. *J Clin Outcomes Manag*. 2015;22(2):57-60. PMID: None. **E7**.
35. Berry D, Savoye M, Melkus G, et al. An intervention for multiethnic obese parents and overweight children. *Appl Nurs Res*. 2007;20(2):63-71. PMID: 17481469. **E4c**.
36. Bloom T, Sharpe L, Mullan B, et al. A pilot evaluation of appetite-awareness training in the treatment of childhood overweight and obesity: a preliminary investigation. *Int J Eat Disord*. 2013;46(1):47-51. PMID: 22826019. **E4b**.
37. Bluher S, Panagiotou G, Petroff D, et al. Effects of a 1-year exercise and lifestyle intervention on irisin, adipokines, and inflammatory markers in obese children. *Obesity (Silver Spring)*. 2014;22(7):1701-8. PMID: 24644099. **E7**.
38. Bock DE, Robinson T, Seabrook JA, et al. The Health Initiative Program for Kids (HIP Kids): effects of a 1-year multidisciplinary lifestyle intervention on adiposity and quality of life in obese children and adolescents--a longitudinal pilot intervention study. *BMC Pediatrics*. 2014;14:296. PMID: 25475951. **E7**.
39. Bohnert AM, Ward AK. Making a difference: Evaluating the Girls in the Game (GIG) after-school program. *J Early Adolesc*. 2013;33(1):104-30. PMID: None. **E6h**.
40. Bonsergent E, Agrinier N, Thilly N, et al. Overweight and obesity prevention for adolescents: a cluster randomized controlled trial in a school setting. *Am J Prev Med*. 2013;44(1):30-9. PMID: 23253647. **E6c**.
41. Bonsergent E, Thilly N, Legrand K, et al. Process evaluation of a school-based overweight and obesity screening strategy in adolescents. *Global Health Promot*. 2013;20(2 Suppl):76-82. PMID: 23678500. **E6c**.
42. Boudreau AD, Kurowski DS, Gonzalez WI, et al. Latino families, primary care, and childhood obesity: a randomized controlled trial. *Am J Prev Med*. 2013;44(3 Suppl 3):S247-57. PMID: 23415190. **E4c**.
43. Boutelle KN, Braden A, Douglas JM, et al. Design of the FRESH study: A randomized controlled trial of a parent-only and parent-child family-based treatment for childhood obesity. *Contemp Clin Trials*. 2015;45(Pt B):364-70. PMID: 26358536. **E4**.
44. Boutelle KN, Cafri G, Crow SJ. Parent-only treatment for childhood obesity: a randomized controlled trial. *Obesity*. 2011;19(3):574-80. PMID: 20966907. **E4c**.
45. Boutelle KN, Fannin H, Cafri G, et al. A randomized clinical trial evaluating the efficacy of a guided self-help treatment for families with an overweight child. *Obesity (Silver Spring, Md)*. 2011;19:S103. PMID: None. **E4b**.
46. Boutelle KN, Norman GJ, Rock CL, et al. Guided self-help for the treatment of pediatric obesity. *Pediatrics*. 2013;131(5):e1435-42. PMID: 23545372. **E4b**.
47. Boutelle KN, Zucker N, Peterson CB, et al. An intervention based on Schachter's externality theory for overweight children: The Regulation of Cues pilot. *J Pediatr Psychol*. 2014;39(4):405-17. PMID: 24459240. **E6g**.

48. Boutelle KN, Zucker NL, Peterson CB, et al. Two novel treatments to reduce overeating in overweight children: a randomized controlled trial. *Journal of Consulting & Clinical Psychology*. 2011;79(6):759-71. PMID: 22122291. **E6g.**
49. Braet C, Tanghe A, Decaluwe V, et al. Inpatient treatment for children with obesity: weight loss, psychological well-being, and eating behavior. *J Pediatr Psychol*. 2004;29(7):519-29. PMID: 15347700. **E2.**
50. Braet C, Van Winckel M. Long-term follow-up of a cognitive behavioral treatment program for obese children. *Behav Ther*. 2000;31(1):55-74. PMID: None. **E7.**
51. Braet C, Van Winckel M, Van Leeuwen K. Follow-up results of different treatment programs for obese children. *Acta Paediatr*. 1997;86(4):397-402. PMID: 9174227. **E7.**
52. Brennan L, Walkley J, Fraser SF, et al. Motivational interviewing and cognitive behaviour therapy in the treatment of adolescent overweight and obesity: study design and methodology. *Contemp Clin Trials*. 2008;29(3):359-75. PMID: 17950046. **E8a.**
53. Brennan L, Walkley J, Wilks R. Parent- and adolescent-reported barriers to participation in an adolescent overweight and obesity intervention. *Obesity (Silver Spring)*. 2012;20(6):1319-24. PMID: 22193923. **E8a.**
54. Brennan L, Walkley J, Wilks R, et al. Physiological and behavioural outcomes of a randomised controlled trial of a cognitive behavioural lifestyle intervention for overweight and obese adolescents. *Obes Res Clin Pract*. 2013;7(1):e23-41. PMID: 24331680. **E8a.**
55. Brennan L, Wilks R, Walkley J, et al. Treatment acceptability and psychosocial outcomes of a randomised controlled trial of a cognitive behavioural lifestyle intervention for overweight and obese adolescents. *Behav Change*. 2012;29(1):36-62. PMID: 24331680. **E8a.**
56. Briancon S, Bonsergent E, Agrinier N, et al. PRALIMAP: study protocol for a high school-based, factorial cluster randomised interventional trial of three overweight and obesity prevention strategies. *Trials [Electronic Resource]*. 2010;11:119. PMID: 21134278. **E6a.**
57. Brown B, Noonan C, Harris KJ, et al. Developing and piloting the Journey to Native Youth Health program in Northern Plains Indian communities. *Diabetes Educ*. 2013;39(1):109-18. PMID: 23150531. **E4b.**
58. Brown BD, Noonan C, Harris KJ, et al. Diabetes prevention program for native american youth: The journey to native youth health feasibility study. *Diabetes*. 2011;60:A82. PMID: None. **E4b.**
59. Browning MG, Bean MK, Wickham EP, et al. Cardiometabolic and fitness improvements in obese girls who either gained or lost weight during treatment. *J Pediatr*. 2015;166(6):1364-9. PMID: 25890676. **E7.**
60. Brufani C, Fintini D, Nobili V, et al. Use of metformin in pediatric age. *Pediatr Diabetes*. 2011;12(6):580-8. PMID: 21366813. **E7.**
61. Bruyndonckx L, Hoymans VY, De Guchteneere A, et al. Diet, exercise, and endothelial function in obese adolescents. *Pediatrics*. 2015;135(3):e653-61. PMID: 25667241. **E2.**
62. Budd GM, Hayman LL, Crump E, et al. Weight loss in obese African American and Caucasian adolescents: secondary analysis of a randomized clinical trial of behavioral therapy plus sibutramine. *J Cardiovasc Nurs*. 2007;22(4):288-96. PMID: 17589281. **E6f.**
63. Burgert TS, Duran EJ, Goldberg-Gell R, et al. Short-term metabolic and cardiovascular effects of metformin in markedly obese adolescents with normal glucose tolerance. *Pediatr Diabetes*. 2008;9(6):567-76. **E6f.**
64. Burrows T, Warren JM, Baur LA, et al. Impact of a child obesity intervention on dietary intake and behaviors. *International Journal of Obesity*. 2008;32(10):1481-8. PMID: 18607380. **E8a.**
65. Campos RM, de Mello MT, Tock L, et al. Aerobic plus resistance training improves bone metabolism and inflammation in adolescents who are obese. *J Strength Cond Res*. 2014;28(3):758-66. PMID: 24263653. **E2a.**
66. Carraway ME. Project mentor+: Mentor-led exercise with cognitive-behavioral therapy to improve perceived competence, reduce social anxiety, and increase physical activity in overweight adolescents. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2015;76(2). PMID: None. **E4b.**

67. Caylr A, Turan MI, Gurbuz F, et al. The effect of lifestyle change and metformin therapy on serum arylesterase and paraoxonase activity in obese children. *J Pediatr Endocrinol Metab*. 2015;28(5-6):551-6. PMID: None. **E6f**.
68. Celio AA. Early intervention of eating- and weight-related problems via the internet in overweight adolescents: A randomized controlled trial. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2005;66(4-B):2299. PMID: None. **E4c**.
69. Chanoine JP, Hampl S, Jensen C, et al. Effect of orlistat on weight and body composition in obese adolescents: a randomized controlled trial. *JAMA*. 2005;293(23):2873-83. PMID: 15956632. **E6g**.
70. Chanoine JP, Richard M. Early weight loss and outcome at one year in obese adolescents treated with orlistat or placebo. *Int J Pediatr Obes*. 2011;6(2):95-101. PMID: 20858149. **E6g**.
71. Chen AK, Roberts CK, Barnard RJ. Effect of a short-term diet and exercise intervention on metabolic syndrome in overweight children. *Metabolism*. 2006;55(7):871-8. PMID: 16784957. **E4b**.
72. Chen JL, Kwan M, Mac A, et al. iStart smart: a primary-care based and community partnered childhood obesity management program for Chinese-American children: feasibility study. *J Immigr Minor Health*. 2013;15(6):1125-8. PMID: 23595264. **E8b**.
73. Chen JL, Weiss S, Heyman MB, et al. Efficacy of a child-centred and family-based program in promoting healthy weight and healthy behaviors in Chinese American children: a randomized controlled study. *J Public Health (Oxf)*. 2010;32(2):219-29. PMID: 19933120. **E6a**.
74. Chen JL, Weiss SJ, Heyman MB, et al. The Active Balance Childhood program for improving coping and quality of life in Chinese American children. *Nurs Res*. 2010;59(4):270-9. PMID: 20585223. **E6a**.
75. Chirita-Emandi A, Puiu M. Outcomes of neurofeedback training in childhood obesity management: A pilot study. *J Altern Complement Med*. 2014;20(11):831-7. PMID: None. **E6g**.
76. Chongviriyaphan N, Sangthien N, Suthutvoravut U, editors. The nutrition counselling with a behavior modification is effective in obese school-aged children. 11th International Congress on Obesity; 2010; Stockholm Sweden. Search 1 CENTRAL 20150210. **E2a**.
77. Clarson CL, Brown H, Dejesus S, et al. Structured lifestyle intervention with metformin extended release or placebo in obese adolescents. *Diabetes*. 2013;62:A337-a8. PMID: None. **E6f**.
78. Clarson CL, Brown HK, Dejesus S, et al. Effects of a Comprehensive, Intensive Lifestyle Intervention Combined with Metformin Extended Release in Obese Adolescents. *International Scholarly Research Notices*. 2014;2014, Article ID 659410:13. **E6f**.
79. Clarson CL, Mahmud FH, Baker JE, et al. Metformin in combination with structured lifestyle intervention improved body mass index in obese adolescents, but did not improve insulin resistance. *Endocrine*. 2009;36(1):141-6. PMID: 19387874. **E6f**.
80. Cliff DP, Okely AD, Morgan PJ, et al. Movement skills and physical activity in obese children: randomized controlled trial. *Medicine & Science in Sports & Exercise*. 2011;43(1):90-100. PMID: 20473216. **E8a**.
81. Cohen T, Hazell T, Loiselle SE, et al. A family-centered lifestyle intervention focused on milk and alternatives reduces adiposity in 6-to 8-year-old overweight and obese children compared to control: Results at 6 months from a RCT. *Exp Biol*. 2014;28(Suppl 1). PMID: None. **E4c**.
82. Cohen TR, Hazell TJ, Loiselle S, et al., editors. A family-centered lifestyle intervention focused on milk and alternatives reduces adiposity in six to eight Y old overweight and obese children compared to control: Results at six months from a RCT. 91st Annual Conference of the Canadian Paediatric Society; 2014; Montreal, QC Canada. Search 2 CENTRAL 20160122: Pulsus Group Inc. **E4c**.
83. Cohen TR, Hazell TJ, Vanstone CA, et al. A family-centered lifestyle intervention to improve body composition and bone mass in overweight and obese children 6 through 8 years: a randomized controlled trial study protocol. *BMC Public Health*. 2013;13:383. **E4c**.

84. Coleman KJ, Tiller CL, Sanchez J, et al. Prevention of the epidemic increase in child risk of overweight in low-income schools: the El Paso coordinated approach to child health. *Archives of Pediatrics & Adolescent Medicine* 159(3):217-24,. 2005. PMID: 15753263. **E6c.**
85. Collins CE, Okely AD, Morgan PJ, et al. Parent diet modification, child activity, or both in obese children: an RCT. *Pediatrics*. 2011;127(4):619-27. PMID: 21444600. **E8a.**
86. Condarco TA, Sherafat-Kazemzadeh R, McDuffie JR, et al., editors. Long-term follow-up of a randomized, placebo-controlled trial of orlistat in African-American and caucasian adolescents with obesity-related comorbid conditions. The Endocrine Society's 95th Annual Meeting and Expo; 2013 June 15; San Francisco, CA. Search 2 CENTRAL 20160122: Endocrine Society. **E6f.**
87. Croker H, Viner RM, Nicholls D, et al. Family-based behavioural treatment of childhood obesity in a UK National Health Service setting: randomized controlled trial. *Int J Obes (Lond)*. 2012;36(1):16-26. PMID: 21931327. **E4c.**
88. Cruz TH, Davis SM, FitzGerald CA, et al. Engagement, recruitment, and retention in a trans-community, randomized controlled trial for the prevention of obesity in rural American Indian and Hispanic children. *J Prim Prev*. 2014;35(3):135-49. PMID: 24549525. **E6c.**
89. Damaso AR, da Silveira Campos RM, Caranti DA, et al. Aerobic plus resistance training was more effective in improving the visceral adiposity, metabolic profile and inflammatory markers than aerobic training in obese adolescents. *J Sports Sci*. 2014;32(15):1435-45. PMID: 24730354. **E2a.**
90. Daniels SR, Long B, Crow S, et al. Cardiovascular effects of sibutramine in the treatment of obese adolescents: results of a randomized, double-blind, placebo-controlled study. *Pediatrics*. 2007;120(1):e147-57. PMID: 17576783. **E6f.**
91. Danielsen YS, Nordhus IH, Juliusson PB, et al. Effect of a family-based cognitive behavioural intervention on body mass index, self-esteem and symptoms of depression in children with obesity (aged 7-13): a randomised waiting list controlled trial. *Obes Res Clin Pract*. 2013;7(2):e116-e28. PMID: 24331773. **E4b.**
92. Davies MA, Terhorst L, Nakonechny AJ, et al. The development and effectiveness of a health information website designed to improve parents' self-efficacy in managing risk for obesity in preschoolers. *J Spec Pediatr Nurs*. 2014;19(4):316-30. PMID: 25160030. **E7.**
93. Davis AM, James RL, Boles RE, et al. The use of TeleMedicine in the treatment of paediatric obesity: feasibility and acceptability. *Matern Child Nutr*. 2011;7(1):71-9. PMID: 21108739. **E8b.**
94. Davis AM, Sampilo M, Gallagher KS, et al. Treating rural paediatric obesity through telemedicine vs. telephone: Outcomes from a cluster randomized controlled trial. *J Telemed Telecare*. 2015. PMID: 26026186. **E4b.**
95. Davis AM, Sampilo M, Gallagher KS, et al. Treating rural pediatric obesity through telemedicine: outcomes from a small randomized controlled trial. *J Pediatr Psychol*. 2013;38(9):932-43. PMID: 23428652. **E4c.**
96. Davis JN, Kelly LA, Lane CJ, et al. Randomized control trial to improve adiposity and insulin resistance in overweight Latino adolescents. *Obesity (Silver Spring)*. 2009;17(8):1542-8. PMID: 19247280. **E4b.**
97. Davis JN, Ventura EE, Shaibi GQ, et al. Interventions for improving metabolic risk in overweight Latino youth. *International Journal of Pediatric Obesity*. 2010;5(5):451-5. PMID: 20387989. **E7.**
98. de Carvalho-Ferreira JP, Masquio DC, da Silveira Campos RM, et al. Is there a role for leptin in the reduction of depression symptoms during weight loss therapy in obese adolescent girls and boys? *Peptides*. 2015;65:20-8. PMID: 25629253. **E2a.**
99. de Mello ED, Luft VC, Meyer F. [Individual outpatient care versus group education programs. Which leads to greater change in dietary and physical activity habits for obese children?]. *J Pediatr (Rio J)*. 2004;80(6):468-74. PMID: 15622423. **E2a.**

100. De Miguel-Etayo P, Moreno LA, Santabarbara J, et al. Anthropometric indices to assess body-fat changes during a multidisciplinary obesity treatment in adolescents: EVASYON Study. *Clin Nutr*. 2015;34(3):523-8. PMID: 24993080. **E7**.
101. de Piano A, de Mello MT, Sanches Pde L, et al. Long-term effects of aerobic plus resistance training on the adipokines and neuropeptides in nonalcoholic fatty liver disease obese adolescents. *European Journal of Gastroenterology & Hepatology*. 2012;24(11):1313-24. PMID: 22932160. **E6h**.
102. de Piano A, Mello M, Sanches P, et al. Long-term effects of aerobic plus resistance training on the adipokines and neuropeptides in naflid obese adolescents. *Obes Facts*. 2012;5:187. PMID: None. **E6h**.
103. Demol S, Yackobovitch-Gavan M, Shalitin S, et al. Low-carbohydrate (low & high-fat) versus high-carbohydrate low-fat diets in the treatment of obesity in adolescents. *Acta Paediatrica*. 2009;98(2):346-51. PMID: 18826492. **E3a**.
104. Denney-Wilson E, Robinson A, Laws R, et al. Development and feasibility of a child obesity prevention intervention in general practice: the Healthy 4 Life pilot study. *J Paediatr Child Health*. 2014;50(11):890-4. PMID: 24946199. **E7**.
105. Dennison BA, Nicholas J, de Long R, et al. Randomized controlled trial of a mailed toolkit to increase use of body mass index percentiles to screen for childhood obesity. *Preventing Chronic Disease*. 2009;6(4):A122. PMID: 19754998. **E1**.
106. Dennison BA, Russo TJ, Burdick PA, et al. An intervention to reduce television viewing by preschool children. *Arch Pediatr Adolesc Med*. 2004;158(2):170-6. PMID: 14757609. **E6a**.
107. Dewes O, Sluyter J, Scragg R, et al. Fanau FAB: Parent-focused weight management programme for Pacific children. *Obesity reviews*. 2014;15:212. PMID: None. **E4c**.
108. Diaz M, Bassols J, Lopez-Bermejo A, et al. Metformin treatment to reduce central adiposity after prenatal growth restraint: a placebo-controlled pilot study in prepubertal children. *Pediatr Diabetes*. 2015;16(7):538-45. PMID: 25332100. **E6f**.
109. Diaz RG, Esparza-Romero J, Moya-Camarena SY, et al. Lifestyle intervention in primary care settings improves obesity parameters among Mexican youth. *J Am Diet Assoc*. 2010;110(2):285-90. PMID: 20102858. **E8a**.
110. Dorgan JF, Liu L, Barton BA, et al. Adolescent diet and metabolic syndrome in young women: Results of the Dietary Intervention Study in Children (DISC) follow-up study. *J Clin Endocrinol Metab*. 2011;96(12):E1999-e2008. PMID: 21994964. **E6a**.
111. Dove J. Effects of a multi-component school-based intervention on health markers, body composition, physical fitness, and psychological measures in overweight and obese adolescent females. Waco, Texas: Baylor University; 2008. **E4b**.
112. Doyle AC, Goldschmidt A, Huang C, et al. Reduction of overweight and eating disorder symptoms via the Internet in adolescents: a randomized controlled trial. *J Adolesc Health*. 2008;43(2):172-9. PMID: 18639791. **E4c**.
113. Dreyer Gillette ML, Odar Stough C, Best CM, et al. Comparison of a condensed 12-week version and a 24-week version of a family-based pediatric weight management program. *Child Obes*. 2014;10(5):375-82. PMID: 25260025. **E8a**.
114. Duggins M, Cherven P, Carrithers J, et al. Impact of family YMCA membership on childhood obesity: a randomized controlled effectiveness trial. *J Am Board Fam Med*. 2010;23(3):323-33. PMID: 20453178. **E6g**.
115. Ebbeling CB, Feldman HA, Chomitz VR, et al. A randomized trial of sugar-sweetened beverages and adolescent body weight. *N Engl J Med*. 2012;367(15):1407-16. PMID: 22998339. **E6g**.
116. Ebbeling CB, Feldman HA, Osganian SK, et al. Effects of decreasing sugar-sweetened beverage consumption on body weight in adolescents: a randomized, controlled pilot study. *Pediatrics*. 2006;117(3):673-80. PMID: 16510646. **E6a**.
117. Ebbeling CB, Leidig MM, Sinclair KB, et al. A reduced-glycemic load diet in the treatment of adolescent obesity. *Arch Pediatr Adolesc Med*. 2003;157(8):773-9. PMID: 12912783. **E5a**.

118. Eddy LS, Moral I, Frutos E, et al. Evaluation of self-awareness of adolescents with overweight and obesity (Obescat Study). *Pediatr Catalana*. 2013;73(3):107-12. PMID: None. **E9.**
119. Eliakim A, Friedland O, Kowen G, et al. Parental obesity and higher pre-intervention BMI reduce the likelihood of a multidisciplinary childhood obesity program to succeed--a clinical observation. *J Pediatr Endocrinol Metab*. 2004;17(8):1055-61. PMID: 15379415. **E7.**
120. Eliakim A, Kaven G, Berger I, et al. The effect of a combined intervention on body mass index and fitness in obese children and adolescents - a clinical experience. *Eur J Pediatr*. 2002;161(8):449-54. PMID: 12172831. **E7.**
121. Ellis DA, Janisse H, Naar-King S, et al. The effects of multisystemic therapy on family support for weight loss among obese African-American adolescents: findings from a randomized controlled trial. *J Dev Behav Pediatr*. 2010;31(6):461-8. PMID: 20585269. **E4c.**
122. Endevelt R, Elkayam O, Cohen R, et al. An intensive family intervention clinic for reducing childhood obesity. *J Am Board Fam Med*. 2014;27(3):321-8. PMID: 24808110. **E8b.**
123. Epstein LH, Kilanowski C, Paluch RA, et al. Reducing variety enhances effectiveness of family-based treatment for pediatric obesity. *Eat Behav*. 2015;17:140-3. PMID: 25706950. **E4b.**
124. Epstein LH, Kuller LH, Wing RR, et al. The effect of weight control on lipid changes in obese children. *Am J Dis Child*. 1989;143(4):454-7. PMID: 2929526. **E4c.**
125. Epstein LH, Roemmich JN, Robinson JL, et al. A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children. *Arch Pediatr Adolesc Med*. 2008;162(3):239-45. PMID: 18316661. **E6g.**
126. Escobar-Chaves SL, Markham CM, Addy RC, et al. The Fun Families Study: intervention to reduce children's TV viewing. *Obesity*. 2010;18 Suppl 1:S99-101. PMID: 20107469. **E4.**
127. Etu SF. A test of the compensation and capitalization models in group interpersonal psychotherapy for adolescent girls at risk for obesity. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2012;72(10-B):6412. PMID: None. **E6g.**
128. Evans WD, Christoffel KK, Necheles J, et al. Outcomes of the 5-4-3-2-1 Go! Childhood obesity community trial. *Am J Health Behav*. 2011;35(2):189-98. PMID: 21204681. **E4.**
129. Evia-Viscarra ML, Rodea-Montero ER, Apolinar-Jimenez E, et al. The effects of metformin on inflammatory mediators in obese adolescents with insulin resistance: controlled randomized clinical trial. *J Pediatr Endocrinol*. 2012;25(1-2):41-9. PMID: 22570949. **E6f.**
130. Ewing LJ, Cluss P, Goldstrohm S, et al. Translating an evidence-based intervention for pediatric overweight to a primary care setting. *Clin Pediatr (Phila)*. 2009;48(4):397-403. PMID: 19164134. **E7.**
131. Ezendam NP, Brug J, Oenema A. Evaluation of the Web-based computer-tailored FATaintPHAT intervention to promote energy balance among adolescents: results from a school cluster randomized trial. *Archives of Pediatrics & Adolescent Medicine*. 2012;166(3):248-55. PMID: 22064878. **E6a.**
132. Fagg J, Chadwick P, Cole TJ, et al. From trial to population: a study of a family-based community intervention for childhood overweight implemented at scale. *Int J Obes (Lond)*. 2014;38(10):1343-9. PMID: 24919564. **E4b.**
133. Faigenbaum A, Farrell A, Radler T, et al. "Plyo Play": a novel program of short bouts of moderate and high intensity exercise improves physical fitness in elementary school children. *The Physical Educator*. 2009;66:37-44. PMID: None. **E2.**
134. Faith MS, Berman N, Heo M, et al. Effects of contingent television on physical activity and television viewing in obese children. *Pediatrics*. 2001;107(5):1043-8. PMID: 11331684. **E4b.**
135. Fajcsak Z, Gabor A, Kovacs V, et al. The effects of 6-week low glycemic load diet based on low glycemic index foods in overweight/obese children--pilot study. *J Am Coll Nutr*. 2008;27(1):12-21. PMID: 18460477. **E4b.**
136. Falbe J, Cadiz AA, Tantoco NK, et al. Active and healthy families: a randomized controlled trial of a culturally tailored obesity intervention for Latino children. *Acad Pediatr*. 2015;15(4):386-95. PMID: 25937516. **E4b.**

137. Farpour-Lambert NJ, Aggoun Y, Marchand LM, et al. Physical activity reduces systemic blood pressure and improves early markers of atherosclerosis in pre-pubertal obese children. *J Am Coll Cardiol*. 2009;54(25):2396-406. PMID: 20082930. **E4b.**
138. Figueroa-Colon R, Franklin FA, Lee JY, et al. Feasibility of a clinic-based hypocaloric dietary intervention implemented in a school setting for obese children. *Obes Res*. 1996;4(5):419-29. PMID: 8885206. **E2.**
139. Fillingim J. An after school health intervention program for obese elementary children. Atlanta, Georgia: Georgia State University; 1987.
140. Finne E, Reinehr T, Schaefer A, et al. Changes in self-reported and parent-reported health-related quality of life in overweight children and adolescents participating in an outpatient training: findings from a 12-month follow-up study. *Health Qual of Life Outcomes*. 2013;11:1. PMID: 23281620. **E4c.**
141. Firoozi M, Gheed Rahmat A. Virtual social network for management of obesity in children and adolescents. *Iran*. 2013;23:S9-s10. PMID: None. **E4c.**
142. Fitzgibbon ML, Stolley MR, Schiffer L, et al. Two-year follow-up results for Hip-Hop to Health Jr.: A randomized controlled trial for overweight prevention in preschool minority children. *J Pediatr*. 2005;146(5):618-25. PMID: None. **E2.**
143. Flattum C, Friend S, Story M, et al. Evaluation of an individualized counseling approach as part of a multicomponent school-based program to prevent weight-related problems among adolescent girls. *Journal of the American Dietetic Association*. 2011;111(8):1218-23. PMID: 21802570. **E6a.**
144. Flodmark CE, Ohlsson T, Ryden O, et al. Prevention of progression to severe obesity in a group of obese schoolchildren treated with family therapy. *Pediatrics*. 1993;91(5):880-4. PMID: 8474806. **E8b.**
145. Fogelholm M, Larsen TM, Westerterp-Plantenga M, et al. The preview-intervention trial: Design and methods. *Ann Nutr Metab*. 2013;63:96-7. PMID: None. **E4, X7.**
146. Foley L, Jiang Y, Ni Mhurchu C, et al. The effect of active video games by ethnicity, sex and fitness: subgroup analysis from a randomised controlled trial. *Int J Behav Nutr Phys Act*. 2014;11(1):46. PMID: 24694082. **E6g.**
147. Follansbee-Junger K, Janicke DM, Sallinen BJ. The influence of a behavioral weight management program on disordered eating attitudes and behaviors in children with overweight. *J Am Diet Assoc*. 2010;110(11):1653-9. PMID: 21034878. **E4c.**
148. Fonseca H, Palmeira AL, Martins SC, et al. Managing paediatric obesity: a multidisciplinary intervention including peers in the therapeutic process. *BMC Pediatrics*. 2014;14:89. PMID: 24693926. **E6h.**
149. Ford AL, Bergh C, Sodersten P, et al. Treatment of childhood obesity by retraining eating behaviour: randomised controlled trial. *BMJ*. 2010;340:b5388. PMID: 20051465. **E6g.**
150. Ford AL, Bergh C, Sodersten P, et al. Treatment of childhood obesity by retraining eating behaviour: randomised controlled trial. *BMJ*. 2009;340:b5388. PMID: 20051465. **E6g.**
151. Fortune R, Love-Osborne K, Sheeder J. Use of text messaging as an adjunct to obesity prevention and treatment in school-based health clinics. *J Adolesc Health*. 2012;50(2 suppl. 1):S33. PMID: None. **E6h.**
152. Foster GD, Wadden TA, Brownell KD. Peer-led program for the treatment and prevention of obesity in the schools. *J Consult Clin Psychol*. 1985;53(4):538-40. PMID: 4031211. **E4c.**
153. Freedman DS, Shear CL, Burke GL, et al. Persistence of juvenile-onset obesity over eight years: the Bogalusa Heart Study. *Am J Public Health*. 1987;77(5):588-92. PMID: 3565653. **E1.**
154. Freemark M. Liver dysfunction in paediatric obesity: a randomized, controlled trial of metformin. *Acta Paediatrica*. 2007;96(9):1326-32. PMID: 17718786. **E6f.**
155. Freemark M, Bursey D. The effects of metformin on body mass index and glucose tolerance in obese adolescents with fasting hyperinsulinemia and a family history of type 2 diabetes. *Pediatrics*. 2001;107(4):E55. PMID: 11335776. **E6f.**

156. Fulkerson JA, Rydell S, Kubik MY, et al. Healthy Home Offerings via the Mealtime Environment (HOME): feasibility, acceptability, and outcomes of a pilot study. *Obesity*. 2010;18 Suppl 1:S69-74. PMID: 20107464. **E6a.**
157. Gallagher KS, Davis AM, Malone B, et al. Treating rural pediatric obesity through telemedicine: baseline data from a randomized controlled trial. *J Pediatr Psychol*. 2011;36(6):687-95. PMID: 21372069. **E4c.**
158. Garcia-Morales LM, Berber A, Ias-Lara CC, et al. Use of sibutramine in obese Mexican adolescents: A 6-month, randomized, double-blind, placebo-controlled, parallel-group trial. *Clin Ther*. 2006;28(5):770-82. PMID: 16861099. **E6f.**
159. Garibay N, Queipo G. Metformin vs conjugated linoleic acid and an intervention program with healthy habits in obese children. NCT02063802. <https://clinicaltrials.gov/ct2/show/NCT02063802?term=metformin&age=0&rank=58>. Accessed 2/17/2016, PMID: None. **E6f.**
160. Gately PJ, Cooke CB, Barth JH, et al. Children's residential weight-loss programs can work: a prospective cohort study of short-term outcomes for overweight and obese children. *Pediatrics*. 2005;116(1):73-7. PMID: 15995034. **E6.**
161. Gee L, Agras WS. A randomized pilot study of a brief outpatient problem-solving intervention to promote healthy eating and activity habits in adolescents. *Clin Pediatr (Phila)*. 2014;53(3):293-6. PMID: 23897759. **E4b.**
162. Gesell SB, Scott TA, Barkin SL. Accuracy of perception of body size among overweight Latino preadolescents after a 6-month physical activity skills building intervention. *Clin Pediatr (Phila)*. 2010;49(4):323-9. PMID: 19605865. **E8b.**
163. Ghatrehsamani S, Khavarian N, Beizaei M, et al. Effect of different physical activity training methods on overweight adolescents. *ARYA Atheroscler*. 2010;6(2):45-9. PMID: 22577413. **E2a.**
164. Gillette ML, Stough CO, Beck AR, et al. Outcomes of a weight management clinic for children with special needs. *J Dev Behav Pediatr*. 2014;35(4):266-73. PMID: 17924120. **E5b.**
165. Gillis D, Brauner M, Granot E. A community-based behavior modification intervention for childhood obesity. *J Pediatr Endocrinol Metab*. 2007;20(2):197-203. PMID: 17396436. **E8b.**
166. Glasofer DR. Self-efficacy in adolescent girls at risk for overweight during an obesity prevention program. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2009;69(7-B):4420. PMID: None. **E6g.**
167. Glazebrook C, Batty MJ, Mullan N, et al. Evaluating the effectiveness of a schools-based programme to promote exercise self-efficacy in children and young people with risk factors for obesity: steps to active kids (STAK). *BMC Public Health*. 2011;11:830. PMID: 22029547. **E6g.**
168. Godoy-Matos A, Carraro L, Vieira A, et al. Treatment of obese adolescents with sibutramine: a randomized, double-blind, controlled study. *J Clin Endocrinol Metab*. 2005;90(3):1460-5. PMID: 15613431. **E6f.**
169. Golan M, Fainaru M, Weizman A. Role of behaviour modification in the treatment of childhood obesity with the parents as the exclusive agents of change. *Int J Obes Relat Metab Disord*. 1998;22(12):1217-24. PMID: 9877257. **E8a.**
170. Golan M, Kaufman V, Shahar DR. Childhood obesity treatment: targeting parents exclusively v. parents and children. *British Journal of Nutrition*. 2006;95(5):1008-15. PMID: 16611394. **E8a.**
171. Golan M, Weizman A, Apter A, et al. Parents as exclusive agents of change in the treatment of childhood obesity. *Am J Clin Nutr*. 1998;67:1130-5. PMID: 9625084. **E8a.**
172. Goldaracena-Orozco F, Torres-Alvarez B, Castanedo-Cazares J. Study of efficacy of metformin in the treatment of acanthosis nigricans in children with obesity. NCT02438020. <https://clinicaltrials.gov/ct2/show/NCT02438020?term=metformin&age=0&rank=11>. Accessed 2/17/2016, PMID: None. **E6f.**
173. Gong L, Yuan F, Teng J, et al. Weight loss, inflammatory markers, and improvements of iron status in overweight and obese children. *J Pediatr*. 2014;164(4):795-800. PMID: 24518166. **E2a.**

174. Gorin AA, Wiley J, Ohannessian CM, et al. Steps to Growing Up Healthy: a pediatric primary care based obesity prevention program for young children. *BMC Public Health*. 2014;14:72. PMID: 24456698. **E6a.**
175. Gourlan M, Sarrazin P, Trouilloud D. Motivational interviewing as a way to promote physical activity in obese adolescents: a randomised-controlled trial using self-determination theory as an explanatory framework. *Psychology & Health*. 2013;28(11):1265-86. PMID: 23756082. **E4c.**
176. Graf C, Koch B, Bjarnason-Wehrens B, et al. Who benefits from intervention in, as opposed to screening of, overweight and obese children? *Cardiol Young*. 2006;16(5):474-80. PMID: 16984699. **E4c.**
177. Graves T, Meyers AW, Clark L. An evaluation of parental problem-solving training in the behavioral treatment of childhood obesity. *J Consult Clin Psychol*. 1988;56(2):246-50. PMID: 3372833. **E4c.**
178. Gunnarsdottir T, Sigurdardottir ZG, Njardvik U, et al. A randomized-controlled pilot study of Epstein's family-based behavioural treatment for childhood obesity in a clinical setting in Iceland. *Nordic Psychology*. 2011;63(1):6-19. PMID: None. **E8b.**
179. Guo SS, Roche AF, Chumlea WC, et al. The predictive value of childhood body mass index values for overweight at age 35 y. *Am J Clin Nutr*. 1994;59(4):810-9. PMID: 8147324. **E1.**
180. Guo SS, Wu W, Chumlea WC, et al. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. *Am J Clin Nutr*. 2002;76(3):653-8. PMID: 12198014. **E1.**
181. Gutin B. Child obesity can be reduced with vigorous activity rather than restriction of energy intake. *Obesity*. 2008;16(10):2193-6. PMID: 18719647. **E7.**
182. Gutin B, Barbeau P, Owens S, et al. Effects of exercise intensity on cardiovascular fitness, total body composition, and visceral adiposity of obese adolescents. *Am J Clin Nutr*. 2002;75(5):818-26. PMID: 11976154. **E6h.**
183. Guzman A, Richardson IM, Gesell S, et al. Recruitment and retention of Latino children in a lifestyle intervention. *Am J Health Behav*. 2009;33(5):581-6. PMID: 19296748. **E8b.**
184. Haire-Joshu D, Nanney MS, Elliott M, et al. The use of mentoring programs to improve energy balance behaviors in high-risk children. *Obesity (Silver Spring)*. 2010;18 Suppl 1:S75-83. PMID: 20107465. **E6a.**
185. Hakanen M, Lagstrom H, Pahkala K, et al. Dietary and lifestyle counselling reduces the clustering of overweight-related cardiometabolic risk factors in adolescents. *Acta Paediatr*. 2010;99(6):888-95. PMID: 20002624. **E5a.**
186. Halsteinli V, Odegard R, Lekhal S, et al. Family intervention targeting obese children: Treatment cost differences of two standardized programs. *Obes Facts*. 2015;8:149. PMID: None. **E2.**
187. Hamilton-Shield J, Goodred J, Powell L, et al. Changing eating behaviours to treat childhood obesity in the community using Mandolean: the Community Mandolean randomised controlled trial (ComMando)--a pilot study. *Health Technol Assess*. 2014;18(47):i-xxiii, 1-75. PMID: 25043221. **E4.**
188. Hammarlund V. Development and evaluation of a weight control program for obese preadolescent children. Fort Collins, CO: Colorado State University; 1992. **E4b.**
189. Hasson RE, Adam TC, Davis JN, et al. Randomized controlled trial to improve adiposity, inflammation, and insulin resistance in obese African-American and Latino youth. *Obesity (Silver Spring)*. 2012;20(4):811-8. PMID: 21293446. **E4b.**
190. Hay J, Wittmeier K, Macintosh A, et al., editors. Physical activity intensity and adiposity in overweight youth: A randomized controlled trial. 3rd National Obesity Summit; 2013; Vancouver, BC Canada. Search 2 CENTRAL 20160122: Elsevier. **E6g.**
191. Hay J, Wittmeier K, MacIntosh A, et al. Physical activity intensity and type 2 diabetes risk in overweight youth: a randomized trial. *Int J Obes (Lond)*. 2015. **E6g.**
192. Herget S, Markert J, Petroff D, et al. Psychosocial well-being of adolescents before and after a 1-year telephone-based adiposity prevention study for families. *J Adolesc Health*. 2015;57(3):351-4. PMID: 26299563. **E8.**

193. Herrera EA, Johnston CA, Steele RG. A Comparison of Cognitive and Behavioral Treatments for Pediatric Obesity. *Children's Health Care*. 2004;33(2):151-67. PMID: None. **E4b.**
194. Hills AP, Parker AW. Obesity management via diet and exercise intervention. *Child Care Health Dev*. 1988;14(6):409-16. PMID: 3228964. **E4b.**
195. Ho M, Gow M, Baur LA, et al. Effect of fat loss on arterial elasticity in obese adolescents with clinical insulin resistance: RESIST study. *J Clin Endocrinol Metab*. 2014;99(10):E1846-53. PMID: 24955610. **E6f.**
196. Hoelscher DM, Springer AE, Ranjit N, et al. Reductions in child obesity among disadvantaged school children with community involvement: the Travis County CATCH Trial. *Obesity*. 2010;18:Suppl-44. PMID: 20107459. **E2.**
197. Hoffmann-La Roche. A study of xenical (orlistat) in overweight and obese adolescents. NCT00940628. <https://clinicaltrials.gov/ct2/show/study/NCT00940628?term=orlistat&age=0&rank=7>. Accessed 2/17/2016, PMID: None. **E6f.**
198. Hofsteenge GH, Chinapaw MJ, Delemarre-van de Waal HA, et al. Long-term effect of the Go4it group treatment for obese adolescents: a randomised controlled trial. *Clin Nutr*. 2014;33(3):385-91. PMID: 23810626. **E4c.**
199. Hofsteenge GH, Chinapaw MJ, Weijs PJ, et al. Go4it; study design of a randomised controlled trial and economic evaluation of a multidisciplinary group intervention for obese adolescents for prevention of diabetes mellitus type 2. *BMC Public Health*. 2008;8:410. PMID: 19087330. **E4c.**
200. Hofsteenge GH, Weijs PJ, Delemarre-van de Waal HA, et al. Effect of the Go4it multidisciplinary group treatment for obese adolescents on health related quality of life: a randomised controlled trial. *BMC Public Health*. 2013;13:939. PMID: 24103472. **E4c.**
201. Holland JC, Kolko RP, Stein RI, et al. Modifications in parent feeding practices and child diet during family-based behavioral treatment improve child zBMI. *Obesity (Silver Spring, Md)*. 2014;22(5):E119-e26. PMID: 24458836. **E7.**
202. Hollar D, Lombardo M, Lopez-Mitnik G, et al. Effective multi-level, multi-sector, school-based obesity prevention programming improves weight, blood pressure, and academic performance, especially among low-income, minority children. *Journal of health care for the poor and underserved*. 2010;21(2 Suppl):93-108. PMID: 20453379. **E2.**
203. Hollinghurst S, Hunt LP, Banks J, et al. Cost and effectiveness of treatment options for childhood obesity. *Pediatr Obes*. 2014;9(1):e26-34. PMID: 23505002. **E6h.**
204. Huang F, del-Rio-Navarro BE, Perez-Ontiveros JA, et al. Effect of six-month lifestyle intervention on adiponectin, Resistin and soluble tumor necrosis factor-alpha receptors in obese adolescents. *Endocr J*. 2014;61(9):921-31. PMID: 25029953. **E7.**
205. Huang T, Larsen KT, Jepsen JR, et al. Effects of an obesity intervention program on cognitive function in children: A randomized controlled trial. *Obesity*. 2015;23(10):2101-8. PMID: 26337394. **E6e.**
206. Hung SH, Hwang SL, Su MJ, et al. An evaluation of a weight-loss program incorporating E-learning for obese junior high school students. *Telemed J E Health*. 2008;14(8):783-92. PMID: 18954248. **E2a.**
207. Iannuzzi A, Licenziati MR, Vacca M, et al. Comparison of two diets of varying glycemic index on carotid subclinical atherosclerosis in obese children. *Heart Vessels*. 2009;24(6):419-24. PMID: 20108073. **E3a.**
208. Ibanez L, Lopez-Bermejo A, Diaz M, et al. Early metformin therapy (age 8-12 years) in girls with precocious pubarche to reduce hirsutism, androgen excess, and oligomenorrhea in adolescence. *J Clin Endocrinol Metab*. 2011;96(8):E1262-e7. PMID: 21632811. **E1.**
209. Ibanez L, Lopez-Bermejo A, Diaz M, et al. Early metformin treatment (age 8-12) in girls with precocious pubarche to prevent polycystic ovary syndrome (PCOS) in adolescence: A randomized study over 7 years. *Endocr Rev*. 2011;32(3). PMID: None. **E1.**
210. Ildiko V, Zsofia M, Janos M, et al. Activity-related changes of body fat and motor performance in obese seven-year-old boys. *J Physiol Anthropol*. 2007;26(3):333-7. PMID: 17641452. **E2.**

211. Israel AC, Solotar LC, Zimand E. An investigation of two parental involvement roles in the treatment of obese children. *Int J Eat Disord.* 1990;9(5):557-64. PMID: None. **E8b.**
212. Jago R, Baranowski T, Baranowski JC, et al. Fit for Life Boy Scout badge: outcome evaluation of a troop and Internet intervention. *Prev Med.* 2006;42(3):181-7. PMID: 16458955. **E6a.**
213. Jago R, McMurray RG, Drews KL, et al. HEALTHY intervention: fitness, physical activity, and metabolic syndrome results. *Medicine & Science in Sports & Exercise.* 2011;43(8):1513-22. PMID: 21233778. **E6a.**
214. Janicke DM, Gray WN, Mathews AE, et al. A pilot study examining a group-based behavioral family intervention for obese children enrolled in Medicaid: Differential outcomes by race. *Children's Health Care.* 2011;40(3):212-31. PMID: None. **E4c.**
215. Janicke DM, Sallinen BJ, Perri MG, et al. Comparison of parent-only vs family-based interventions for overweight children in underserved rural settings: outcomes from project STORY. *Arch Pediatr Adolesc Med.* 2008;162(12):1119-25. PMID: 19047538. **E4c.**
216. Janicke DM, Sallinen BJ, Perri MG, et al. Comparison of program costs for parent-only and family-based interventions for pediatric obesity in medically underserved rural settings. *J Rural Health.* 2009;25(3):326-30. **E4c.**
217. Jelalian E, Lloyd-Richardson EE, Mehlenbeck RS, et al. Behavioral weight control treatment with supervised exercise or peer-enhanced adventure for overweight adolescents. *Journal of Pediatrics.* 2010;157(6):923-8.e1. PMID: 20655544. **E3b.**
218. Jelalian E, Mehlenbeck R, Lloyd-Richardson EE, et al. 'Adventure therapy' combined with cognitive-behavioral treatment for overweight adolescents. *International Journal of Obesity.* 2006;30(1):31-9. PMID: 16158087. **E4c.**
219. Jelalian E, Sato A, Hart CN. The effect of group-based weight-control intervention on adolescent psychosocial outcomes: Perceived peer rejection, social anxiety, and self-concept. *Children's Health Care.* 2011;40(3):197-211. PMID: 23258948. **E3b.**
220. Jelalian E, Sato AF, Hart C, et al. Two-year follow up of a behavioral adolescent weight control intervention. *Obesity (Silver Spring, Md).* 2010;18:S104. PMID: None. **E3b.**
221. John R. Effects of parent-focused media interventions on body mass index, waist size, self-perception, family eating habits, and family activity habits in overweight hispanic children. *Dissertation Abstracts International: Section B: The Sciences and Engineering.* 2010;70(7-B):4087. PMID: None. **E4b.**
222. Johnson WG, Hinkle LK, Carr RE, et al. Dietary and exercise interventions for juvenile obesity: long-term effect of behavioral and public health models. *Obes Res.* 1997;5(3):257-61. PMID: 9192400. **E4b.**
223. Johnston CA, Palcic J, George CS, et al. Weight change among Mexican American students involved in an intensive intervention to prevent and treat obesity: 5-year results. *Obesity (Silver Spring, Md).* 2011;19:S111-s2. PMID: None. **E4.**
224. Jones RA, Kelly J, Cliff DP, et al. Acceptability and potential efficacy of single-sex after-school activity programs for overweight and at-risk children: the Wollongong SPORT RCT. *Pediatr Exerc Sci.* 2015;27(4):535-45. PMID: 26305240. **E6g.**
225. Jones RA, Warren JM, Okely AD, et al. Process evaluation of the Hunter Illawarra Kids Challenge Using Parent Support study: a multisite randomized controlled trial for the management of child obesity. *Health Promot Pract.* 2010;11(6):917-27. PMID: 19158237. **E8a.**
226. Kang HS, Gutin B, Barbeau P, et al. Physical training improves insulin resistance syndrome markers in obese adolescents. *Med Sci Sports Exerc.* 2002;34(12):1920-7. PMID: 12471297. **E6h.**
227. Kay JP, Alemzadeh R, Langley G, et al. Beneficial effects of metformin in normoglycemic morbidly obese adolescents. *Metabolism.* 2001;50(12):1457-61. PMID: 11735093. **E4b.**
228. Kelishadi R, Zemel MB, Hashemipour M, et al. Can a dairy-rich diet be effective in long-term weight control of young children? *J Am Coll Nutr.* 2009;28(5):601-10. PMID: 20439556. **E2a.**

229. Kendall D, Vail A, Amin R, et al. Metformin in obese children and adolescents: the MOCA trial. *J Clin Endocrinol Metab.* 2013;98(1):322-9. PMID: 23175691. **E6f.**
230. Kerr J. Effects of Promoting Health Among Teens: A Brief General Health Program Intervention for African-American Adolescents From a Multi-Site Trial. Columbia, SC: University of South Carolina; 2010. **E1.**
231. Khan NA, Raine LB, Drollette ES, et al. Impact of the FITKids physical activity intervention on adiposity in prepubertal children. *Pediatrics.* 2014;133(4):e875-83. PMID: 24685956. **E6g.**
232. Kirk S, Brehm B, Saelens BE, et al. Role of carbohydrate modification in weight management among obese children: a randomized clinical trial. *Journal of Pediatrics.* 2012;161(2):320-7.e1. PMID: 22381024. **E3a.**
233. Klesges RC, Obarzanek E, Klesges LM, et al. Memphis Girls health Enrichment Multi-site Studies (GEMS): Phase 2: design and baseline. *Contemp Clin Trials.* 2008;29(1):42-55. PMID: 17588824. **E6a.**
234. Klesges RC, Obarzanek E, Kumanyika S, et al. The Memphis Girls' health Enrichment Multi-site Studies (GEMS): an evaluation of the efficacy of a 2-year obesity prevention program in African American girls. *Arch Pediatr Adolesc Med.* 2010;164(11):1007-14. PMID: 21041593. **E6a.**
235. Kokkvoll A, Grimsgaard S, Odegaard R, et al. Single versus multiple-family intervention in childhood overweight--Finnmark Activity School: a randomised trial. *Arch Dis Child.* 2014;99(3):225-31. PMID: 24336385. **E2.**
236. Kokkvoll A, Grimsgaard S, Steinsbekk S, et al. Health in overweight children: 2-year follow-up of Finnmark Activity School--a randomised trial. *Arch Dis Child.* 2015;100(5):441-8. PMID: 25414250. **E2.**
237. Kolko RP, Teim KR, Stein RI, et al., editors. Self-and parent-reported psychosocial symptoms in overweight children. 28th Annual Scientific Meeting of the Obesity Society; 2010; San Diego, CA. Search 2 CENTRAL 20160122: Blackwell Publishing Inc. **E4.**
238. Kolotourou M, Radley D, Gammon C, et al. Long-term outcomes following the MEND 7-13 child weight management program. *Child Obes.* 2015;11(3):325-30. PMID: 25764056. **E7.**
239. Kong AP, Choi KC, Chan RS, et al. A randomized controlled trial to investigate the impact of a low glycemic index (GI) diet on body mass index in obese adolescents. *BMC Public Health.* 2014;14:180. PMID: 24552366. **E2a.**
240. Kong AS, Sussman AL, Yahne C, et al. School-based health center intervention improves body mass index in overweight and obese adolescents. *J Obes.* 2013;2013:575016. PMID: 23589771. **E4c.**
241. Korsten-Reck U, Kromeyer-Hauschild K, Wolfarth B, et al. Freiburg Intervention Trial for Obese Children (FITOC): results of a clinical observation study. *Int J Obes (Lond).* 2005;29(4):356-61. PMID: 15583698. **E7.**
242. Krebs NF, Gao D, Gralla J, et al. Efficacy and safety of a high protein, low carbohydrate diet for weight loss in severely obese adolescents. *Journal of Pediatrics.* 2010;157(2):252-8. PMID: 20304413. **E6g.**
243. Kulik N. Social support and weight loss among adolescent females. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2012;73(6-B):3568. PMID: None. **E4.**
244. Kulik NL, Fisher EB, Ward DS, et al. Peer support enhanced social support in adolescent females during weight loss. *American Journal of Health Behavior.* 2014;38(5):789-800. PMID: 249331489. **E4b.**
245. Lavine JE, Schwimmer JB, Van Natta ML, et al. Effect of vitamin E or metformin for treatment of nonalcoholic fatty liver disease in children and adolescents: the TONIC randomized controlled trial. *JAMA.* 2011;305(16):1659-68. PMID: 21521847. **E6f.**
246. Lazorick S, Fang X, Hardison GT, et al. Improved Body Mass Index Measures Following a Middle School-Based Obesity Intervention--The MATCH Program. *J School Health.* 2015;85(10):680-7. PMID: None. **E2.**

247. Lee A, Ho M, Keung VM, et al. Childhood obesity management shifting from health care system to school system: intervention study of school-based weight management programme. *BMC Public Health*. 2014;14:1128. PMID: 25363153. **E2a.**
248. Lee S, Misra R, Kaster E. Active Intervention Program Using Dietary Education and Exercise Training for Reducing Obesity in Mexican American Male Children. *Health Educator*. 2012;44(1):2-13. PMID: None. **E4b.**
249. Libman IM, Miller KM, DiMeglio LA, et al. Effect of metformin added to insulin on glycemic control among overweight/obese adolescents with type 1 diabetes: a randomized clinical trial. *JAMA*. 2015;314(21):2241-50. PMID: 26624824. **E6f.**
250. Lison JF, Real-Montes JM, Torro I, et al. Exercise intervention in childhood obesity: a randomized controlled trial comparing hospital-versus home-based groups. *Acad Pediatr*. 2012;12(4):319-25. PMID: 22634075. **E4c.**
251. Litwin SE, Pollock N, Waller J, et al. Effects of aerobic training on arterial stiffness in overweight minority children: A randomized controlled trial. *Circulation*. 2013;128(22 suppl. 1). PMID: None. **E6g.**
252. Llargues E, Franco R, Recasens A, et al. Assessment of a school-based intervention in eating habits and physical activity in school children: the AVall study. *Journal of Epidemiology & Community Health*. 2011;65(10):896-901. PMID: 21398682. **E6a.**
253. Lloyd-Richardson EE, Jelalian E, Sato AF, et al. Two-year follow-up of an adolescent behavioral weight control intervention. *Pediatrics*. 2012;130(2):e281-8. PMID: 22753560. **E3b.**
254. Lochrie AS, Buckloh LM, Antal H, et al. Emotional and behavioral functioning in obese children participating in a 14-week lifestyle intervention to prevent DM2. 2010. PMID: None. **E8a.**
255. Lochrie AS, Wysocki T, Buckloh LM, et al. Effects of a family based intervention study for overweight children: 6 month medical outcome data. 2010. PMID: None. **E8a.**
256. Lochrie AS, Wysocki T, Hossain J, et al. The effects of a family-based intervention (FBI) for overweight/obese children on health and psychological functioning. *Clin Pract Pediatr Psychol*. 2013;1(2):159-70. PMID: None. **E8a.**
257. Loeb KL, Doyle AC, Anderson K, et al. Family-based treatment for child and adolescent overweight and obesity: A transdevelopmental approach. *Family therapy for adolescent eating and weight disorders: New applications*. New York, NY: Routledge/Taylor & Francis Group; US; 2015. p. 177-229. **E4.**
258. Looney SM, Raynor HA. Examining the effect of three low-intensity pediatric obesity interventions: a pilot randomized controlled trial. *Clin Pediatr (Phila)*. 2014;53(14):1367-74. PMID: 25006118. **E4c.**
259. Love-Osborne K, Fortune R, Sheeder J, et al. School-based health center-based treatment for obese adolescents: feasibility and body mass index effects. *Child Obes*. 2014;10(5):424-31. PMID: 25259781. **E6h.**
260. Love-Osborne K, Sheeder J, Zeitler P. Addition of metformin to a lifestyle modification program in adolescents with insulin resistance. *J Pediatr*. 2008;152(6):817-22. PMID: 18492523. **E6f.**
261. Lubans DR, Morgan PJ, Callister R. Potential moderators and mediators of intervention effects in an obesity prevention program for adolescent boys from disadvantaged schools. *Journal of Science & Medicine in Sport*. 2012;15(6):519-25. PMID: 22575499. **E6h.**
262. Lubans DR, Morgan PJ, Collins CE, et al. Mediators of weight loss in the 'Healthy Dads, Healthy Kids' pilot study for overweight fathers. *Int J Behav Nutr Phys Act*. 2012;9:45. PMID: 22512861. **E5a.**
263. Luca P, Dettmer E, Khoury M, et al. Adolescents with severe obesity: outcomes of participation in an intensive obesity management programme. *Pediatr Obes*. 2015;10(4):275-82. PMID: 25236943. **E7.**
264. Luley C, Blaik A, Aronica S, et al. Evaluation of three new strategies to fight obesity in families. *J Nutr Metab*. 2010. PMID: 20885935. **E6g.**

265. Luna-Pech JA, Torres-Mendoza BM, Luna-Pech JA, et al. Normocaloric diet improves asthma-related quality of life in obese pubertal adolescents. *Int Arch Allergy Immunol*. 2014;163(4):252-8. PMID: 24713632. **E6g.**
266. Luszczynska A, Horodyska K, Zarychta K, et al. Planning and self-efficacy interventions encouraging replacing energy-dense foods intake with fruit and vegetable: A longitudinal experimental study. *Psychol Health*. 2016;31(1):40-64. PMID: 26160226. **E6a.**
267. Maahs D, de Serna DG, Kolotkin RL, et al. Randomized, double-blind, placebo-controlled trial of orlistat for weight loss in adolescents. *Endocr Pract*. 2006;12(1):18-28. PMID: 16524859. **E6f.**
268. Maddison R, Foley L, Mhurchu CN, et al. Feasibility, design and conduct of a pragmatic randomized controlled trial to reduce overweight and obesity in children: The electronic games to aid motivation to exercise (eGAME) study. *BMC Public Health*. 2009;9:146. PMID: 19450288. **E6g.**
269. Maddison R, Foley L, Ni Mhurchu C, et al. Effects of active video games on body composition: a randomized controlled trial. *Am J Clin Nutr*. 2011;94(1):156-63. PMID: 21562081. **E6g.**
270. Maddison R, Marsh S, Foley L, et al. Screen-Time Weight-loss Intervention Targeting Children at Home (SWITCH): a randomized controlled trial. *Int J Behav Nutr Phys Act*. 2014;11:111. PMID: 25204320. **E6g.**
271. Maddison R, Mhurchu CN, Foley L, et al. Screen-time weight-loss intervention targeting children at home (SWITCH): a randomized controlled trial study protocol. *BMC Public Health*. 2011;11:524. PMID: 21718543. **E6g.**
272. Maddison R, Mhurchu CN, Jull A, et al. Active video games: the mediating effect of aerobic fitness on body composition. *Int J Behav Nutr Phys Act*. 2012;9:54. PMID: 22554052. **E6g.**
273. Madsen KA, Garber AK, Mietus-Snyder ML, et al. A clinic-based lifestyle intervention for pediatric obesity: efficacy and behavioral and biochemical predictors of response. *J Pediatr Endocrinol Metab*. 2009;22(9):805-14. PMID: 19960890. **E7.**
274. Maloney AE, Bethea TC, Kelsey KS, et al. A pilot of a video game (DDR) to promote physical activity and decrease sedentary screen time. *Obesity (Silver Spring)*. 2008;16(9):2074-80. PMID: 19186332. **E6g.**
275. Mani S, Joseph LH, Sharma S. Feasibility of telemedicine or telephone-based family intervention for rural paediatric obesity: Cluster randomized control trial. *J Telemed Telecare*. 2015. PMID: 26362563. **E7.**
276. Manley D. Self-efficacy, Physical Activity, and Aerobic Fitness in Middle School Children: Examination of a Pedometer Intervention Program Memphis, TN: University of Tennessee; 2008. **E4b.**
277. Marcus C. Effect of exercise or metformin on nocturnal blood pressure and other risk factors for CVD among obese adolescents. NCT00889876. <https://clinicaltrials.gov/ct2/show/NCT00889876?term=metformin&age=0&rank=59>. Accessed 2/17/2016, PMID: None. **E6f.**
278. Marild S, Gronowitz E, Forsell C, et al. A controlled study of lifestyle treatment in primary care for children with obesity. *Pediatr Obes*. 2013;8(3):207-17. PMID: 23172847. **E8b.**
279. Markert J, Alff F, Zschaler S, et al. Prevention of childhood obesity: recruiting strategies via local paediatricians and study protocol for a telephone-based counselling programme. *Obes Res Clin Pract*. 2013;7(6):e476-86. PMID: 24308890. **E8.**
280. Markert J, Herget S, Petroff D, et al. Telephone-based adiposity prevention for families with overweight children (T.A.F.F.-Study): one year outcome of a randomized, controlled trial. *Int J Environ Res Public Health*. 2014;11(10):10327-44. PMID: 25286167. **E8.**
281. Maron L, Maeder M, Kirchhoff E, et al. Individual therapy equals group therapy in significantly improving mental and physical health in obese children. *Swiss Med Wkly*. 2014;144:20s. PMID: None. **E8b.**
282. Martinez-Andrade GO, Cespedes EM, Rifas-Shiman SL, et al. Feasibility and impact of Creciendo Sanos, a clinic-based pilot intervention to prevent obesity among preschool children in Mexico City. *BMC Pediatrics*. 2014;14:77. PMID: 24649831. **E6a.**

283. Matthan NR, Xue X, Gao Q, et al. Effect of a family based intervention on biomarkers of diet quality/endogenous metabolism and BMI z-score. *Circulation*. 2015;131. PMID: None. **E8b.**
284. Mauras N, DelGiorno C, Hossain J, et al. Metformin use in children with obesity and normal glucose tolerance--effects on cardiovascular markers and intrahepatic fat. *J Pediatr Endocrinol Metab*. 2012;25(1-2):33-40. PMID: 22570948. **E6f.**
285. Mazzeo SE, Kelly NR, Stern M, et al. Parent skills training to enhance weight loss in overweight children: evaluation of NOURISH. *Eat Behav*. 2014;15(2):225-9. PMID: 24854808. **E4b.**
286. Mazzeo SE, Kelly NR, Stern M, et al. Nourishing Our Understanding of Role Modeling to Improve Support and Health (NOURISH): design and methods. *Contemp Clin Trials*. 2012;33(3):515-22. PMID: 22273843. **E4b.**
287. Mazzeo SE, Kelly NR, Thornton L, et al. Parent skills training to enhance weight loss in overweight children: Evaluation of NOURISH. *Obesity (Silver Spring, Md)*. 2011;19:S106. PMID: None. **E4b.**
288. McCormick DP, Ramirez M, Caldwell S, et al. YMCA program for childhood obesity: a case series. *Clin Pediatr (Phila)*. 2008;47(7):693-7. PMID: 18448625. **E7.**
289. McDuffie J, Calis K, Uwaifo G, et al. Efficacy of orlistat as an adjunct to behavioral treatment in overweight African American and Caucasian adolescents with obesity-related co-morbid conditions. *J Pediatr Endocrinol Metab*. 2004;17(3):307-19. PMID: 15112907. **E6f.**
290. McDuffie JR, Calis KA, Uwaifo GI, et al. Three-month tolerability of orlistat in adolescents with obesity-related comorbid conditions. *Obes Res*. 2002;10(7):642-50. PMID: 12105286. **E6f.**
291. McFarlin BK, Johnston CJ, Carpenter KC, et al. A one-year school-based diet/exercise intervention improves non-traditional disease biomarkers in Mexican-American children. *Maternal & Child Nutrition*. 2013;9(4):524-32. PMID: 22458649. **E7.**
292. Medrano M, Maiz E, Maldonado-Martin S, et al. The effect of a multidisciplinary intervention program on hepatic adiposity in overweight-obese children: Protocol of the EFIGRO study. *Contemp Clin Trials*. 2015;45. PMID: None. **E4a.**
293. Mellin LM, Slinkard LA, Irwin CE, Jr. Adolescent obesity intervention: validation of the SHAPEDOWN program. *J Am Diet Assoc*. 1987;87(3):333-8. PMID: 3819254. **E4c.**
294. Melnyk BM, Jacobson D, Kelly SA, et al. Twelve-month effects of the COPE healthy lifestyles TEEN program on overweight and depressive symptoms in high school adolescents. *J Sch Health*. 2015;85(12):861-70. PMID: 26522175. **E1.**
295. Melnyk BM, Small L, Morrison-Beedy D, et al. The COPE Healthy Lifestyles TEEN program: feasibility, preliminary efficacy, & lessons learned from an after school group intervention with overweight adolescents. *Journal of Pediatric Health Care*. 2007;21(5):315-22. PMID: 17825729. **E4b.**
296. Meyer AA, Kundt G, Lenschow U, et al. Improvement of early vascular changes and cardiovascular risk factors in obese children after a six-month exercise program. *J Am Coll Cardiol*. 2006;48(9):1865-70. PMID: 17084264. **E7.**
297. Miedema B, Reading SA, Hamilton RA, et al. Can certified health professionals treat obesity in a community-based programme? A quasi-experimental study. *BMJ Open*. 2015;5(2):e006650. PMID: 25652801. **E5a.**
298. Minossi V, Cecchetto FH, Pellanda LC. Healthy habits education for overweight children impacts both children and caregivers: A randomized clinical trial. *Glob Heart*. 2014;9(Suppl 1):e226-e7. PMID: None. **E2a.**
299. Mirza NM, Palmer MG, Sinclair KB, et al. Effects of a low glycemic load or a low-fat dietary intervention on body weight in obese Hispanic American children and adolescents: a randomized controlled trial. *American Journal of Clinical Nutrition*. 2013;97(2):276-85. PMID: 23255569. **E3a.**
300. Moens E, Braet C. Training parents of overweight children in parenting skills: a 12-month evaluation. *Behav Cogn Psychother*. 2012;40(1):1-18. PMID: 21740603. **E8a.**
301. Monika Siegrist M, Hanssen H, Lammel C, et al., editors. Changes in fitness, body weight and inflammatory markers in children: Longitudinal results of a comprehensive school-based intervention study (JuvenTUM 3). *EuroPrevent*; 2013 Apr 18-20; Rome, Italy. Search 2 CENTRAL 20160122: SAGE Publications Inc. **E6a.**

302. Moore BA, O'Donohue WT. Evaluating a web-based cognitive behavioral intervention for the prevention and treatment of pediatric obesity. *Stepped care and e-health: Practical applications to behavioral disorders*. New York, NY: Springer Science + Business Media; US; 2011. p. 137-49. **E4b**.
303. Morgan PJ, Lubans DR, Callister R, et al. The 'Healthy Dads, Healthy Kids' randomized controlled trial: efficacy of a healthy lifestyle program for overweight fathers and their children. *Int J Obes (Lond)*. 2011;35(3):436-47. PMID: 20697417. **E6h**.
304. Morgan PJ, Lubans DR, Plotnikoff RC, et al. The 'Healthy Dads, Healthy Kids' community effectiveness trial: study protocol of a community-based healthy lifestyle program for fathers and their children. *BMC Public Health*. 2011;11:876. PMID: 22099889. **E6a**.
305. Morgan PJ, Saunders KL, Lubans DR. Improving physical self-perception in adolescent boys from disadvantaged schools: psychological outcomes from the Physical Activity Leaders randomized controlled trial. *Pediatric Obesity*. 2012;7(3):e27-32. PMID: 22492681. **E6h**.
306. Mo-suwan L, Junjana C, Puetpaiboon A. Increasing obesity in school children in a transitional society and the effect of the weight control program. *Southeast Asian J Trop Med Public Health*. 1993;24(3):590-4. PMID: 7605404. **E2a**.
307. Muller MJ, Asbeck I, Mast M, et al. Prevention of obesity--more than an intention. Concept and first results of the Kiel Obesity Prevention Study (KOPS). *Int J Obes Relat Metab Disord*. 2001;25 Suppl 1:S66-74. PMID: 11466593. **E6a**.
308. Munsch S, Roth B, Michael T, et al. Randomized controlled comparison of two cognitive behavioral therapies for obese children: mother versus mother-child cognitive behavioral therapy. *Psychother Psychosom*. 2008;77(4):235-46. PMID: 18443390. **E4c**.
309. Murphy E, Carson L, Neal W, et al. Effects of an exercise intervention using Dance Dance Revolution on endothelial function and other risk factors in overweight children. *Int J Pediatr Obes*. 2009;4(4):205-14. PMID: 19922034. **E4a**.
310. Naar-King S, Ellis D, Kolmodin K, et al. A randomized pilot study of multisystemic therapy targeting obesity in African-American adolescents. *J Adolesc Health*. 2009;45(4):417-9. PMID: 19766948. **E4c**.
311. Nadeau KJ, Chow K, Alam S, et al. Effects of low dose metformin in adolescents with type I diabetes mellitus: A randomized, double-blinded placebo-controlled study. *Pediatr Diabetes*. 2015;16(3):196-203. PMID: 24698216. **E6f**.
312. Nadeau KJ, Miller KM, Dimeglio LA, et al., editors. Effect of metformin on cardiovascular risk factors in overweight and obese adolescents with type 1 diabetes. 75th Scientific Sessions of the American Diabetes Association; 2015; Boston, MA. Search 2 CENTRAL 20160122: American Diabetes Association Inc. **E6f**.
313. Nemet D, Levi L, Pantanowitz M, et al. A combined nutritional-behavioral-physical activity intervention for the treatment of childhood obesity--a 7-year summary. *J Pediatr Endocrinol Metab*. 2014;27(5-6):445-51. PMID: 24464474. **E7**.
314. Ni Mhurchu C, Roberts V, Maddison R, et al. Effect of electronic time monitors on children's television watching: pilot trial of a home-based intervention. *Prev Med*. 2009;49(5):413-7. PMID: 19744507. **E4b**.
315. Ning Y, Yang S, Evans RK, et al. Changes in body anthropometry and composition in obese adolescents in a lifestyle intervention program. *Eur J Nutr*. 2014;53(4):1093-102. PMID: 24212451. **E7**.
316. Norgren S, Danielsson P, Jurolid R, et al. Orlistat treatment in obese prepubertal children: a pilot study. *Acta Paediatr*. 2003;92(6):666-70. PMID: 12856974. **E6f**.
317. Novotny R, Nigg CR, Li F, et al. Pacific kids DASH for health (PacDASH) randomized, controlled trial with DASH eating plan plus physical activity improves fruit and vegetable intake and diastolic blood pressure in children. *Child Obes*. 2015;11(2):177-86. PMID: 25671796. **E6a**.
318. Nowicka P, Lanke J, Pietrobelli A, et al. Sports camp with six months of support from a local sports club as a treatment for childhood obesity. *Scand J Public Health*. 2009;37(8):793-800. PMID: 19717572. **E6**.
319. Nuutinen O. Long-term effects of dietary counselling on nutrient intake and weight loss in obese children. *Eur J Clin Nutr*. 1991;45(6):287-97. PMID: 1915202. **E8b**.

320. Nwosu BU, Maranda L, Cullen K, et al. A randomized, double-blind, placebo-controlled trial of adjunctive metformin therapy in overweight/obese youth with type 1 diabetes. *PLoS ONE*. 2015;10(9):e0137525. PMID: 26367281. **E6f.**
321. O'Connor JN, Golley RK, Perry RA, et al. A longitudinal investigation of overweight children's body perception and satisfaction during a weight management program. *Appetite*. 2015;85:48-51. PMID: 25447017. **E7.**
322. O'Connor TM, Hilmers A, Watson K, et al. Feasibility of an obesity intervention for paediatric primary care targeting parenting and children: Helping HAND. *Child Care Health Dev*. 2013;39(1):141-9. PMID: 22066521. **E4c.**
323. Okely AD, Collins CE, Morgan PJ, et al. Multi-site randomized controlled trial of a child-centered physical activity program, a parent-centered dietary-modification program, or both in overweight children: the HIKCUPS study. *Journal of Pediatrics*. 2010;157(3):388-94, 94.e1. PMID: 20447648. **E8a.**
324. Olson WA. Internet technology and social support: Are they beneficial for overweight older adolescents? Dissertation Abstracts International: Section B: The Sciences and Engineering. 2011;72(2-B):1171. PMID: None. **E4b.**
325. O'Malley CL, Moore HJ, Batterham AM, et al., editors. The TeesCAKE intervention. 20th European Congress on Obesity (ECO); 2013; Liverpool, UK. Search 2 CENTRAL 20160122: S. Karger AG. **E6a.**
326. O'Malley G. Aerobic exercise enhances executive function and academic achievement in sedentary, overweight children aged 7-11 years. *J Physiother*. 2011;57(4):255. PMID: 22093124. **E4b.**
327. Omorou AY, Langlois J, Lecomte E, et al. Adolescents' physical activity and sedentary behavior: a pathway in reducing overweight and obesity. The PRALIMAP 2-year cluster randomized controlled trial. *J Phys Act Health*. 2015;12(5):628-35. PMID: 25393601. **E6a.**
328. Onnerfalt J, Erlandsson L, Orban K, et al., editors. Loops-Lund overweight and obesity preschool study: An intervention involving parents of preschool children with obesity has a long-term effect on the weight development of targeted children. 22nd Congress of the European Congress on Obesity (ECO); 2015; Prague, Czech Republic. Search 2 CENTRAL 20160122: S. Karger AG. **E8a.**
329. Onnerfalt J, Erlandsson LK, Orban K, et al. A family-based intervention targeting parents of preschool children with overweight and obesity: conceptual framework and study design of LOOPS-Lund overweight and obesity preschool study. *BMC Public Health*. 2012;12:879. PMID: 23072247. **E8a.**
330. Orban K, Ellegard K, Thorngren-Jerneck K, et al. Shared patterns of daily occupations among parents of children aged 4-6 years old with obesity. *Journal of Occupational Science*. 2012;19(3):241-57. **E4.**
331. Ordovas K, Saloner D. Cardiovascular effects of metformin on obesity. NCT01910246. <https://clinicaltrials.gov/ct2/show/NCT01910246?term=metformin&age=0&rank=9>. Accessed 2/17/2016, PMID: None. **E6f.**
332. Owens S, Gutin B, Allison J, et al. Effect of physical training on total and visceral fat in obese children. *Med Sci Sports Exerc*. 1999;31(1):143-8. PMID: 9927022. **E4b.**
333. Owens SG, Garner JC, 3rd, Loftin JM, et al. Changes in physical activity and fitness after 3 months of home Wii Fit use. *J Strength Cond Res*. 2011;25(11):3191-7. PMID: 21993031. **E4b.**
334. Ozkan B, Bereket A, Turan S, et al. Addition of orlistat to conventional treatment in adolescents with severe obesity. *Eur J Pediatr*. 2004;163(12):738-41. PMID: 15378354. **E6f.**
335. Page a. The effect of a multidimensional weight management program for children. Salt Lake City, UT: The University of Utah; 1985. **E7.**
336. Palcic J, Johnston CA, Breslin W, et al. Dissemination of an effective weight management program for Mexican American children in schools. *Faseb J* [serial on the Internet]. 2012 [cited Search 1 CENTRAL 20150210; 26: Available from: <http://onlinelibrary.wiley.com/doi/10.1002/ajim.12101>. **E4.**

337. Parillo M, Licenziati MR, Vacca M, et al. Metabolic changes after a hypocaloric, low-glycemic-index diet in obese children. *J Endocrinol Invest*. 2012;35(7):629-33. PMID: 21897113. **E3a.**
338. Parks EP, Zemel B, Moore RH, et al. Change in body composition during a weight loss trial in obese adolescents. *Pediatr Obes*. 2014;9(1):26-35. PMID: 23382092. **E6f.**
339. Parra-Medina D, Mojica C, Liang Y, et al. Promoting weight maintenance among overweight and obese hispanic children in a rural practice. *Child Obes*. 2015;11(4):355-63. PMID: 25950140. **E4a.**
340. Partsalaki I, Karvela A, Spiliotis BE. Metabolic impact of a ketogenic diet compared to a hypocaloric diet in obese children and adolescents. *Journal of Pediatric Endocrinology*. 2012;25(7-8):697-704. PMID: 23155696. **E3a.**
341. Pasquali R, Gambineri A, Biscotti D, et al. Effect of long-term treatment with metformin added to hypocaloric diet on body composition, fat distribution, and androgen and insulin levels in abdominally obese women with and without the polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2000;85(8):2767-74. PMID: 10946879. **E6f.**
342. Patrick K, Calfas KJ, Norman GJ, et al. Randomized controlled trial of a primary care and home-based intervention for physical activity and nutrition behaviors: PACE+ for adolescents. *Arch Pediatr Adolesc Med*. 2006;160(2):128-36. PMID: 16461867. **E6a.**
343. Pbert L, Druker S, Gapinski MA, et al., editors. School nurse-delivered intervention for overweight and obese adolescents: Outcomes from a randomized controlled trial. 28th Annual Scientific Meeting of the Obesity Society; 2010; San Diego, CA. Search 2 CENTRAL 20160122: Blackwell Publishing Inc. **E6h.**
344. Pbert L, Druker S, Gapinski MA, et al. A school nurse-delivered intervention for overweight and obese adolescents. *J Sch Health*. 2013;83(3):182-93. PMID: 23343319. **E6h.**
345. Pedrosa C, Oliveira BM, Albuquerque I, et al. Markers of metabolic syndrome in obese children before and after 1-year lifestyle intervention program. *Eur J Nutr*. 2011;50(6):391-400. PMID: 21107585. **E6g.**
346. Pedrosa C, Oliveira BM, Albuquerque I, et al. Metabolic syndrome, adipokines and ghrelin in overweight and obese schoolchildren: results of a 1-year lifestyle intervention programme. *European Journal of Pediatrics*. 2011;170(4):483-92. PMID: 20957391. **E6g.**
347. Pettman T, Magarey A, Mastersson N, et al. Improving weight status in childhood: results from the eat well be active community programs. *Int J Public Health*. 2014;59(1):43-50. PMID: 23529384. **E6a.**
348. Reinehr T, Schaefer A, Winkel K, et al. Development and evaluation of the lifestyle intervention "obeldicks light" for overweight children and adolescents. *J Public Health (Oxf)*. 2011;19(4):377-84. PMID: None. **E4c.**
349. Reinehr T, Schaefer A, Winkel K, et al. An effective lifestyle intervention in overweight children: findings from a randomized controlled trial on "Obeldicks light". *Clin Nutr*. 2010;29(3):331-6. PMID: 20106567. **E4c.**
350. Rezvanian H, Hashemipour M, Kelishadi R, et al. A randomized, triple masked, placebo-controlled clinical trial for controlling childhood obesity. *World J Pediatr*. 2010;6(4):317-22. PMID: 21080144. **E2a.**
351. Rhee KE, Phan TL, Barnes RF, et al. A delayed-control trial examining the impact of body mass index recognition on obesity-related counseling. *Clin Pediatr (Phila)*. 2013;52(9):836-44. PMID: 23754841. **E1.**
352. Rhodes RE, Naylor PJ, McKay HA. Pilot study of a family physical activity planning intervention among parents and their children. *J Behav Med*. 2010;33(2):91-100. PMID: 19937106. **E6a.**
353. Richmond SA, Emery CA, Doyle-Baker T, et al. Examining a sport injury and obesity intervention program in junior high school. *Clin J Sport Med*. 2012;22(3):304-5. PMID: None. **E6a.**
354. Riddiford-Harland D, Steele J, Baur L, et al. Effects of a physical activity program on plantar pressures in overweight and obese children: RCT findings at 12 months follow-up. *Obes Res Clin Pract*. 2012;6:76. PMID: None. **E8a.**
355. Riddiford-Harland DL, Steele JR, Cliff DP, et al. Does participation in a physical activity program impact upon the feet of overweight and obese children? *J Sci Med Sport*. 2016;19(1):51-5. PMID: 25499915. **E8a.**

356. Robbins LB, Pfeiffer KA, Maier KS, et al. Pilot Intervention to Increase Physical Activity among Sedentary Urban Middle School Girls: A Two-Group Pretest-Posttest Quasi-Experimental Design. *Journal of School Nursing*. 2012;28(4):302-15. PMID: 22472632. **E1a.**
357. Robertson W, Friede T, Blissett J, et al. Pilot of "Families for Health": community-based family intervention for obesity. *Arch Dis Child*. 2008;93(11):921-6. PMID: 18463121. **E4c.**
358. Robinson TN, Killen JD, Kraemer HC, et al. Dance and reducing television viewing to prevent weight gain in African-American girls: the Stanford GEMS pilot study. *Ethn Dis*. 2003;13(1 Suppl 1):S65-77. PMID: 12713212. **E4b.**
359. Robinson TN, Kraemer HC, Matheson DM, et al. Stanford GEMS phase 2 obesity prevention trial for low-income African-American girls: design and sample baseline characteristics. *Contemp Clin Trials*. 2008;29(1):56-69. PMID: 17600772. **E6g.**
360. Robinson TN, Matheson DM, Kraemer HC, et al. A randomized controlled trial of culturally tailored dance and reducing screen time to prevent weight gain in low-income African American girls: Stanford GEMS. *Arch Pediatr Adolesc Med*. 2010;164(11):995-1004. PMID: 21041592. **E6g.**
361. Rocchini AP, Katch V, Anderson J, et al. Blood pressure in obese adolescents: effect of weight loss. *Pediatrics*. 1988;82(1):16-23. PMID: 2668763. **E4b.**
362. Rocchini AP, Katch V, Schork A, et al. Insulin and blood pressure during weight loss in obese adolescents. *Hypertension*. 1987;10(3):267-73. PMID: 3305355. **E4b.**
363. Roemmich JN, Gurgol CM, Epstein LH. Open-loop feedback increases physical activity of youth. *Med Sci Sports Exerc*. 2004;36(4):668-73. PMID: 15064595. **E4b.**
364. Rooney BL, Gritt LR, Havens SJ, et al. Growing healthy families: family use of pedometers to increase physical activity and slow the rate of obesity. *WMJ*. 2005;104(5):54-60. PMID: 16138517. **E4c.**
365. Rosado JL, del RAM, Montemayor K, et al. An increase of cereal intake as an approach to weight reduction in children is effective only when accompanied by nutrition education: a randomized controlled trial. *Nutr J*. 2008;7:28. PMID: 18783622. **E4b.**
366. Ruotsalainen H, Kaariainen M, Tammelin T, et al., editors. Facebook-delivered physical activity promotion intervention for overweight and obese adolescents. 21st European Congress on Obesity (ECO); 2014 May 28-31; Sofia, Bulgaria. Search 2 CENTRAL 20160122. **E6g.**
367. Rush E, Reed P, McLennan S, et al. A school-based obesity control programme: Project Energize. Two-year outcomes. *British Journal of Nutrition*. 2012;107(4):581-7. PMID: 21733268. **E6a.**
368. Rynders C, Weltman A, Delgiorno C, et al. Lifestyle intervention improves fitness independent of metformin in obese adolescents. *Med Sci Sports Exerc*. 2012;44(5):786-92. PMID: 22015710. **E6f.**
369. Saakslähti A, Numminen P, Salo P, et al. Effects of a three-year intervention on children's physical activity from age 4 to 7. *Pediatr Exerc Sci*. 2004;16(2):167-80. PMID: None. **E4.**
370. Sacher PM, Kolotourou M, Chadwick PM, et al. Randomized controlled trial of the MEND program: a family-based community intervention for childhood obesity. *Obesity (Silver Spring)*. 2010;18 Suppl 1. PMID: 20107463. **E4c.**
371. Saelens BE, Grow HM, Stark LJ, et al. Efficacy of increasing physical activity to reduce children's visceral fat: a pilot randomized controlled trial. *International Journal of Pediatric Obesity*. 2011;6(2):102-12. PMID: 20528109. **E4b.**
372. Saelens BE, Sallis JF, Wilfley DE, et al. Behavioral weight control for overweight adolescents initiated in primary care. *Obes Res*. 2002;10(1):22-32. PMID: 11786598. **E4c.**
373. Salcedo Aguilar F, Martinez-Vizcaino V, Sanchez Lopez M, et al. Impact of an after-school physical activity program on obesity in children. *Journal of Pediatrics*. 2010;157(1):36-42.e3. PMID: 20227726. **E6g.**
374. Savoye M, Caprio S, Dziura J, et al. Reversal of early abnormalities in glucose metabolism in obese youth: results of an intensive lifestyle randomized controlled trial. *Diabetes Care*. 2014;37(2):317-24. PMID: 24062325. **E4c.**
375. Savoye M, Caprio S, Dziura J, et al. A community-based intervention for diabetes risk reduction in innercity obese adolescents. *Diabetologia*. 2013;56:S342. PMID: None. **E4c.**

376. Schaefer A, Winkel K, Finne E, et al. An effective lifestyle intervention in overweight children: one-year follow-up after the randomized controlled trial on "Obeldicks light". *Clin Nutr.* 2011;30(5):629-33. PMID: 21514017. **E4c.**
377. Schranz N, Tomkinson G, Parletta N, et al. Can resistance training change the strength, body composition and self-concept of overweight and obese adolescent males? A randomised controlled trial. *BJSM online.* 2014;48(20):1482-8. PMID: 23945035. **E6g.**
378. Schwartz RP, Hamre R, Dietz WH, et al. Office-based motivational interviewing to prevent childhood obesity: a feasibility study. *Arch Pediatr Adolesc Med.* 2007;161(5):495-501. PMID: 17485627. **E8a.**
379. Schwingshandl J, Sudi K, Eibl B, et al. Effect of an individualised training programme during weight reduction on body composition: a randomised trial. *Arch Dis Child.* 1999;81(5):426-8. PMID: 10519718. **E6h.**
380. Senediak C, Spence SH. Rapid versus gradual scheduling of therapeutic contact in a family based behavioural weight control programme for children. *Behav Psychother.* 1985;13(4):287. PMID: None. **E4c.**
381. Serra-Paya N, Ensenyat A, Castro-Vinuales I, et al. Effectiveness of a multi-component intervention for overweight and obese children (Nereu Program): a randomized controlled trial. *PLoS ONE.* 2015;10(12):e0144502. PMID: 26658988. **E4c.**
382. Serra-Paya N, Ensenyat A, Real J, et al. Evaluation of a family intervention programme for the treatment of overweight and obese children (Nereu Programme): a randomized clinical trial study protocol. *BMC Public Health.* 2013;13:1000. PMID: 24153001. **E4, X7.**
383. Shaikh U, Berrong J, Nettiksimmons J, et al. Impact of Electronic Health Record Clinical Decision Support on the Management of Pediatric Obesity. *Am J Med Qual.* 2014. PMID: 24418755. **E1.**
384. Shalitin S, Ashkenazi-Hoffnung L, Yackobovitch-Gavan M, et al. Effects of a twelve-week randomized intervention of exercise and/or diet on weight loss and weight maintenance, and other metabolic parameters in obese preadolescent children. *Horm Res.* 2009;72(5):287-301. PMID: 19844115. **E8a.**
385. Sharma S, Fleming SE. One-year change in energy and macronutrient intakes of overweight and obese inner-city African American children: effect of community-based Taking Action Together type 2 diabetes prevention program. *Eat Behav.* 2012;13(3):271-4. PMID: 22664410. **E7.**
386. Sherwood NE, JaKa MM, Crain AL, et al. Pediatric primary care-based obesity prevention for parents of preschool children: a pilot study. *Child Obes.* 2015;11(6):674-82. PMID: 26478951. **E4b.**
387. Siegel RM, Neidhard MS, Kirk S. A comparison of low glycemic index and staged portion-controlled diets in improving BMI of obese children in a pediatric weight management program. *Clinical Pediatrics.* 2011;50(5):459-61. PMID: 21357196. **E7.**
388. Siegrist M, Hanssen H, Lammel C, et al. Effects of the school-based intervention programme JuvenTUM 3 on physical fitness, physical activity, and the prevalence of overweight. *Eur J Prev Cardiol.* 2012;19(Suppl 1):S2. PMID: None. **E6a.**
389. Sigal RJ, Alberga AS, Goldfield GS, et al. Effects of aerobic training, resistance training, or both on percentage body fat and cardiometabolic risk markers in obese adolescents: the healthy eating aerobic and resistance training in youth randomized clinical trial. *JAMA Pediatr.* 2014;168(11):1006-14. PMID: 25243536. **E3b.**
390. Simons M, Chinapaw MJ, van de Bovenkamp M, et al. Active video games as a tool to prevent excessive weight gain in adolescents: rationale, design and methods of a randomized controlled trial. *BMC Public Health.* 2014;14:275. PMID: 24661535. **E6a.**
391. Skelton JA. Erratum: randomised controlled trial: family intervention focused on effective parenting is associated with decreased child obesity prevalence 3-5 years later. *Evid Based Med.* 2015;20(1):34. PMID: None. **E7.**
392. Skouteris H, Hill B, McCabe M, et al. Recruitment evaluation of a preschooler obesity-prevention intervention. *Early Child Development and Care.* 2014;184(5):649-57. PMID: None. **E6a.**
393. Slusser W, Frankel F, Robison K, et al. Pediatric overweight prevention through a parent training program for 2-4 year old Latino children. *Child Obes.* 2012;8(1):52-9. PMID: 22799481. **E6a.**

394. Small L, Bonds-McClain D, Melnyk B, et al. The preliminary effects of a primary care-based randomized treatment trial with overweight and obese young children and their parents. *J Pediatr Health Care*. 2014;28(3):198-207. PMID: 23511090. **E8b.**
395. Smith J, Morgan P, Saunders K, et al. Improving physical self-perception in adolescent boys from disadvantaged communities: Psychological outcomes from the PALs intervention. *J Sci Med Sport*. 2012;15:S344-s5. PMID: None. **E6h.**
396. Smith KL, Kerr DA, Howie EK, et al. Do overweight adolescents adhere to dietary intervention messages? Twelve-month detailed dietary outcomes from Curtin University's activity, food and attitudes program. *Nutrients*. 2015;7(6):4363-82. PMID: 26043035. **E4.**
397. Solis L, Ponte L, Martinez D, et al. Effects of telephone intervention on inflammatory cytokines following summer lifestyle intervention program. *Exp Biol*. 2015;29. PMID: None. **E4.**
398. Sothorn MS, Loftin JM, Udall JN, et al. Safety, feasibility, and efficacy of a resistance training program in preadolescent obese children. *Am J Med Sci*. 2000;319(6):370-5. PMID: 10875292. **E8a.**
399. Sousa P, Fonseca H, Gaspar P, et al. Controlled trial of an Internet-based intervention for overweight teens (Next.Step): effectiveness analysis. *Eur J Pediatr*. 2015;174(9):1143-57. PMID: 25772743. **E4c.**
400. Spears-Lanoix EC, McKyer EL, Evans A, et al. Using family-focused garden, nutrition, and physical activity programs to reduce childhood obesity: The Texas! Go! Eat! Grow! Pilot Study. *Child Obes*. 2015;11(6):707-14. PMID: 26655452. **E2.**
401. Spriet SW, Davis KL. Diet-induced weight loss in obese children with asthma: a randomized controlled trial. *Pediatrics*. 2014;134 Suppl 3:S170. PMID: 25363970. **E4b.**
402. Spurrier NJ, Bell L, Wilson A, et al. Minimal change in children's lifestyle behaviours and adiposity following a home-based obesity intervention: results from a pilot study. *BMC Res Notes*. 2016;9(1):26. PMID: 26758057. **E7.**
403. Srinivasan S, Ambler GR, Baur LA, et al. Randomized, controlled trial of metformin for obesity and insulin resistance in children and adolescents: improvement in body composition and fasting insulin. *J Clin Endocrinol Metab*. 2006;91(6):2074-80. PMID: 16595599. **E6f.**
404. Stansberry S, Palcic J, El-Mubasher AA, et al. School-based sports participation and its effects on weight maintenance in Mexican American adolescents: A two-year analysis. *Obesity (Silver Spring, Md)*. 2011;19:S108. PMID: None. **E4.**
405. Stice E, Yokum S, Burger K, et al. A pilot randomized trial of a cognitive reappraisal obesity prevention program. *Physiol Behav*. 2015;138:124-32. PMID: 25447334. **E5a.**
406. Stolk L. Parent training as a component of behavioral program for the treatment of childhood obesity. Albany, NY: State University of New York at Albany; 1986. **E4b.**
407. Stone S, Raman A, Fleming S. Behavioral characteristics among obese/overweight inner-city African American children: A secondary analysis of participants in a community-based type 2 diabetes risk reduction program. *Child Youth Serv Rev*. 2010;32(6):833-9. PMID: None. **E6.**
408. St-Onge MP, Goree LL, Gower B. High-milk supplementation with healthy diet counseling does not affect weight loss but ameliorates insulin action compared with low-milk supplementation in overweight children. *J Nutr*. 2009;139(5):933-8. PMID: 19321584. **E4b.**
409. Straker L, Howie E, McVeigh J, et al. Changing the sedentary time and physical activity trajectories of obese adolescents: Results from the CAFAP controlled clinical trial. *J Sci Med Sport*. 2014;18(Suppl 1):e121. PMID: None. **E7.**
410. Straker LM, Smith KL, Fenner AA, et al. Rationale, design and methods for a staggered-entry, waitlist controlled clinical trial of the impact of a community-based, family-centred, multidisciplinary program focussed on activity, food and attitude habits (Curtin University's Activity, Food and Attitudes Program--CAFAP) among overweight adolescents. *BMC Public Health*. 2012;12:471. **E7.**

411. Sung RY, Yu CW, Chang SK, et al. Effects of dietary intervention and strength training on blood lipid level in obese children. *Arch Dis Child*. 2002;86(6):407-10. PMID: 12023168. **E4b**.
412. Sze YY, Daniel TO, Kilanowski CK, et al. Web-based and mobile delivery of an episodic future thinking intervention for overweight and obese families: a feasibility study. *JMIR Mhealth Uhealth*. 2015;3(4):e97. PMID: 26678959. **E4a**.
413. Tanofsky-Kraff M, Shomaker LB, Wilfley DE, et al. Targeted prevention of excess weight gain and eating disorders in high-risk adolescent girls: a randomized controlled trial. *Am J Clin Nutr*. 2014;100(4):1010-8. PMID: 25240070. **E6g**.
414. Tanofsky-Kraff M, Wilfley DE, Young JF, et al. A pilot study of interpersonal psychotherapy for preventing excess weight gain in adolescent girls at-risk for obesity. *Int J Eat Disord*. 2010;43(8):701-6. PMID: 19882739. **E6g**.
415. Tjonna AE, Stolen TO, Bye A, et al. Aerobic interval training reduces cardiovascular risk factors more than a multitreatment approach in overweight adolescents. *Clin Sci (Colch)*. 2009;116(4):317-26. PMID: 18673303. **E6h**.
416. Tock L, Damaso AR, de Piano A, et al. Long-term effects of metformin and lifestyle modification on nonalcoholic Fatty liver disease obese adolescents. *J Obes*. 2010. PMID: 20798858. **E2a**.
417. Today Study Group. Design of a family-based lifestyle intervention for youth with type 2 diabetes: the TODAY study. *Int J Obes (Lond)*. 2010;34(2):217-26. PMID: 19823189. **E6f**.
418. Togashi K, Masuda H, Rankinen T, et al. A 12-year follow-up study of treated obese children in Japan. *Int J Obes Relat Metab Disord*. 2002;26(6):770-7. PMID: 12037646. **E7**.
419. Truby H, Baxter KA, Barrett P, et al. The Eat Smart Study: a randomised controlled trial of a reduced carbohydrate versus a low fat diet for weight loss in obese adolescents. *BMC Public Health*. 2010;10:464. PMID: 20696032. **E4c**.
420. Tsang TW, Kohn M, Chow CM, et al. A randomized controlled trial of Kung Fu training for metabolic health in overweight/obese adolescents: the "martial fitness" study. *J Pediatr Endocrinol Metab*. 2009;22(7):595-607. PMID: 19774841. **E3b**.
421. Tsang TW, Kohn M, Chow CM, et al. A randomised placebo-exercise controlled trial of Kung Fu training for improvements in body composition in overweight/obese adolescents: the "Martial Fitness" study. *J Sports Sci Med*. 2009;8(1):97-106. PMID: 24150562. **E3b**.
422. Tucker S, Lanningham-Foster LM. Nurse-led school-based child obesity prevention. *J School Nurs*. 2015;31(6):450-66. PMID: None. **E6a**.
423. Uysal Y, Wolters B, Knop C, et al. Components of the metabolic syndrome are negative predictors of weight loss in obese children with lifestyle intervention. *Clin Nutr*. 2014;33(4):620-5. PMID: 24075648. **E7**.
424. Van Mil EG, Westerterp KR, Kester AD, et al. The effect of sibutramine on energy expenditure and body composition in obese adolescents. *J Clin Endocrinol Metab*. 2007;92(4):1409-14. PMID: 17264187. **E6f**.
425. Vanhelst J, Mikulovic J, Fardy P, et al. Effects of a multidisciplinary rehabilitation program on pediatric obesity: the CEMHaVi program. *Int J Rehabil Res*. 2011;34(2):110-4. PMID: 21317789. **E7**.
426. Vann LH, Stanford FC, Durkin MW, et al. "Moving and losing": A pilot study incorporating physical activity to decrease obesity in the pediatric population. *J S C Med Assoc*. 2013;109(4):116-20. PMID: 24908910. **E8a**.
427. Vay RA, Kulendran M, Sides N, et al., editors. The effect of an interactive short messaging service in paediatric weight loss maintenance: A randomised control trial. 20th European Congress on Obesity; 2013 May 12-15; Liverpool, UK. Search 2 CENTRAL 20160122: S. Karger AG. **E4a**.
428. Verkauskiene R. Obesity in children and adolescents: associated risks and early intervention (OCA). NCT01677923. <https://clinicaltrials.gov/ct2/show/NCT01677923?term=metformin&age=0&rank=68>. Accessed 2/17/2016, PMID: None. **E6f**

429. Vissers D, Meulenaere A, Vanroy C, et al. Effect of a multidisciplinary school-based lifestyle intervention on body weight and metabolic variables in overweight and obese youth. *e-SPEN*. 2008;3(5):e196-e202. PMID: None. **E4c.**
430. Wabitsch M, Moss A, Reinehr T, et al. Medical and psychosocial implications of adolescent extreme obesity - acceptance and effects of structured care, short: Youth with Extreme Obesity Study (YES). *BMC Public Health*. 2013;13:789. PMID: 23987123. **E6h.**
431. Wadden TA, Stunkard AJ, Rich L, et al. Obesity in black adolescent girls: a controlled clinical trial of treatment by diet, behavior modification, and parental support. *Pediatrics*. 1990;85(3):345-52. PMID: 2304788. **E4c.**
432. Waling M, Backlund C, Lind T, et al. Effects on metabolic health after a 1-year-lifestyle intervention in overweight and obese children: a randomized controlled trial. *J Nutr Metab*. 2012;2012:913965. PMID: 21941639. **E8b.**
433. Waling M, Larsson C. Improved dietary intake among overweight and obese children followed from 8 to 12 years of age in a randomised controlled trial. *J Nutr Sci*. 2012;1:e16. PMID: 25191545. **E8b.**
434. Waling M, Lind T, Hernell O, et al. A one-year intervention has modest effects on energy and macronutrient intakes of overweight and obese Swedish children. *J Nutr*. 2010;140(10):1793-8. PMID: 20739446. **E8b.**
435. Walpole B, Dettmer E, Morrongiello B, et al. Motivational interviewing as an intervention to increase adolescent self-efficacy and promote weight loss: methodology and design. *BMC Public Health*. 2011;11:459. PMID: 21663597. **E6h.**
436. Walpole B, Dettmer E, Morrongiello BA, et al. Motivational interviewing to enhance self-efficacy and promote weight loss in overweight and obese adolescents: a randomized controlled trial. *J Pediatr Psychol*. 2013;38(9):944-53. PMID: 23671058. **E6h.**
437. Warschburger P. SRT-Joy - computer-assisted self-regulation training for obese children and adolescents: study protocol for a randomized controlled trial. *Trials*. 2015;16:566. PMID: 26654798. **E2.**
438. Warschburger P, Fromme C, Petermann F, et al. Conceptualisation and evaluation of a cognitive-behavioural training programme for children and adolescents with obesity. *Int J Obes Relat Metab Disord*. 2001;25 Suppl 1:S93-5. PMID: 11466598. **E2.**
439. Warschburger P, Kroll K, Unverzagt S, et al., editors. What is the parents' part in long-term weight management of their obese child? Results from the EPOC study. 20th European Congress on Obesity (ECO); 2013 May 12-15; Liverpool, UK. Search 2 CENTRAL 20160122: S. Karger AG. **E2.**
440. Watson P, Wiers RW, Hommel B, et al. An associative account of how the obesogenic environment biases adolescents' food choices. *Appetite*. 2016;96:560-71. PMID: None. **E6a.**
441. Wattigney WA, Webber LS, Srinivasan SR, et al. The emergence of clinically abnormal levels of cardiovascular disease risk factor variables among young adults: the Bogalusa Heart Study. *Prev Med*. 1995;24(6):617-26. PMID: 8610086. **E1.**
442. Weijs PJ, Hofsteenge AG, Chinapaw M, et al. Long-term effect of the Go4it group treatment for obese adolescents: A randomised controlled trial. *Clinical Nutrition*. 2012;7(1 Suppl):130. PMID: 23810626. **E4c.**
443. Wengle JG, Hamilton JK, Manhiot C, et al. The 'Golden Keys' to health - a healthy lifestyle intervention with randomized individual mentorship for overweight and obesity in adolescents. *Paediatr child health*. 2011;16(8):473-8. PMID: 23024585. **E4c.**
444. Wessel J, O'Kelly-Phillips E, Palmer K, et al. Comparative effectiveness study of the diabetes prevention program in families: Preliminary results. *Circulation*. 2015;131. PMID: None. **E6a.**
445. Wessel J, Phillips E, Palmer K, et al. Comparative effectiveness trial of the diabetes prevention program in families. *Diabetes*. 2015;64(Suppl 1):A633. PMID: None. **E6a.**
446. West F, Sanders MR, Cleghorn GJ, et al. Randomised clinical trial of a family-based lifestyle intervention for childhood obesity involving parents as the exclusive agents of change. *Behav Res Ther*. 2010;48(12):1170-9. PMID: 20883981. **E4b.**

447. Wiegand S, Bau AM, Ernert A, et al. Maintain: An intervention study of weight regain after weight loss in adolescents and children reveals an only minor role of leptin in weight regain. *Horm Res Paediatr*. 2014;82:221. PMID: None. **E8b.**
448. Wiegand S, l'Allemand D, Hubel H, et al. Metformin and placebo therapy both improve weight management and fasting insulin in obese insulin-resistant adolescents: a prospective, placebo-controlled, randomized study. *Eur J Endocrinol*. 2010;163(4):585-92. PMID: 20639355. **E6f.**
449. Wilson AJ, Prapavessis H, Jung ME, et al. Lifestyle modification and metformin as long-term treatment options for obese adolescents: study protocol. *BMC Public Health*. 2009;9:434. **E6f.**
450. Wilson DM, Abrams SH, Aye T, et al. Metformin extended release treatment of adolescent obesity: a 48-week randomized, double-blind, placebo-controlled trial with 48-week follow-up. *Arch Pediatr Adolesc Med*. 2010;164(2):116-23. PMID: 20124139. **E6f.**
451. Woo KS, Chook P, Yu CW, et al. Effects of diet and exercise on obesity-related vascular dysfunction in children. *Circulation*. 2004;109(16):1981-6. PMID: 15066949. **E6g.**
452. Wright DR, Taveras EM, Gillman MW, et al. The cost of a primary care-based childhood obesity prevention intervention. *BMC Health Serv Res*. 2014;14:44. PMID: 24472122. **E4.**
453. Wright K, Norris K, Newman Giger J, et al. Improving healthy dietary behaviors, nutrition knowledge, and self-efficacy among underserved school children with parent and community involvement. *Childhood Obesity*. 2012;8(4):347-56. PMID: 22867074. **E6c.**
454. Wylie-Rosett J, Isasi C, Soroudi N, et al. KidWAVE: Get Healthy Game--promoting a more healthful lifestyle in overweight children. *J Nutr Educ Behav*. 2010;42(3):210-2. PMID: 20434077. **E1.**
455. Yanovski J. Safety and efficacy of xenical in children and adolescents with obesity-related diseases. NCT00001723. <https://clinicaltrials.gov/ct2/show/NCT00001723>. Accessed 02/05/2016, PMID: None. **E6f.**
456. Yanovski JA, Krakoff J, Salaita CG, et al. Effects of metformin on body weight and body composition in obese insulin-resistant children: a randomized clinical trial. *Diabetes*. 2011;60(2):477-85. PMID: 21228310. **E6f.**
457. Yoshinaga M, Sameshima K, Miyata K, et al. Prevention of mildly overweight children from development of more overweight condition. *Prev Med*. 2004;38(2):172-4. PMID: 14715208. **E7.**
458. Yun L, Boles RE, Haemer MA, et al. A randomized, home-based, childhood obesity intervention delivered by patient navigators. *BMC Public Health*. 2015;15:506. PMID: 26002612. **E4.**

Appendix C. Included Studies

Below is a list of included studies and their ancillary publications (indented below main results publication):

1. Banks J, Sharp DJ, Hunt LP, et al. Evaluating the transferability of a hospital-based childhood obesity clinic to primary care: a randomised controlled trial. *British Journal of General Practice*. 2012;62(594):e6-12. PMID: 22520658.
2. Bathrellou E, Yannakoulia M, Papanikolaou K, et al. Parental involvement does not augment the effectiveness of an intense behavioral program for the treatment of childhood obesity. *Hormones*. 2010;9(2):171-5. PMID: 20687401.
 - a. Bathrellou E, Yannakoulia M, Papanikolaou K, et al. Development of a Multi-Disciplinary Intervention for the Treatment of Childhood Obesity Based on Cognitive Behavioral Therapy. *Child & Family Behavior Therapy*. 2010;32(1):34-50. PMID: None.
3. Berkowitz RI, Rukstalis MR, Bishop-Gilyard CT, et al. Treatment of adolescent obesity comparing self-guided and group lifestyle modification programs: a potential model for primary care. *J Pediatr Psychol*. 2013;38(9):978-86. PMID: 23750019.
4. Berry DC, Schwartz TA, McMurray RG, et al. The family partners for health study: a cluster randomized controlled trial for child and parent weight management. *Nutr Diabetes*. 2014;4:e101. PMID: 24418827.
 - a. Berry DC, McMurray R, Schwartz TA, et al. Rationale, design, methodology and sample characteristics for the family partners for health study: a cluster randomized controlled study. *BMC Public Health*. 2012;12:250. PMID: 22463125.
5. Bocca G, Corpeleijn E, Stolk RP, et al. Results of a multidisciplinary treatment program in 3-year-old to 5-year-old overweight or obese children: a randomized controlled clinical trial. *Arch Pediatr Adolesc Med*. 2012;166(12):1109-15. PMID: 23108941.
 - a. Bocca G, Corpeleijn E, Stolk RP, et al. Effect of obesity intervention programs on adipokines, insulin resistance, lipid profile, and low-grade inflammation in 3- to 5-year-old children. *Pediatr Res*. 2014;75(2):352-7. PMID: 24232638.
 - b. Bocca G, Corpeleijn E, van den Heuvel ER, et al. Three-year follow-up of 3-year-old to 5-year-old children after participation in a multidisciplinary or a usual-care obesity treatment program. *Clin Nutr*. 2014;33(6):1095-100. PMID: 24377413.
 - c. Bocca G, Kuitert MW, Sauer PJ, et al. A multidisciplinary intervention programme has positive effects on quality of life in overweight and obese preschool children. *Acta Paediatr*. 2014;103(9):962-7. PMID: 24862085.
6. Broccoli S, Davoli AM, Bonvicini L, et al. Motivational interviewing to treat overweight children: 24-month follow-up of a randomized controlled trial. *Pediatrics*. 2016;137(1):1-10. PMID: 26702030.
 - a. Davoli AM, Broccoli S, Bonvicini L, et al. Pediatrician-led motivational interviewing to treat overweight children: an RCT. *Pediatrics*. 2013;132(5):e1236-46. PMID: 24144717.

7. Bryant M, Farrin A, Christie D, et al. Results of a feasibility randomised controlled trial (RCT) for WATCH IT: a programme for obese children and adolescents. *Clin Trials*. 2011;8(6):755-64. PMID: 22024104.
 - a. Rudolf M, Christie D, McElhone S, et al. WATCH IT: a community based programme for obese children and adolescents. *Arch Dis Child*. 2006;91(9):736-9. PMID: None.
8. Coppins DF, Margetts BM, Fa JL, et al. Effectiveness of a multi-disciplinary family-based programme for treating childhood obesity (the Family Project). *Eur J Clin Nutr*. 2011;65(8):903-9. PMID: 21487425.
9. Davis JN, Ventura EE, Tung A, et al. Effects of a randomized maintenance intervention on adiposity and metabolic risk factors in overweight minority adolescents. *Pediatr Obes*. 2012;7(1):16-27. PMID: 22434736.
10. de Niet J, Timman R, Bauer S, et al. The effect of a short message service maintenance treatment on body mass index and psychological well-being in overweight and obese children: a randomized controlled trial. *Pediatr Obes*. 2012;7(3):205-19. PMID: 22492669.
 - a. de Niet J, Timman R, Bauer S, et al. Short message service reduces dropout in childhood obesity treatment: a randomized controlled trial. *Health Psychol*. 2012;31(6):797-805. PMID: 22468714.
11. DeBar LL, Stevens VJ, Perrin N, et al. A primary care-based, multicomponent lifestyle intervention for overweight adolescent females. *Pediatrics*. 2012;129(3):e611-20. PMID: 22331335.
12. Epstein LH, McKenzie SJ, Valoski A, et al. Effects of mastery criteria and contingent reinforcement for family-based child weight control. *Addict Behav*. 1994;19(2):135-45. PMID: 8036961.
13. Epstein LH, Paluch RA, Beecher MD, et al. Increasing healthy eating vs. reducing high energy-dense foods to treat pediatric obesity. *Obesity*. 2008;16(2):318-26. PMID: 18239639.
14. Epstein LH, Paluch RA, Gordy CC, et al. Decreasing sedentary behaviors in treating pediatric obesity. *Arch Pediatr Adolesc Med*. 2000;154(3):220-6. PMID: 10710017.
15. Epstein LH, Paluch RA, Gordy CC, et al. Problem solving in the treatment of childhood obesity. *J Consult Clin Psychol*. 2000;68(4):717-21. PMID: 10965646.
16. Epstein LH, Paluch RA, Kilanowski CK, et al. The effect of reinforcement or stimulus control to reduce sedentary behavior in the treatment of pediatric obesity. *Health Psychol*. 2004;23(4):371-80. PMID: 15264973.
17. Epstein LH, Paluch RA, Wrotniak BH, et al. Cost-effectiveness of family-based group treatment for child and parental obesity. *Child Obes*. 2014;10(2):114-21. PMID: 24655212.
18. Epstein LH, Valoski AM, Vara LS, et al. Effects of decreasing sedentary behavior and increasing activity on weight change in obese children. *Health Psychol*. 1995;14(2):109-15. PMID: 7789345.
19. Epstein LH, Wing RR, Penner BC, et al. Effect of diet and controlled exercise on weight loss in obese children. *J Pediatr*. 1985;107(3):358-61. PMID: 4032130.
20. Epstein LH, Wing RR, Woodall K, et al. Effects of family-based behavioral treatment on obese 5-to-8-year-old children. *Behavior Therapy*. 1985;16(2):205-12. PMID: None.

- a. Epstein LH, Woodall K, Goreczny AJ, et al. The modification of activity patterns and energy expenditure in obese young girls. *Behavior Therapy*. 1984;15:101-8. PMID: None
21. Estabrooks PA, Shoup JA, Gattshall M, et al. Automated telephone counseling for parents of overweight children: a randomized controlled trial. *Am J Prev Med*. 2009;36(1):35-42. PMID: 19095163.
22. Garipagaoglu M, Sahip Y, Darendeliler F, et al. Family-based group treatment versus individual treatment in the management of childhood obesity: randomized, prospective clinical trial. *European Journal of Pediatrics*. 2009;168(9):1091-9. PMID: 19089448.
23. Gerards SM, Dagnelie PC, Gubbels JS, et al. The effectiveness of lifestyle triple p in the Netherlands: a randomized controlled trial. *PLoS One*. 2015;10(4):e0122240. PMID: 25849523.
 - a. Gerards SM, Dagnelie PC, Jansen MW, et al. Lifestyle Triple P: a parenting intervention for childhood obesity. *BMC Public Health*. 2012;12:267. PMID: 22471971
24. Goldfield GS, Epstein LH, Kilanowski CK, et al. Cost-effectiveness of group and mixed family-based treatment for childhood obesity. *Int J Obes Relat Metab Disord*. 2001;25(12):1843-9. PMID: 11781766.
25. Golley RK, Magarey AM, Baur LA, et al. Twelve-month effectiveness of a parent-led, family-focused weight-management program for prepubertal children: a randomized, controlled trial. *Pediatrics*. 2007;119(3):517-25. PMID: 17332205.
 - a. Golley RK, Magarey AM, Daniels LA. Children's food and activity patterns following a six-month child weight management program. *Int J Pediatr Obes*. 2011;6(5-6):409-14. PMID: 21838569.
 - b. Golley RK, Magarey AM, Steinbeck KS, et al. Comparison of metabolic syndrome prevalence using six different definitions in overweight pre-pubertal children enrolled in a weight management study. *Int J Obes (Lond)*. 2006;30(5):853-60. PMID: 16404409.
 - c. Golley RK, Perry RA, Magarey A, et al. Family-focused weight management program for five- to nine-year-olds incorporating parenting skills training with healthy lifestyle information to support behaviour modification. *Nutr Diet*. 2007;64(3):144-50. PMID: None.
 - d. Sanders MR. Triple P-Positive Parenting Program: towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clin Child Fam Psychol Rev*. 1999;2(2):71-90. PMID: 11225933.
26. Grey M, Berry D, Davidson M, et al. Preliminary testing of a program to prevent type 2 diabetes among high-risk youth. *J Sch Health*. 2004;74(1):10-5. PMID: 15022370.
27. Hughes AR, Stewart L, Chapple J, et al. Randomized, controlled trial of a best-practice individualized behavioral program for treatment of childhood overweight: Scottish Childhood Overweight Treatment Trial (SCOTT). *Pediatrics*. 2008;121(3):e539-46. PMID: 18310175.
 - a. Stewart L, Houghton J, Hughes AR, et al. Dietetic management of pediatric overweight: development and description of a practical and evidence-based behavioral approach. *J Am Diet Assoc*. 2005;105(11):1810-5. PMID: 16256768.

28. Hystad HT, Steinsbekk S, Odegard R, et al. A randomised study on the effectiveness of therapist-led v. self-help parental intervention for treating childhood obesity. *Br J Nutr.* 2013;110(6):1143-50. PMID: 23388524.
29. Israel AC, Stolmaker L, Andrian CA. The effects of training parents in general child management skills on a behavioral weight loss program for children. *Behavior Therapy.* 1985;16(2):180. PMID: None.
30. Johnston CA, Moreno JP, Gallagher MR, et al. Achieving long-term weight maintenance in Mexican-American adolescents with a school-based intervention. *Journal of Adolescent Health.* 2013;53(3):335-41. PMID: 23727501.
 - a. Johnston CA, Tyler C, Fullerton G, et al. Results of an intensive school-based weight loss program with overweight Mexican American children. *Int J Pediatr Obes.* 2007;2(3):144-52. PMID: 17999280.
31. Johnston CA, Tyler C, Fullerton G, et al. Corrigendum: Effects of a school-based weight maintenance program for Mexican-American children: Results at 2 years. *Obesity.* 2010;18(3):647. PMID: None.
 - a. Johnston CA, Tyler C, McFarlin B, et al. Weight Loss in Overweight Mexican American Children: A Randomized Controlled Trial. *Pediatrics.* 2007;120:e1450-e7. PMID: 18055663.
32. Kalarchian MA, Levine MD, Arslanian SA, et al. Family-based treatment of severe pediatric obesity: randomized, controlled trial. *Pediatrics.* 2009;124(4):1060-8. PMID: 19786444.
 - a. Wildes JE, Marcus MD, Kalarchian MA, et al. Self-reported binge eating in severe pediatric obesity: impact on weight change in a randomized controlled trial of family-based treatment. *Int J Obes (Lond).* 2010;34(7):1143-8. PMID: 20157322.
33. Kalavainen M, Korppi M, Nuutinen O. Long-term efficacy of group-based treatment for childhood obesity compared with routinely given individual counselling. *Int J Obes.* 2011;35(4):530-3. PMID: None.
 - a. Kalavainen M, Utriainen P, Vanninen E, et al. Impact of childhood obesity treatment on body composition and metabolic profile. *World J Pediatr.* 2012;8(1):31-7. PMID: 22105574.
 - b. Kalavainen MP, Korppi MO, Nuutinen OM. Clinical efficacy of group-based treatment for childhood obesity compared with routinely given individual counseling. *Int J Obes (Lond).* 2007;31(10):1500-8. PMID: 17438555.
34. Larsen LM, Hertel NT, Molgaard C, et al. Early intervention for childhood overweight: A randomized trial in general practice. *Scand J Prim Health Care.* 2015;33(3):184-90. PMID: 26194172.
35. Magarey AM, Perry RA, Baur LA, et al. A parent-led family-focused treatment program for overweight children aged 5 to 9 years: the PEACH RCT. *Pediatrics.* 2011;127(2):214-22. PMID: 21262890.
36. McCallum Z, Wake M, Gerner B, et al. Outcome data from the LEAP (Live, Eat and Play) trial: a randomized controlled trial of a primary care intervention for childhood overweight/mild obesity. *Int J Obes (Lond).* 2007;31(4):630-6. PMID: 17160087.
 - a. McCallum Z, Wake M, Gerner B, et al. Can Australian general practitioners tackle childhood overweight/obesity? Methods and processes from the LEAP

- (Live, Eat and Play) randomized controlled trial. *J Paediatr Child Health*. 2005;41(9-10):488-94. PMID: 16150065.
- b. Wake M, Gold L, McCallum Z, et al. Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children: the LEAP trial. *Ambul Pediatr*. 2008;8(5):336-41. PMID: 18922508.
37. Nemet D, Barkan S, Epstein Y, et al. Short- and long-term beneficial effects of a combined dietary-behavioral-physical activity intervention for the treatment of childhood obesity. *Pediatrics*. 2005;115(4):e443-e9. PMID: 15805347.
 38. Nguyen B, Shrewsbury VA, O'Connor J, et al. Twelve-month outcomes of the loozit randomized controlled trial: a community-based healthy lifestyle program for overweight and obese adolescents. *Arch Pediatr Adolesc Med*. 2012;166(2):170-7. PMID: 22312175.
 - a. Nguyen B, Shrewsbury VA, O'Connor J, et al. A process evaluation of an adolescent weight management intervention: findings and recommendations. *Health Promot Int*. 2015;30(2):201-12. PMID: 25550288.
 - b. Nguyen B, McGregor KA, O'Connor J, et al. Recruitment challenges and recommendations for adolescent obesity trials. *J Paediatr Child Health*. 2012;48(1):38-43. PMID: 22250828.
 - c. Nguyen B, Shrewsbury V, Lau C, et al. Adolescent and parent views of an adolescent weight management program: Lessons from the Loozit randomised controlled trial. *Obesity research & clinical practice*. 2012;6:56. PMID: None.
 - d. Nguyen B, Shrewsbury VA, O'Connor J, et al. Two-year outcomes of an adjunctive telephone coaching and electronic contact intervention for adolescent weight-loss maintenance: the Loozit randomized controlled trial. *International Journal of Obesity*. 2013;37(3):468-72. PMID: 22584456.
 - e. Nguyen B, Shrewsbury VA, O'Connor J, et al. Community-based adolescent weight management with additional therapeutic contact: Twelve month outcomes of the Loozit RCT. *Obesity reviews*. 2011;12:278-9. PMID: None.
 - f. Shrewsbury VA, O'Connor J, Steinbeck KS, et al. A randomised controlled trial of a community-based healthy lifestyle program for overweight and obese adolescents: the Loozit study protocol. *BMC Public Health*. 2009;9:119. PMID: 19402905.
 39. Norman G, Huang J, Davila EP, et al. Outcomes of a 1-year randomized controlled trial to evaluate a behavioral 'stepped-down' weight loss intervention for adolescent patients with obesity. *Pediatr Obes*. 2016;11(1):18-25. PMID: 25702630.
 40. Nowicka P, Hoglund P, Pietrobelli A, et al. Family Weight School treatment: 1-year results in obese adolescents. *Int J Pediatr Obes*. 2008;3(3):141-7. PMID: 18608623.
 41. Patrick K, Norman GJ, Davila EP, et al. Outcomes of a 12-month technology-based intervention to promote weight loss in adolescents at risk for type 2 diabetes. *J Diabetes Sci Technol*. 2013;7(3):759-70. PMID: 23759410.
 42. Quattrin T, Roemmich JN, Paluch R, et al. Treatment outcomes of overweight children and parents in the medical home. *Pediatrics*. 2014;134(2):290-7. PMID: 25049340.
 - a. Quattrin T, Roemmich JN, Paluch R, et al. Efficacy of family-based weight control program for preschool children in primary care. *Pediatrics*. 2012;130(4):660-6. PMID: 22987879.
 43. Raynor HA, Osterholt KM, Hart CN, et al. Efficacy of U.S. paediatric obesity primary care guidelines: two randomized trials. *Pediatr Obes*. 2012;7(1):28-38. PMID: 22434737.

44. Reinehr T, de SG, Toschke AM, et al. Long-term follow-up of cardiovascular disease risk factors in children after an obesity intervention. *Am J Clin Nutr.* 2006;84(3):490-6. PMID: 16960161.
 - a. Reinehr T, Temmesfeld M, Kersting M, et al. Four-year follow-up of children and adolescents participating in an obesity intervention program. *Int J Obes (Lond).* 2007;31(7):1074-7. PMID: 17471300.
45. Reinehr T, Kleber M, Toschke AM. Lifestyle intervention in obese children is associated with a decrease of the metabolic syndrome prevalence. *Atherosclerosis.* 2009;207(1):174-80. PMID: 19442975.
46. Resnick EA, Bishop M, O'Connell A, et al. The CHEER study to reduce BMI in Elementary School students: a school-based, parent-directed study in Framingham, Massachusetts. *Journal of School Nursing.* 2009;25(5):361-72. PMID: 19564251.
47. Resnicow K, McMaster F, Bocian A, et al. Motivational interviewing and dietary counseling for obesity in primary care: an RCT. *Pediatrics.* 2015;135(4):649-57. PMID: 25825539.
 - a. Resnicow K, McMaster F, Woolford S, et al. Study design and baseline description of the BMI2 trial: reducing paediatric obesity in primary care practices. *Pediatr Obes.* 2012;7(1):3-15. PMID: 22434735.
48. Resnicow K, Taylor R, Baskin M, et al. Results of go girls: a weight control program for overweight African-American adolescent females. *Obesity Research.* 2005;13(10):1739-48. PMID: 16286521.
49. Saelens BE, Lozano P, Scholz K. A randomized clinical trial comparing delivery of behavioral pediatric obesity treatment using standard and enhanced motivational approaches. *Journal of Pediatric Psychology.* 2013;38(9):954-64. PMID: 23902797.
50. Savoye M, Shaw M, Dziura J, et al. Effects of a weight management program on body composition and metabolic parameters in overweight children: a randomized controlled trial. *JAMA.* 2007;297(24):2697-704. PMID: 17595270.
 - a. Savoye M, Nowicka P, Shaw M, et al. Long-term results of an obesity program in an ethnically diverse pediatric population. *Pediatrics.* 2011;127(3):402-10. PMID: 21300674.
 - b. Shaw M, Savoye M, Cali A, et al. Effect of a successful intensive lifestyle program on insulin sensitivity and glucose tolerance in obese youth. *Diabetes Care.* 2009;32(1):45-7. PMID: 18840769.
51. Stark LJ, Clifford LM, Towner EK, et al. A pilot randomized controlled trial of a behavioral family-based intervention with and without home visits to decrease obesity in preschoolers. *J Pediatr Psychol.* 2014;39(9):1001-12. PMID: 25080605.
52. Stark LJ, Spear S, Boles R, et al. A pilot randomized controlled trial of a clinic and home-based behavioral intervention to decrease obesity in preschoolers. *Obesity (Silver Spring).* 2011;19(1):134-41. PMID: 20395948.
 - a. Van Allen J, Kuhl ES, Filigno SS, et al. Changes in parent motivation predicts changes in body mass index z-score (zBMI) and dietary intake among preschoolers enrolled in a family-based obesity intervention. *J Pediatr Psychol.* 2014;39(9):1028-37. PMID: 25016604.
53. Steele RG, Aylward BS, Jensen CD, et al. Comparison of a family-based group intervention for youths with obesity to a brief individual family intervention: a practical clinical trial of positively fit. *J Pediatr Psychol.* 2012;37(1):53-63. PMID: 21852343.

- a. Steele RG, Jensen CD, Gayes LA, et al. Medium is the message: moderate parental control of feeding correlates with improved weight outcome in a pediatric obesity intervention. *J Pediatr Psychol*. 2014;39(7):708-17. PMID: 24914085.
54. Stettler N, Wrotniak BH, Hill DL, et al. Prevention of excess weight gain in paediatric primary care: beverages only or multiple lifestyle factors. The Smart Step Study, a cluster-randomized clinical trial. *Pediatr Obes*. 2014. PMID: 25251166.
55. Taveras EM, Gortmaker SL, Hohman KH, et al. Randomized controlled trial to improve primary care to prevent and manage childhood obesity: the High Five for Kids study. *Arch Pediatr Adolesc Med*. 2011;165(8):714-22. PMID: 21464376.
 - a. Taveras EM, Marshall R, Horan CM, et al. Improving children's obesity-related health care quality: process outcomes of a cluster-randomized controlled trial. *Obesity (Silver Spring)*. 2014;22(1):27-31. PMID: 23983130.
 - b. Sonnevile KR, Rifas-Shiman SL, Kleinman KP, et al. Associations of obesogenic behaviors in mothers and obese children participating in a randomized trial. *Obesity (Silver Spring)*. 2012;20(7):1449-54. PMID: 22349735.
 - c. Woo Baidal JA, Price SN, Gonzalez-Suarez E, et al. Parental perceptions of a motivational interviewing-based pediatric obesity prevention intervention. *Clin Pediatr (Phila)*. 2013;52(6):540-8. PMID: 23564304.
56. Taveras EM, Marshall R, Kleinman KP, et al. Comparative effectiveness of childhood obesity interventions in pediatric primary care: a cluster-randomized clinical trial. *JAMA Pediatr*. 2015;169(6):535-42. PMID: 25895016.
 - a. Taveras EM, Hohman KH, Price SN, et al. Correlates of participation in a pediatric primary care-based obesity prevention intervention. *Obesity (Silver Spring)*. 2011;19(2):449-52. PMID: 20847735.
 - b. Taveras EM, Marshall R, Horan CM, et al. Rationale and design of the STAR randomized controlled trial to accelerate adoption of childhood obesity comparative effectiveness research. *Contemp Clin Trials*. 2013;34(1):101-8. PMID: 23099100.
57. Taylor RW, Cox A, Knight L, et al. A tailored family-based obesity intervention: a randomized trial. *Pediatrics*. 2015;136(2):281-9. PMID: 26195541.
 - a. Taylor RW, Brown D, Dawson AM, et al. Motivational interviewing for screening and feedback and encouraging lifestyle changes to reduce relative weight in 4-8 year old children: design of the MInT study. *BMC Public Health*. 2010;10:271. PMID: 20497522.
58. Toruner EK, Savaser S. A controlled evaluation of a school-based obesity prevention in Turkish school children. *Journal of School Nursing*. 2010;26(6):473-82. PMID: 20864549.
59. van Grieken A, Veldhuis L, Renders CM, et al. Population-based childhood overweight prevention: outcomes of the 'Be active, eat right' study. *PLoS ONE*. 2013;8(5):e65376. PMID: 23741491.
 - a. van Grieken A, Renders CM, Veldhuis L, et al. Promotion of a healthy lifestyle among 5-year-old overweight children: health behavior outcomes of the 'Be active, eat right' study. *BMC Public Health*. 2014;14:59. PMID: 24447459.

- b. Veldhuis L, Struijk MK, Kroeze W, et al. 'Be active, eat right', evaluation of an overweight prevention protocol among 5-year-old children: design of a cluster randomised controlled trial. *BMC Public Health*. 2009;9:177. PMID: 19505297.
- 60. Vos RC, Wit JM, Pijl H, et al. Long-term effect of lifestyle intervention on adiposity, metabolic parameters, inflammation and physical fitness in obese children: a randomized controlled trial. *Nutr Diabetes*. 2011;1:e9. PMID: 23455021.
 - a. Vos RC, Huisman SD, Houdijk EC, et al. The effect of family-based multidisciplinary cognitive behavioral treatment on health-related quality of life in childhood obesity. *Qual Life Res*. 2012;21(9):1587-94. PMID: 22161746.
 - b. Vos RC, Wit JM, Pijl H, et al. The effect of family-based multidisciplinary cognitive behavioral treatment in children with obesity: study protocol for a randomized controlled trial. *Trials*. 2011;12:110. PMID: 21548919.
- 61. Wake M, Baur LA, Gerner B, et al. Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. *BMJ*. 2009;339:b3308. PMID: 19729418.
 - a. Incledon E, Gerner B, Hay M, et al. Psychosocial predictors of 4-year BMI change in overweight and obese children in primary care. *Obesity (Silver Spring)*. 2013;21(3):E262-70. PMID: 23404919.
- 62. Wake M, Lycett K, Clifford SA, et al. Shared care obesity management in 3-10 year old children: 12 month outcomes of HopSCOTCH randomised trial. *BMJ*. 2013;346:f3092. PMID: 23751902.
 - a. Wake M, Lycett K, Sabin MA, et al. A shared-care model of obesity treatment for 3-10 year old children: protocol for the HopSCOTCH randomised controlled trial. *BMC Pediatrics*. 2012;12:39. PMID: 22455381.
- 63. Weigel C, Kokocinski K, Lederer P, et al. Childhood obesity: concept, feasibility, and interim results of a local group-based, long-term treatment program. *J Nutr Educ Behav*. 2008;40(6):369-73. PMID: 18984493.
- 64. Wilfley DE, Stein RI, Saelens BE, et al. Efficacy of maintenance treatment approaches for childhood overweight: a randomized controlled trial. *JAMA*. 2007;298(14):1661-73. PMID: 17925518.
 - a. Altman M, Cahill Holland J, Lundeen D, et al. Reduction in food away from home is associated with improved child relative weight and body composition outcomes and this relation is mediated by changes in diet quality. *J Acad Nutr Diet*. 2015;115(9):1400-7. PMID: 25963602.
 - b. Best JR, Goldschmidt AB, Mockus-Valenzuela DS, et al. Shared weight and dietary changes in parent-child dyads following family-based obesity treatment. *Health Psychol*. 2016;35(1):92-5. PMID: 26192385.
 - c. Goldschmidt AB, Best JR, Stein RI, et al. Predictors of child weight loss and maintenance among family-based treatment completers. *J Consult Clin Psychol*. 2014;82(6):1140-50. PMID: 24932567.
 - d. Goldschmidt AB, Stein RI, Saelens BE, et al. Importance of early weight change in a pediatric weight management trial. *Pediatrics*. 2011;128(1):e33-9. PMID: 21690118.

- e. Theim KR, Sinton MM, Goldschmidt AB, et al. Adherence to behavioral targets and treatment attendance during a pediatric weight control trial. *Obesity*. 2013;21(2):394-7. PMID: 23532993.
- 65. Williamson DA, Walden HM, White MA, et al. Two-year internet-based randomized controlled trial for weight loss in African-American girls. *Obesity (Silver Spring)*. 2006;14(7):1231-43. PMID: 16899804.
 - a. White MA. Mediators of weight loss in an internet-based intervention for African-American adolescent girls. *Dissertation Abstracts International: Section B: the Sciences & Engineering*. 2004;64(7-B). PMID: None.
 - b. Williamson DA, Martin PD, White MA, et al. Efficacy of an internet-based behavioral weight loss program for overweight adolescent African-American girls. *Eat Weight Disord*. 2005;10(3):193-203. PMID: 16277142.

Appendix D. Evidence Tables

Table 1. Study design characteristics of included studies

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Banks, 2012 ⁸⁰ Fair	76	12 (68.4)	United Kingdom	RCT	5 to 16 years with BMI ≥ 98th percentile (UK norms)	Primary care-based	2.5 (5)	Hospital-based obesity clinic		X	
Bathrellou, 2010 ¹¹⁹ Fair	47	18 (76.2)	Greece	RCT	7 to 12 year olds who are overweight or have obesity (IOTF)	Child-and-parent group	21 (21)	Child only		X	
Berkowitz, 2012 ⁸¹ Fair	173	12 (67.5)	United States	RCT	12 to 16 year olds who have obesity (BMI ≥ 28 kg/m ² [CDC])	Group-based lifestyle modification program	38.5 (23)	Individual family counseling + printed curriculum		X	
Berry, 2014 ⁹² Fair	358	12; 18 (NR)	United States	Cluster RCT	7 to 10 year olds who are overweight or have obesity (BMI ≥ 85th percentile for age and sex [CDC]) with at least one overweight parent	Nutrition/exercise education and coping skills	36.75 (21)	Waitlist	X		
Bocca, 2012 ⁹³ Fair	75	12 (76.0)	Netherlands	RCT	3 to 5 year olds who are overweight or have obesity (IOTF)	Multidisciplinary intervention	30 (25)	Control	X		
Broccoli, 2016 ⁹⁴ Good	372	12; 24 (95.4)	Italy	RCT	4 to 7 year olds who are overweight (85th-95th BMI percentile [CDC])	Motivational Interviewing	3.75 (5)	Obesity prevention booklet	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Bryant, 2011 ⁹⁵ Fair	70	12 (75.7)	United Kingdom	RCT	8 to 16 year olds with obesity (BMI > 98th percentile, [NR])	WATCH IT	24 (16)	Waitlist	X		
Coppins, 2011 ⁹⁶ Fair	65	12 (84.6)	United Kingdom	RCT	6 to 14 year olds who have obesity (BMI ≥ 91st percentile [UK norms])	Multi-disciplinary program	48 (78)	Waitlist	X		
Davis, 2012 ¹¹⁷ Fair	61	8 (86.9)	United States	RCT	Adolescent African Americans or Latinos in grades 9 through 12 who had completed initial 4-month weight loss intervention and are overweight or have obesity (≥85th percentile [CDC])	Maintenance (Group classes)	16 (14)	Newsletters			X
de Niet, 2012 ¹²⁰ Fair	141	12 (78.0)	Netherlands	RCT	7 to 12 year olds who are overweight or have obesity (IOTF)	Healthy lifestyle intervention + SMS	47.5 (11)	Healthy lifestyle intervention only		X	
DeBar, 2012 ⁶⁹ Good	208	12 (83.2)	United States	RCT	12 to 17 year old females who are overweight or have obesity (BMI ≥ 90th percentile [CDC])	Multicomponent behavioral intervention	36.5 (18)	PCP Meeting + materials	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Epstein, 1985a ⁸² Fair	23	12 (82.6)	United States	RCT	8 to 12 year old females who have obesity (at least 20% over ideal weight for height and age [WHO])	Family-based lifestyle + PA sessions	66.5 (54)	Family-based lifestyle		X	
Epstein, 1985b ⁸³ Fair	24	12; 24 (75.0)	United States	RCT	5 to 8 year old females who have obesity (NR)	Healthy lifestyle education + parent behavior change skills	64 (25)	Healthy lifestyle education only		X	
Epstein, 1994 ⁸⁴ Good	44	24 (88.6)	United States	RCT	8 to 12 year olds who have obesity (between 20-100% over average weight for height [CDC])	Individualized progression	64 (32)	Paced progression		X	
Epstein, 1995 ⁸⁵ Fair	61	12 (90)	United States	RCT	8 to 12 year olds who have obesity (btwn 20-100% overweight [CDC])	Decrease sedentary+ increase physical activity	40.5 (18)	Increase physical activity Decrease sedentary behavior		X	
Epstein, 2000a ¹²¹ Good	90	24 (84.4)	United States	RCT	8 to 12 year olds who have obesity (btwn 20-100% overweight, comparing to population standards based on sex and age [CDC])	High dose sedentary activity reduction	30 (20)	Low dose sedentary activity reduction High dose physical activity increase Low dose physical activity increase		X	

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Epstein, 2000b ¹²² Fair	67	12; 24 (77.6)	United States	RCT	Children who are overweight (> 20% overweight; based on 50th BMI percentile [CDC])	Problem-solving for parent and child	30 (20)	Problem-solving for child only Family-based treatment		X	
Epstein, 2004 ¹²³ Good	72	12 (95.2)	United States	RCT	8 to 12 year olds who have obesity (BMI > 85th percentile [CDC])	Reinforced reduced sedentary behaviors	30 (20)	Stimulus control of sedentary behaviors		X	
Epstein, 2008b ¹²⁴ Fair	41	12; 24 (65.8)	United States	RCT	8 to 12 year olds who are overweight (BMI > 85th percentile [CDC])	Increase healthy foods	32.5 (13)	Reduce high energy-dense foods		X	
Epstein, 2014 ¹²⁵ Fair	54	12 (66)	United States	RCT	8 to 12 year olds who are overweight or have obesity with at least one overweight parent (BMI ≥ 85th percentile [NR])	Family-based treatment	26.25 (15)	Parent-child treated separately		X	
Estabrooks, 2009 ¹²⁶ Fair	220	12 (70.4)	United States	RCT	8 to 12 year olds who are overweight (BMI ≥ 85th percentile for age [CDC])	Workbook + group sessions + IVR system	4 (2)	Workbook + group sessions Workbook only		X	
Garipagaoglu, 2009 ¹²⁷ Fair	80	12 (95.0)	Turkey	RCT	6 to 14 years who have obesity (BMI > 97th percentile [Turkish norms])	Family-based group treatment	10.5 (7)	Individual treatment		X	

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Gerards, 2015 ⁹⁷ Fair	86	12 (77.9)	Netherlands	RCT	4 to 8 year olds who are overweight or have obesity (IOTF)	Lifestyle Triple P	16.5 (14)	Control	X		
Goldfield, 2001 ¹²⁸ Fair	31	12 (77.4)	United States	RCT	8 to 12 year olds who have obesity (btwn 20-100% overweight [CDC])	Individualized + group treatment	21.67 (13)	Group treatment		X	
Golley, 2007 ⁷⁰ Fair	111	12 (82.0)	Australia	RCT	6 to 9 year olds who are overweight or have obesity, but zBMI ≤ 3.5 (IOTF)	Triple P + healthy lifestyle group	23.75 (18)	Triple P Waitlist	X	X	
Grey, 2004 ⁸⁶ Fair	41	12 (100)	United States	SG-CRCT	10 to 14 years who have obesity (BMI ≥ 95th percentile [norms NR])	Nutrition education + PA sessions + coping skills training	39 (60)	Nutrition education + PA sessions		X	
Hughes, 2008 ⁹⁸ Fair	134	12 (64.2)	United Kingdom	RCT	5-11 year olds who have obesity (≥ 98th percentile [UK norms])	Individualized behavior program	5 (8)	Standard dietetic care	X		
Hystad, 2013 ¹²⁹ Fair	99	24 (80.8)	Norway	RCT	7 to 12 year olds who have obesity (zBMI ≥ 2 [norms NR])	Structured weight management group	65 (25)	Parent-led support group		X	
Israel, 1985 ⁸⁷ Fair	24	12 (83.3)	United States	RCT	8 to 12 year olds who are overweight or have obesity (≥ 20% overweight [1977 NCHS norms])	Behavioral weight reduction + parent training	35.5 (37)	Behavioral-weight reduction		X	

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Johnston, 2010 ¹³⁰ Fair	60	12; 24 (95.0)	United States	RCT	10 to 14 year old Mexican Americans who are overweight or have obesity (>85th percentile [CDC])	Instructor-led intervention	47.25 (72)	Self-help intervention		X	
Johnston, 2013 ¹³¹ Fair	71	12; 24 (91.5)	United States	RCT	10 to 14 year old Mexican Americans who are overweight or have obesity (>85th percentile [CDC])	Instructor-led intervention	47.25 (72)	Self-help intervention		X	
Kalarchian, 2009 ⁷¹ Fair	192	12; 18 (72.4)	United States	RCT	8 to 12 year olds with severe obesity (BMI ≥ 97th percentile [CDC])	Family-based lifestyle intervention	43.75 (26)	Nutrition consultation	X		
Kalavainen, 2007 ⁹⁹ Fair	70	12; 24; 36 (98.6)	Finland	RCT	7 to 9 year olds with obesity (weight for height 120-200% of median [UK norms])	Health-promoting lifestyle	43.5 (15)	Brief education + booklets	X		
Larsen, 2015 ⁸⁸ Fair	80	24 (92.5)	Denmark	RCT	5 to 9 year olds who are overweight (IOTF)	Educational program + GP consultations	18 (21)	GP consultations		X	
Magarey, 2011 ⁸⁹ Fair	169	12; 18; 24 (72.8)	Australia	RCT	5 to 9 year olds who are overweight (IOTF)	Triple P + healthy lifestyle group	33 (16)	Healthy lifestyle group		X	

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
McCallum, 2007 ⁷² Good	163	15 (89.6)	Australia	RCT	5 to 9 year olds who are overweight or have mild obesity (IOTF [but zBMI <3.0])	LEAP	1 (4)	Usual care	X		
Nemet, 2005 ¹⁰⁰ Fair	54	12 (74.1)	Israel	RCT	6 to 16 year olds with obesity (definition NR)	Dietitian + PA sessions	32.5 (34)	Nutrition referral	X		
Nguyen, 2012 ¹³² Fair	151	12; 24 (70.9)	Australia	RCT	13 to 16 year olds who are overweight or have mild obesity (zBMI 1.0-2.5 [CDC])	Loozit + additional therapeutic contact	26.8 (28)	Loozit only		X	
Norman, 2015 ⁷³ Fair	106	12 (80.2)	United States	RCT	11 to 13 year olds with obesity (BMI ≥ 95 percentile for age and gender [CDC])	Stepped-down Care	8.25 (27)	Enhanced Usual Care	X		
Nowicka, 2008 ¹⁰¹ Fair	95	12 (92.6)	Sweden	CCT	12 to 19 year olds with obesity (IOTF)	Family Weight School	16 (4)	Waitlist	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Patrick, 2013 ¹⁰² Fair	101	12 (63.4)	United States	RCT	12 to 16 year olds who are overweight or have obesity (>85th percentile, or 120% of ideal weight [CDC] and at-risk for type 2 diabetes (based on family hx, race/ethnicity, insulin resistance)	Website + group sessions	38 (18)	Website + SMS Website only	X	X	
Quattrin, 2014 ⁷⁴ Fair	105	12; 18; 24 (76.2)	United States	RCT	2 to 5 year olds who are overweight or have obesity (BMI ≥ 85th percentile [norms NR]) with at least one overweight parent	Weight management education + additional parent contact	39.25 (29)	Weight management education	X	X	
Raynor, 2012b ¹⁰³ Fair	81	12 (91.4)	United States	RCT	4 to 9 year olds who are overweight or have obesity (≥ 85th BMI percentile [CDC])	TRADITIONAL + Growth Monitoring	6 (8)	SUBSTITUTES + Growth Monitoring Monthly newsletters + growth monitoring	X	X	
Reinehr, 2006 ¹⁰⁴ Fair	240	12; 24 (87.9)	Germany	CCT	6 to 14 year olds with obesity (BMI ≥ 97th percentile [German norms])	Obeldicks	77.5 (52)	Distance control	X		
Reinehr, 2009 ¹⁰⁵ Fair	474	12 (100)	Germany	CCT	10 to 16 year olds with obesity (minimum BMI NR [German norms])	Obeldicks	77.5 (52)	Distance control	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Resnick, 2009 ⁷⁵ Fair	46	12 (93.5)	United States	RCT	Parents of children in grades K through 5 who are overweight or have obesity (BMI ≥ 85th percentile [CDC])	Materials + personal encounters	1.7 (3)	Materials only	X		
Resnicow, 2005 ⁹⁰ Fair	147	12 (73)	United States	Cluster RCT	12 to 16 year old African-American females who are overweight or have obesity (BMI >90 percentile for age and gender [CDC])	High-intensity lifestyle intervention	45.5 (29)	Moderate-intensity lifestyle intervention		X	
Resnicow, 2015 ⁷⁶ Fair	645	24 (70.9)	United States	Cluster RCT	2 to 8 year olds who are overweight or have obesity (BMI 85-97th percentile [CDC])	PCP + RD MI	2.5 (10)	PCP MI Usual care	X	X	
Saelens, 2013 ¹³³ Fair	89	12; 24 (66.3)	United States	RCT	7 to 11 year olds who are overweight or have obesity (≥85th percentile, but not >75% above median [CDC]) with at least one overweight parent	Family-based treatment with family-set goals	40 (20)	Family-based treatment with study-set goals		X	
Savoye, 2007 ¹⁰⁶ Fair	209	12 (68.4)	United States	RCT	8 to 16 year olds with obesity (BMI > 95th percentile [CDC])	Bright Bodies	82.33 (64)	Semi-annual individual counseling	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Stark, 2011 ¹⁰⁷ Fair	18	12 (88.9)	United States	RCT	2 to 5 year olds with at least one overweight parent and who have obesity ($\geq$ 95th BMI percentile but < 100% above the mean BMI [CDC])	LAUNCH	38.25 (18)	Enhanced standard of care	X		
Stark, 2014 ¹⁰⁸ Fair	27	12 (85.2)	United States	RCT	2 to 5 year olds with at least one overweight parent and who have obesity ($\geq$ 95th BMI percentile but < 100% above the mean BMI [CDC])	LAUNCH-clinic	30 (10)	Enhanced standard of care	X		
Steele, 2012 ¹³⁴ Fair	93	12 (62.4)	United States	RCT	7 to 17 year olds who are overweight or have obesity (BMI $\geq$ 85th percentile [CDC])	Family-based behavioral group treatment	28.3 (10)	Brief individual family intervention		X	
Stettler, 2014 ¹⁰⁹ Fair	173	12; 24 (69.9)	United States	Cluster RCT	8 to 12 year olds who are overweight (75th-95th percentile [CDC]) and consuming average of $\geq$ 4 ounces of sugar sweetened beverages/day	Multiple-behavior change	4 (12)	Attention control (bullying prevention)	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Taveras, 2011 ¹¹⁰ Good	475	12; 24 (93.7)	United States	Cluster RCT	2 to 6 year olds who are overweight ($\geq$ 85th percentile [CDC]) and have an overweight parent (BMI $\geq$ 25), or are obese ($\geq$ 95th percentile)	MI + enhanced EMR and training	2.67 (8)	Usual care	X		
Taveras, 2015 ¹¹¹ Good	549	12 (94.4)	United States	Cluster RCT	6 to 12 years olds with obesity ($\geq$ 95th percentile [CDC])	CDS+coaching	1.25 (5)	CDS Usual care	X	X	
Taylor, 2015 ¹¹² Good	206	12; 24 (87.9)	New Zealand	RCT	4 to 8 years old who are overweight or have obesity (BMI $\geq$ 85th percentile [CDC])	Tailored lifestyle support	7.2 (14)	Brief feedback and advice	X		
Toruner, 2010 ⁷⁷ Fair	84	12 (NR)	Turkey	SG-CRCT	4th graders who are overweight or have obesity (>90th percentile [Turkish norms])	Weight-management program	9.75 (7)	Waitlist	X		
Van Grieken, 2013 ⁷⁸ Fair	637	24 (79.6)	Netherlands	Cluster RCT	5 year olds who are overweight but do not have obesity (IOTF)	Be Active Eat Right	2 (4)	Usual care	X		
Vos, 2011 ¹¹³ Fair	81	12 (82.7)	Netherlands	RCT	8 to 17 year olds with obesity (IOTF)	Family-based multidisciplinary lifestyle intervention	46.25 (19)	Waitlist	X		

Author, Year and Quality	N Rand.	Followup months (% followed at timepoint closes to 12 months)	Country	Design	Population	Intervention*	Est Hours Contact (Sessions) †	Comparator(s)	Efficacy	CE	Maintenance Only
Wake, 2009 ⁷⁹ Good	258	12 (95.0)	Australia	RCT	5 to 10 year olds who are overweight or have obesity but zBMI <3.0 (IOTF and UK norms)	LEAP-2	1 (4)	Usual care	X		
Wake, 2013 ¹¹⁴ Good	118	12 (90.7)	Australia	RCT	3 to 10 year olds with obesity (≥95th percentile [CDC])	HopSCOTCH	2.5 (6)	Usual care	X		
Weigel, 2008 ¹¹⁵ Fair	73	12 (90.4)	Germany	RCT	7 to 15 year olds with obesity (>97th percentile [German norms])	Sea Lion Club	114.1 (104)	Brief advice	X		
Wilfley, 2007 ¹¹⁸ Good	150	12; 24 (86)	United States	RCT	7 to 12 year olds who are overweight or have obesity (20-100 above median [CDC]) with at least one overweight parent	Combined maintenance group	60 (36)	Social facilitation maintenance Behavioral skills maintenance No maintenance		X	X
Williamson, 2006 ¹¹⁶ Fair	61	12; 15; 24 (65.6)	United States	RCT	11 to 15 year old African American females who are overweight or obese (BMI > 85th percentile for age and sex [NHANES]) with at least one obese parent	Interactive behavior therapy	4 (4)	Passive health education	X		

*Most intensive intervention

†Estimated hours of contacts and number of sessions of the most intensive intervention

Abbreviations: BMI: body mass index; CDC: Centers for Disease Control; hx: history; IOTF: International Obesity TaskForce; NCHS: National Center for Health Statistics; NHANES: National Health and Nutrition Examination Survey; NR: not reported; RCT: randomized, controlled trial; UK: United Kingdom; WHO: World Health Organization; zBMI: z score of body mass index

Table 2. Baseline characteristics of participants in included studies

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Banks, 2012 ⁸⁰ Fair	Clinician referral	5 to 16 years with BMI ≥ 98th percentile (UK norms)	11.4	NR 3.05	NR	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			X
Bathrellou, 2010 ¹¹⁹ Fair	NR	7 to 12 year olds who are overweight or have obesity (IOTF)	9.3	27.0 NR	NR	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Berkowitz, 2012 ⁸¹ Fair	Mixed	12 to 16 year olds who have obesity (BMI ≥ 28 kg/m2 [CDC])	14.6	36.7 2.3	76.9	Black: 46.7 Hispanic: 2.4 White: 46.7 Asian: NR Native American: 0.6	NR			
Berry, 2014 ⁹² Fair	NR	7 to 10 year olds who are overweight or have obesity (BMI ≥ 85th percentile for age and sex [CDC]) with at least one overweight parent	9.1	NR	55.5	Black: 64.2 Hispanic: 7.5 White: 26.9 Asian: 0 Native American: NR	100	X		
Bocca, 2012 ⁹³ Fair	Clinician referral	3 to 5 year olds who are overweight or have obesity (IOTF)	4.7	21.1 2.7	72	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Broccoli, 2016 ⁹⁴ Good	Screening (population- based)	4 to 7 year olds who are overweight (85th- 95th BMI percentile [CDC])	6.6	18.25 1.35	61.6	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR		X	
Bryant, 2011 ⁹⁵ Fair	Mixed	8 to 16 year olds with obesity (BMI > 98th percentile, [NR])	11.4	NR 2.99	64.3	Black: 4.3 Hispanic: NR White: 87.1 Asian: 4.3 Native American: NR	NR	X		X

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Coppins, 2011 ⁹⁶ Fair	Mixed	6 to 14 year olds who have obesity (BMI ≥ 91st percentile [UK norms])	10.5	27.5 2.7	66.2	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Davis, 2012 ¹¹⁷ Fair	Volunteer	Adolescent African Americans or Latinos in grades 9 through 12 who had completed initial 4-month weight loss intervention and are overweight or have obesity (≥85th percentile [CDC])	15.7	34.9 2.2	54.7	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
de Niet, 2012 ¹²⁰ Fair	NR	7 to 12 year olds who are overweight or have obesity (IOTF)	9.9	NR 2.6	63.8	Black: NR Hispanic: NR White: 74.5 Asian: NR Native American: NR	NR			
DeBar, 2012 ⁶⁹ Good	Clinician referral	12 to 17 year old females who are overweight or have obesity (BMI ≥ 90th percentile [CDC])	14.1	31.9 2.00	100	Black: NR Hispanic: NR White: 72.1 Asian: NR Native American: NR	NR			
Epstein, 1985a ⁸² Fair	Mixed	8 to 12 year old females who have obesity (at least 20% over ideal weight for height and age [WHO])	NR	NR	100	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Epstein, 1985b ⁸³ Fair	Mixed	5 to 8 year old females who have obesity (NR)	7.1	22.7 NR	100	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Epstein, 1994 ⁸⁴ Good	Mixed	8 to 12 year olds who have obesity (between 20-100% over average weight for height [CDC])	10.2	NR	74.4	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	54			
Epstein, 1995 ⁸⁵ Fair	Mixed	8 to 12 year olds who have obesity (btwn 20-100% overweight [CDC])	10.1	NR	73	Black: NR Hispanic: NR White: 96 Asian: NR Native American: NR	75			
Epstein, 2000a ¹²¹ Good	Mixed	8 to 12 year olds who have obesity (btwn 20-100% overweight, comparing to population standards based on sex and age [CDC])	10.5	NR	68.4	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	64.5			
Epstein, 2000b ¹²² Fair	Mixed	Children who are overweight (> 20% overweight; based on 50th BMI percentile [CDC])	10.3	27.4 2.7	51.9	Black: 2 Hispanic: 2 White: 97 Asian: NR Native American: NR	NR			
Epstein, 2004 ¹²³ Good	Mixed	8 to 12 year olds who have obesity (BMI > 85th percentile [CDC])	9.8	27.7 3.2	62.9	Black: 6.5 Hispanic: 1.6 White: 90.3 Asian: NR Native American: NR	73			
Epstein, 2008b ¹²⁴ Fair	Mixed	8 to 12 year olds who are overweight (BMI > 85th percentile [CDC])	10.5	NR 2.3	43.9	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Epstein, 2014 ¹²⁵ Fair	Mixed	8 to 12 year olds who are overweight or have obesity with at least one overweight parent (BMI ≥ 85th percentile [NR])	10.5	29.2 NR	64	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	100			
Estabrooks, 2009 ¹²⁶ Fair	Screening (population- based)	8 to 12 year olds who are overweight (BMI ≥ 85th percentile for age [CDC])	10.7	27.2 2.04	46	Black: NR Hispanic: 26 White: 63 Asian: NR Native American: NR	NR			
Garipagaoglu, 2009 ¹²⁷ Fair	Volunteer	6 to 14 years who have obesity (BMI >97th percentile [Turkish norms])	10.3	27.7 2.46	51.2	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			X
Gerards, 2015 ⁹⁷ Fair	Mixed	4 to 8 year olds who are overweight or have obesity (IOTF)	7.21	20.5 1.84	55.8	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Goldfield, 2001 ¹²⁸ Fair	Mixed	8 to 12 year olds who have obesity (btwn 20-100% overweight [CDC])	10.1	NR 2.8	70.8	Black: NR Hispanic: NR White: 100 Asian: NR Native American: NR	75			
Golley, 2007 ⁷⁰ Fair	Other	6 to 9 year olds who are overweight or have obesity, but zBMI≤3.5 (IOTF)	8.2	24.3 2.75	63.1	Black: NR Hispanic: NR White: 98 Asian: NR Native American: NR	78			
Grey, 2004 ⁸⁶ Fair	Screening (population- based)	10 to 14 years who have obesity (BMI≥95th percentile [norms NR])	12.5	36.4 NR	63.4	Black: 51.2 Hispanic: 43.9 White: 4.9 Asian: NR Native American: NR	NR	X		

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Hughes, 2008 ⁹⁸ Fair	Clinician referral	5-11 year olds who have obesity ($\geq$ 98th percentile [UK norms])	8.8	NR 3.2	56	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			X
Hystad, 2013 ¹²⁹ Fair	Clinician referral	7 to 12 year olds who have obesity (zBMI $\geq$ 2 [norms NR])	10.2	28.6 3.00	53	Black: 1.2 Hispanic: 1.2 White: 97.6 Asian: NR Native American: NR	NR			
Israel, 1985 ⁸⁷ Fair	Mixed	8 to 12 year olds who are overweight or have obesity ($\geq$ 20% overweight [1977 NCHS norms])	10.8	NR	70.8	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Johnston, 2010 ¹³⁰ Fair	Volunteer	10 to 14 year old Mexican Americans who are overweight or have obesity (>85th percentile [CDC])	12.4	25.7 1.6	45	Black: NR Hispanic: 100 White: NR Asian: NR Native American: NR	NR			
Johnston, 2013 ¹³¹ Fair	Volunteer	10 to 14 year old Mexican Americans who are overweight or have obesity (>85th percentile [CDC])	12.2	27.0 1.8	54.9	Black: NR Hispanic: 100 White: NR Asian: NR Native American: NR	NR			
Kalarchian, 2009 ⁷¹ Fair	NR	8 to 12 year olds with severe obesity (BMI $\geq$ 97th percentile [CDC])	10.19	32.12 NR	56.8	Black: 26 Hispanic: 1 White: 73.4 Asian: 0.5 Native American: 0	NR			X
Kalavainen, 2007 ⁹⁹ Fair	Mixed	7 to 9 year olds with obesity (weight for height 120-200% of median [UK norms])	8.1	23.2 2.6	60	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Larsen, 2015 ⁸⁸ Fair	Screening (population- based)	5 to 9 year olds who are overweight (IOTF)	6.2	NR 2.84	65	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Magarey, 2011 ⁸⁹ Fair	Volunteer	5 to 9 year olds who are overweight (IOTF)	8.2	24.1 2.72	56.2	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
McCallum, 2007 ⁷² Good	Screening (population- based)	5 to 9 year olds who are overweight or have mild obesity (IOTF [but zBMI <3.0])	7.4	20.3 1.9	51.5	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR		X	
Nemet, 2005 ¹⁰⁰ Fair	Volunteer	6 to 16 year olds with obesity (definition NR)	11.1	28.2 NR	43.5	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	78.3			
Nguyen, 2012 ¹³² Fair	Volunteer	13 to 16 year olds who are overweight or have mild obesity (zBMI 1.0- 2.5 [CDC])	14.1	30.8 2.02	51.7	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR		X	
Norman, 2015 ⁷³ Fair	Mixed	11 to 13 year olds with obesity (BMI ≥ 95 percentile for age and gender [CDC])	11.9	29.3 2.1	50.9	Black: 3.8 Hispanic: 82.1 White: 7.5 Asian: 1.9 Native American: NR	NR			
Nowicka, 2008 ¹⁰¹ Fair	Clinician referral	12 to 19 year olds with obesity (IOTF)	14.7	34.5 3.25	50	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Patrick, 2013 ¹⁰² Fair	Mixed	12 to 16 year olds who are overweight or have obesity (>85th percentile, or 120% of ideal weight [CDC] and at-risk for type 2 diabetes (based on family hx, race/ethnicity, insulin resistance)	14.3	NR 2.2	63.4	Black: 15.8 Hispanic: 74.3 White: 17.8 Asian: 4 Native American: 1	NR			
Quattrin, 2014 ⁷⁴ Fair	Clinician referral	2 to 5 year olds who are overweight or have obesity (BMI ≥ 85th percentile [norms NR]) with at least one overweight parent	4.5	20.2 2.11	66.7	Black: 11.5 Hispanic: 9.4 White: 72.9 Asian: 1 Native American: NR	100			
Raynor, 2012b ¹⁰³ Fair	Mixed	4 to 9 year olds who are overweight or have obesity (≥ 85th BMI percentile [CDC])	7.1	NR 2.27	60.5	Black: NR Hispanic: 11.1 White: 90.1 Asian: NR Native American: NR	82.5			
Reinehr, 2006 ¹⁰⁴ Fair	Other	6 to 14 year olds with obesity (BMI ≥ 97th percentile [German norms])	10.4	26.9 2.4	46.7	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			X
Reinehr, 2009 ¹⁰⁵ Fair	Not reported	10 to 16 year olds with obesity (minimum BMI NR [German norms])	12.6	NR 2.46	56.1	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Resnick, 2009 ⁷⁵ Fair	NR	Parents of children in grades K through 5 who are overweight or have obesity (BMI ≥ 85th percentile [CDC])	8.5	NR	NR	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Resnicow, 2005 ⁹⁰ Fair	Screening (population- based)	12 to 16 year old African-American females who are overweight or have obesity (BMI >90 percentile for age and gender [CDC])	13.6	32.0 NR	100	Black: 100 Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Resnicow, 2015 ⁷⁶ Fair	Clinician referral	2 to 8 year olds who are overweight or have obesity (BMI 85-97th percentile [CDC])	5.1	NR	57.1	Black: 6.6 Hispanic: 21.6 White: 60.0 Asian: 5.7 Native American: NR	NR			
Saelens, 2013 ¹³³ Fair	Volunteer	7 to 11 year olds who are overweight or have obesity (≥85th percentile, but not >75% above median [CDC]) with at least one overweight parent	9.8	26.5 2.1	66.7	Black: 6.9 Hispanic: 12.5 White: 84.7 Asian: 2.8 Native American: NR	100			
Savoye, 2007 ¹⁰⁶ Fair	NR	8 to 16 year olds with obesity (BMI > 95th percentile [CDC])	12.1	36.0 NR	60.9	Black: 38.5 Hispanic: 24.7 White: 36.8 Asian: NR Native American: NR	NR			
Stark, 2011 ¹⁰⁷ Fair	Screening (population- based)	2 to 5 year olds with at least one overweight parent and who have obesity (≥ 95th BMI percentile but < 100% above the mean BMI [CDC])	4.1	NR	33.3	Black: NR Hispanic: 16.7 White: 83.3 Asian: NR Native American: NR	100			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Stark, 2014 ¹⁰⁸ Fair	Screening (population- based)	2 to 5 year olds with at least one overweight parent and who have obesity ($\geq$ 95th BMI percentile but < 100% above the mean BMI [CDC])	4.5	NR 2.4	65.2	Black: NR Hispanic: NR White: 82.6 Asian: NR Native American: NR	100			
Steele, 2012 ¹³⁴ Fair	Volunteer	7 to 17 year olds who are overweight or have obesity (BMI $\geq$ 85th percentile [CDC])	11.6	NR 2.22	59.1	Black: 14.0 Hispanic: 4.3 White: 71.0 Asian: NR Native American: NR	NR			
Stettler, 2014 ¹⁰⁹ Fair	Screening (population- based)	8 to 12 year olds who are overweight (75th- 95th percentile [CDC]) and consuming average of $\geq$ 4 ounces of sugar sweetened beverages/day	10.8	21.6 1.24	52.3	Black: 42.4 Hispanic: 6.4 White: 52.9 Asian: NR Native American: NR	NR		X	
Taveras, 2011 ¹¹⁰ Good	Screening (population- based)	2 to 6 year olds who are overweight ($\geq$ 85th percentile [CDC]) and have an overweight parent (BMI $\geq$ 25), or are obese ($\geq$ 95th percentile)	4.9	19.2 1.85	48.3	Black: 18.9 Hispanic: 16.6 White: 56.6 Asian: NR Native American: NR	96			
Taveras, 2015 ¹¹¹ Good	Screening (population- based)	6 to 12 years olds with obesity ($\geq$ 95th percentile [CDC])	9.8	25.8 2.06	46.8	Black: 21.1 Hispanic: 14 White: 51.2 Asian: 4.9 Native American: NR	77.2			
Taylor, 2015 ¹¹² Good	Screening (population- based)	4 to 8 years old who are overweight or have obesity (BMI $\geq$ 85th percentile [CDC])	6.5	19.4 1.63	55.3	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	67			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Toruner, 2010 ⁷⁷ Fair	Screening (population- based)	4th graders who are overweight or have obesity (>90th percentile [Turkish norms])	9.4	23.1 NR	50.6	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Van Grieken, 2013 ⁷⁸ Fair	Screening (population- based)	5 year olds who are overweight but do not have obesity (IOTF)	5.8	18.13 NR	61.9	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	44		X	
Vos, 2011 ¹¹³ Fair	Clinician referral	8 to 17 year olds with obesity (IOTF)	13.2	32.5 4.3	53.2	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Wake, 2009 ⁷⁹ Good	Screening (population- based)	5 to 10 year olds who are overweight or have obesity but zBMI <3.0 (IOTF and UK norms)	7.5	20.2 1.9	60.5	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			
Wake, 2013 ¹¹⁴ Good	Screening (population- based)	3 to 10 year olds with obesity (≥95th percentile [CDC])	7.3	22.5 2.2	54.2	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	45.8			
Weigel, 2008 ¹¹⁵ Fair	Mixed	7 to 15 year olds with obesity (>97th percentile [German norms])	11.2	28.6 2.36	54.8	Black: NR Hispanic: NR White: NR Asian: NR Native American: NR	NR			X
Wilfley, 2007 ¹¹⁸ Good	Mixed	7 to 12 year olds who are overweight or have obesity (20-100 above median [CDC]) with at least one overweight parent	9.9	27.5 NR	69.3	Black: 7.3 Hispanic: 18.7 White: 70.7 Asian: NR Native American: NR	100			

Author, Year and Quality	Recruitment	Population	Age (mean)	BMI and zBMI (mean)	% Female	% Race/Ethnicity	% At Least One Overweight Parent	Targets Low SES	Targets Overweight	Targets Severely Obese
Williamson, 2006 ¹¹⁶ Fair	Volunteer	11 to 15 year old African American females who are overweight or obese (BMI > 85th percentile for age and sex [NHANES]) with at least one obese parent	13.2	36.4 NR	100	Black: 100 Hispanic: NR White: NR Asian: NR Native American: NR	100			

Abbreviations: BMI: body mass index; CDC: Centers for Disease Control; hx: history; IOTF: International Obesity TaskForce; NCHS: National Center for Health Statistics; NHANES: National Health and Nutrition Examination Survey; NR: not reported; RCT: randomized, controlled trial; UK: United Kingdom; WHO: World Health Organization; zBMI: z score of body mass index

Table 3. Intervention characteristics of included studies

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Banks, 2012 ⁸⁰ Fair	IG1: Primary care-based	Primary care-based sociocognitive intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (practice nurse, dietitian, and exercise specialist)	2.5	5	12	Primary care clinics	X				X				X		
	IG2: Hospital-based obesity clinic	Hospital-based childhood obesity clinic sociocognitive intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (consultant, dietitian, and exercise specialist)	2.5	5	12	Hospital-based childhood obesity clinic	X				X				X		
Bathrellou, 2010 ¹¹⁹ Fair	IG1: Child-and-parent group	21-session multidisciplinary individual weight management program, with parent support for child's weight loss	21	21	9	NR	X				X		X	X	X		
	IG2: Child only	19-session child-only multidisciplinary individual weight management program (no parent support)	19	19	15	NR	X				X			X			
Berkowitz, 2012 ⁸¹ Fair	IG1: Group-based lifestyle modification program	Detailed print curriculum for family with 6 45-minute individual family clinic visits and 17 group child sessions with concurrent parent group sessions	38.5	23	12	Home, clinic	X			X	X	X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Individual family counseling + printed curriculum	Detailed print curriculum for family with 6 45-minute individual family clinic visits	4.5	6	12	Home, clinic	X			X	X				X		
Berry, 2014 ⁹² Fair	IG1: Nutrition/exercise education and coping skills	21-session nutrition/exercise education and coping skills weight management program for parents and children	36.75	21	12	School	X					X	X	X	X	X	
	CG: Waitlist	Waitlist	NA	0	18	School											
Bocca, 2012 ⁹³ Fair	IG1: Multidisciplinary intervention	25-session multidisciplinary intervention consisting of dietician visits, PA sessions for children, and behavioral therapy sessions for parents	30	25	4	Outpatient clinic in a hospital (Groningen Expert Center for Kids with Obesity)	X				X	X	X	X	X	X	
	CG: Control	Control	2.25	3	4	Outpatient clinic in a hospital (Groningen Expert Center for Kids with Obesity)	X							X			
Broccoli, 2016 ⁹⁴ Good	IG1: Motivational Interviewing	Five individual motivational interviewing sessions with parent and child and pediatrician; families decided on goals, progress discussed at subsequent meetings	3.75	5	3	Pediatric offices	X				X		X	X	X		
	CG: Obesity prevention booklet	Obesity prevention booklet	0.25	1	12	Pediatric primary care	X				X			X			

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Bryant, 2011 ⁹⁵ Fair	IG1: WATCH IT	16 weekly 30-min individual sessions for support and encouragement and 1-hr PA group sessions; motivational enhancement and solution-focused approach to lifestyle change	24	16	12	NHS-sponsored medical clinic; took place in community settings (community centers, sports centers)	X				X	X		X	X	X	
	CG: Waitlist	12 month waitlist control	0	0	12	NA	X				X						
Coppins, 2011 ⁹⁶ Fair	IG1: Multi-disciplinary program	Two family-based multidisciplinary workshops (8 total hours) and 2 PA sessions/week during the school term; workshops involved separate group sessions for parents and children with some joint content	48	78	12	School	X					X	X	X	X	X	
	CG: Waitlist	Waitlist	0	0	12	NA											
Davis, 2012 ¹¹⁷ Fair	IG1: Maintenance (Group classes)	Eight 90-min group classes for adolescents after completion of weight loss program, reinforcing the content previously covered; 4 additional motivational telephone calls to explore and resolve ambivalence; separate parent classes, asked to attend 2.	16	14	8	Medical research facility	X	X			X	X	X	X		X	X

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	CG: Newsletters	Eight monthly newsletters and 2 check-in calls to confirm newsletter was received and verify contact information	0	0	8	Mailings and phone		X		X				X			
de Niet, 2012 ¹²⁰ Fair	IG1: Healthy lifestyle intervention + SMS	11-session comprehensive group healthy lifestyle intervention for children and parents + SMS messages	47.5	11	12	Hospital complying w/ the BFC program	X		X		X	X	X	X		X	
	IG2: Healthy lifestyle intervention only	11-session comprehensive group healthy lifestyle intervention for children and parents without SMS messages	47.5	11	12	Hospital complying w/ the BFC program	X				X	X	X	X		X	
DeBar, 2012 ⁶⁹ Good	IG1: Multicomponent behavioral intervention	Sixteen 90-min group developmentally-tailored multicomponent behavioral intervention sessions for adolescent girls; 12 with concurrent parent sessions; trained PCP to support behavioral weight management goals; 2 PCP meetings	36.5	18	5	Health maintenance organization	X	X			X	X	X	X		X	
	CG: PCP Meeting + materials	Met with PCP, received packet of print materials, including parent guide, local resources, and suggested books and online resources for healthy lifestyle change.	0.25	1	12	Health maintenance organization	X				X		X	X			
Epstein, 1985a ⁸² Fair	IG1: Family-based lifestyle + PA sessions	18-session comprehensive weight management group and individual family intervention and 18 phone calls, plus 24 exercise sessions for children	66.5	54	12	NR	X	X		X	X	X	X	X	X	X	

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Family-based lifestyle	18-session comprehensive weight management group and individual family intervention and 18 phone calls, with no exercise sessions	42.5	36	12	NR	X	X		X	X	X	X	X	X		
Epstein, 1985b ⁸³ Fair	IG1: Healthy lifestyle education + parent behavior change skills	25-session (including child PA sessions) family-based weight management group and individual family intervention covering diet and physical activity education + parent management techniques	64	25	12	NR	X			X	X	X	X	X	X	X	
	IG2: Healthy lifestyle education only	25-session (including child PA sessions) family-based weight management group and individual family intervention covering diet and physical activity education	64	25	12	NR	X			X	X	X	X	X	X	X	
Epstein, 1994 ⁸⁴ Good	IG1: Individualized progression	32-session comprehensive family-based lifestyle group and individual family intervention with skills mastery approach, families systematically moving through 5 levels of goals for 7 behaviors, only moving to next goal when mastery achieved.	64	32	12	NR	X			X	X	X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Paced progression	32-session comprehensive family-based lifestyle group and individual family intervention without skills mastery approach; families systematically moving through 5 levels of goals for 7 behaviors, progressing in goals according to skill mastery rate of IG1	64	32	12	NR	X			X	X	X	X	X	X		
Epstein, 1995 ⁸⁵ Fair	IG1: Decrease sedentary+ increase physical activity	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for decreasing sedentary activity and increasing physical activity	40.5	18	6	NR	X			X	X	X	X	X	X		
	IG2: Increase physical activity	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for increasing physical activity	40.5	18	6	NR	X			X	X	X	X	X	X		
	IG3: Decrease sedentary behavior	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for decreasing sedentary activity	40.5	18	6	NR	X			X	X	X	X	X	X		
Epstein, 2000a ¹²¹ Good	IG1: High dose sedentary activity reduction	20-session comprehensive family-based weight management group and individual family intervention, goal ≤10 hr/week of (non-schoolwork) sedentary activity	30	20	6	NR	X			X	X	X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: High dose physical activity increase	20-session comprehensive family-based weight management group and individual family intervention, goal energy equivalent of 32.2 km (20 miles)/week increase in exercise	30	20	6	NR	X			X	X	X	X	X	X		
	IG3: Low dose sedentary activity reduction	20-session comprehensive family-based weight management group and individual family intervention, goal ≤20 hr/week of (non-schoolwork) sedentary activity	30	20	6	NR	X			X	X	X	X	X	X		
	IG4: Low dose physical activity increase	20-session comprehensive family-based weight management group and individual family intervention, goal energy equivalent of 16.1 km (10 miles)/week increase in exercise	30	20	6	NR	X			X	X	X	X	X	X		
Epstein, 2000b ¹²² Fair	IG1: Problem-solving for parent and child	20-session comprehensive family-based weight management group and individual family intervention with problem-solving for parent and child	30	20	24	NR	X			X	X	X	X	X	X		
	IG2: Problem-solving for child only	20-session comprehensive family-based weight management group and individual family intervention with problem-solving for child	30	20	24	NR	X			X	X	X	X	X	X		
	IG3: Family-based treatment	20-session comprehensive family-based weight management group and individual family intervention, no problem-solving	30	20	24	NR	X			X	X	X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Epstein, 2004 ¹²³ Good	IG1: Reinforced reduced sedentary behaviors	20-session family-based comprehensive weight management program plus point system with rewards to reinforce meeting sedentary behavior targets (final goal ≤15 hrs/wk)	30	20	12	NR	X			X	X	X	X	X	X		
	IG2: Stimulus control of sedentary behaviors	20-session family-based comprehensive weight management program plus families encouraged to change home environment (e.g., limit access to TV), children reinforced for self-monitoring	30	20	12	NR	X			X	X	X	X	X	X		
Epstein, 2008b ¹²⁴ Fair	IG1: Increase healthy foods	13-session comprehensive family-based weight management group and individual family intervention, focus on increasing healthy foods	32.5	13	12	NR	X			X	X	X	X	X	X		
	IG2: Reduce high energy-dense foods	13-session comprehensive family-based weight management group and individual family intervention, focus on reducing high energy-dense foods	32.5	13	12	NR	X			X	X	X	X	X	X		
Epstein, 2014 ¹²⁵ Fair	IG1: Family-based treatment	15-session comprehensive family-based weight management group intervention, parents and children treated both separately and together	26.2 5	15	12	Medical school complex	X			X		X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Parent-child treated separately	15-session comprehensive family-based weight management group intervention, parents and children treated separately	30	15	12	Medical school complex	X			X		X	X	X	X		
Estabrooks, 2009 ¹²⁶ Fair	IG1: Workbook + group sessions + IVR system	Family Connections self-help workbook + 2 group sessions with parents covering healthy lifestyle information and parenting skills + 10 telephone-based interactive voice response system calls	4	2	3	Local clinic, at home	X	X		X	X	X	X				
	IG2: Workbook + group sessions	Family Connections self-help workbook + 2 group sessions with parents covering healthy lifestyle information and parenting skills	4	2	0.5	Local clinic	X			X		X	X		X		
	IG3: Workbook only	Family Connections self-help workbook only	NA	0	0.25	NR				X			X				
Garipagaolu, 2009 ¹²⁷ Fair	IG1: Family-based group treatment	Seven 90-minute family-based group treatment sessions with multidisciplinary team	10.5	7	3	NR	X					X			X		
	IG2: Individual treatment	Seven 30-minute individual family-based treatment sessions with multidisciplinary team	3.5	7	3	Dietetic department	X				X				X		
Gerards, 2015 ⁹⁷ Fair	IG1: Lifestyle Triple P	10 90-minute group sessions and four individual 15-30 minute phone sessions aimed at changing parenting practices and styles with specific strategies around lifestyle change; workbook, recipes and active games booklet	16.5	14	3.5	Public health service	X	X		X	X	X	X				

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	CG: Control	Brochures and internet-based knowledge quiz	0	0	NA	Brochures and internet-based quiz			X	X	X		X				
Goldfield, 2001 ¹²⁸ Fair	IG1: Individualized + group treatment	Thirteen group (40 minute) each for parents and children separately plus and individual (15-20 minute) family sessions in comprehensive weight management program	21.67	13	6	NR	X				X	X	X	X	X		
	IG2: Group treatment	Thirteen 60-minute comprehensive family-based weight management group and individual family sessions	21.67	13	6	NR	X					X	X	X	X		
Golley, 2007 ⁷⁰ Fair	IG1: Triple P + healthy lifestyle group	Four 2-hr group sessions + 7 individual phone calls aimed at changing parenting practices and general parenting styles, and 7-session behavioral healthy lifestyle group for parents and concurrent child PA sessions	23.75	18	5	Metropolitan teaching hospitals	X	X		X	X	X	X	X		X	
	IG2: Triple P	Four 2-hr group sessions and 7 individual phone followup sessions aimed at changing parenting practices and general parenting styles (no behavioral lifestyle component); workbook, and healthy lifestyle pamphlet	9.75	11	5	Metropolitan teaching hospitals	X	X		X	X	X	X				
	CG: Waitlist	Waitlist + healthy lifestyle pamphlet	0.33	0	12	Metropolitan teaching hospitals		X		X							

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Grey, 2004 ⁸⁶ Fair	IG1: Nutrition ed + PA sessions + coping skills training	16 weekly 45-minute culturally-tailored nutrition education sessions for parents and children together, 32 twice-weekly PA sessions for children, 12 followup phone calls + coping skills training	39	60	7	After-school program	X	X			X	X		X	X	X	
	IG2: Nutrition ed + PA sessions	16 weekly 45-minute culturally-tailored nutrition education sessions for parents and children together, 32 twice-weekly PA sessions for children, 3 followup phone calls	36.75	51	7	After-school program	X	X				X		X	X	X	
Hughes, 2008 ⁹⁸ Fair	IG1: Individualized behavior program	Eight individual family appointments w/ dietitian (7 outpatient, 1 home visit) over 6 months (total contact time of 5 hours) for family behavior change counseling.	5	8	6	Royal Hospitals for Sick Children in Glasgow and Edinburgh	X				X				X		
	CG: Standard dietetic care	3-4 sessions of standard didactic dietetic care	1.5	4	6-10	Royal Hospitals for Sick Children in Glasgow and Edinburgh	X				X				X		
Hystad, 2013 ¹²⁹ Fair	IG1: Structured weight management group	Fifteen 2-hour parent therapist-led group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietitian and physiotherapist.	65	25	24	Outpatient hospital setting	X			X	X	X	X	X	X	X	

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Parent-led support group	Fifteen 2-hour parent self-help group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietician and physiotherapist.	65	25	24	Outpatient hospital setting	X				X	X	X	X	X	X	
Israel, 1985 ⁸⁷ Fair	IG1: Behavioral weight reduction + parent training	Two 1-hour child management skills classes for parents, nine 90-minute weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions	35.5	37	14	NR	X	X			X	X	X	X	X		
	IG2: Behavioral-weight reduction	Nine 90-minute weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions	33.5	35	14	NR	X	X			X	X	X	X	X		
Johnston, 2010 ¹³⁰ Fair	IG1: Instructor-led intervention	12-week daily (Mon-Fri) instructor-led healthy lifestyle intervention class during school hours with PA sessions and 12 weeks bi-weekly followup; monthly parent information meetings	47.25	72	6	School	X				X	X	X	X		X	X
	IG2: Self-help intervention	Parent-guided self-help book	0	0	3	School, home				X	X		X				
Johnston, 2013 ¹³¹ Fair	IG1: Instructor-led intervention	12-week daily (Mon-Fri) instructor-led healthy lifestyle intervention class during school hours with PA sessions and 12 weeks bi-weekly followup; monthly parent information meetings	47.25	72	6	School	X				X	X	X	X		X	X

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Self-help intervention	Parent-guided self-help book	0	0	3	School, home				X	X		X				
Kalarchian, 2009 ⁷¹ Fair	IG1: Family-based lifestyle intervention	Twenty 60-min separate adult and child group sessions including weekly family meeting with lifestyle coach; adult also set goals, modeled behavior change; 6 booster sessions (3 group, 3 phone)	43.75	26	12	University Medical Center	X	X			X	X	X	X	X		
	CG: Nutrition consultation	2 nutrition consultation sessions to develop an individual nutrition plan based on Stoplight Eating Plan	1	2	18	University Medical Center	X						X	X			
Kalavainen, 2007 ⁹⁹ Fair	IG1: Health-promoting lifestyle	15 90-min group sessions, parents and children mostly separate; parents targeted as main agents of change; interactive activities and PA for children; manuals for parents, workbooks for children and homework assigned	43.5	15	6	Pediatric outpatient clinic	X			X		X	X	X	X	X	
	CG: Brief education + booklets	Two 30-minute individual sessions with child and school nurse (parent could also attend); booklets for families covered weight management and healthy lifestyle; workbook for children	1	2	6	Health care centers (not further specified)	X			X	X			X	X		
Larsen, 2015 ⁸⁸ Fair	IG1: Educational program + GP consultations	Three 3-hr group education sessions, monthly GP consultations for one year, then bi-monthly for one year; focus on lifestyle habits, diet, and PA	18	21	24	General practices	X			X	X	X			X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: GP consultations	Monthly GP consultations for one year, then bi-monthly for one year; focus on lifestyle habits, diet, and PA	9	18	24	General practices	X			X	X				X		
Magarey, 2011 ⁸⁹ Fair	IG1: Triple P + healthy lifestyle group	4 2-hr group sessions and 4 individual phone followup sessions aimed at changing parenting practices and general parenting styles and 8- session behavioral healthy lifestyle group for parents and optional concurrent child PA sessions	33	16	6	Flinders Medical Center and the Children's Hospital at Westmead	X	X				X	X	X		X	
	IG2: Healthy lifestyle group	Eight 90-minute group lifestyle support sessions and 4 phone calls for parents and optional concurrent child fun, non-competitive PA sessions.	25	12	6	Flinders Medical Center and the Children's Hospital at Westmead	X	X				X	X	X		X	
McCallum, 2007 ⁷² Good	IG1: LEAP	Four GP consultations using brief solution-focused family therapy for healthy lifestyle goals; 16-page folder of materials including topic sheets, wall chart, reward stickers, and shopping tips	1	4	3	Primary care	X			X	X				X		
	CG: Usual care	Usual care	0	0	3	Primary care	X								X		
Nemet, 2005 ¹⁰⁰	IG1: Dietitian + PA sessions	4 evening lectures for parents, 6 dietitian meetings, and twice-weekly PA sessions for 3 months	32.5	34	3	Child health and sports center of a general hospital	X			X	X	X	X	X	X	X	

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Fair	CG: Nutrition referral	Referred to nutritional consultation, encouraged to perform PA 3 times per week on their own	0.5	1	3	pediatric obesity clinic	X				X						
Nguyen, 2012 ¹³² Fair	IG1: Loozit + additional therapeutic contact	Seven 75-minute weekly Loozit group sessions (Phase 1) separately for adolescents and parents; then adolescents attended 7 60-minute booster sessions, had 14 brief phone sessions and SMS messaging through 24 months	26.8	28	24	Community health centers or local government community centers	X	X	X	X	X	X	X	X		X	
	IG2: Loozit only	Seven 75-minute weekly Loozit group sessions (Phase 1) separately for adolescents and parents; then adolescents attended 7 60-minute booster sessions	24.5	14	24	Community health centers or local government community centers	X			X		X	X	X		X	
Norman, 2015 ⁷³ Fair	IG1: Stepped-down Care	Brief PCP visits + "stepped-down" care tailored to progress of individuals; Step 1: 4 health ed visits + 8 calls, Step 2: 2 vists + 8 calls, Step 3: 4 calls	8.25	27	12	Pediatric primary care	X	X		X	X		X	X	X		
	CG: Enhanced Usual Care	Enhanced usual care	0.75	2	12	Pediatric Primary Care	X			X	X			X			

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Nowicka, 2008 ¹⁰¹ Fair	IG1: Family Weight School	Four 4-hr family group comprehensive behavioral lifestyle meetings, emphasizing communication skills, mutual support, consistency, establishing appropriate limits; 10-min individual meeting with pediatrician each session	16	4	12	Childhood obesity center	X				X	X	X	X	X		
	CG: Waitlist	Waitlist	0	0	12	Childhood obesity center											
Patrick, 2013 ¹⁰² Fair	IG1: Website + group sessions	Access to website and tutorials to promote weight loss and healthy behaviors + 12 monthly 90-minute group sessions for adolescents and parents and brief bi-monthly phone calls for adolescent	38	18	12	Group meeting setting not described-- assumed health care	X	X	X	X	X	X		X	X	X	
	IG2: Website + SMS	Weekly check-in/reminder emails and access to website and tutorials to promote weight loss and healthy behaviors + 3 SMS messages weekly and option to contact health counselor as needed.	0	0	12	website access and text messages		X	X		X			X	X		
	IG3: Website only	Weekly check-in/reminder emails and access to website and tutorials to promote weight loss and healthy behaviors.	0	0	12	website and email			X		X			X	X		
	CG: Usual care	Usual care	3	3	12	Pediatric clinics	X			X	X	X		X			

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Quattrin, 2014 ⁷⁴ Fair	IG1: Weight management education + additional parent contact	Sixteen 60-minute parent group sessions, 16 brief individual parent meetings, 13 phones calls for weight management education program, plus 16 child active game sessions	39.25	29	24	Pediatric Patient Centered Medical Home	X	X			X	X	X	X		X	
	CG: Weight management education	Sixteen 60-minute parent group sessions, 13 phones calls for weight management education program, plus 16 child active game sessions	32.25	29	12	Pediatric Patient Centered Medical Home	X	X				X	X	X		X	
Raynor, 2012b ¹⁰³ Fair	IG1: TRADITIONAL + Growth Monitoring	Eight 45-minute parent group sessions covering behavioral strategies to increase PA and reduce sugar-sweetened beverage consumption; growth assessed at 0, 3, 6 months with accompanying letter providing anthropometric information and interpretation	6	8	6	Medical-school research setting	X					X	X				
	IG2: SUBSTITUTE S + Growth Monitoring	Eight 45-minute parent group sessions covering behavioral strategies to increase low-fat milk and decrease TV as substitute behaviors; growth assessed at 0, 3, 6 months with accompanying letter providing anthropometric information and interpretation	6	8	6	Medical-school research setting	X					X	X				
	CG: Monthly newsletters + growth monitoring	Monthly healthy diet and PA newsletter; growth assessed at 0, 3, and 6 months with accompanying letter providing anthropometric information with interpretation	0.25	3	6	Medical-school research setting	X			X					X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Reinehr, 2006 ¹⁰⁴ Fair	IG1: Obeldicks	Intensive year-long comprehensive program; 9-session parent group course, 6-session behavior therapy and nutrition education groups for children, weekly PA sessions, 6 individual family therapy sessions (more as needed)	77.5	52	12	Obesity clinic	X				X	X	X	X	X	X	
	CG: Distance control	Children who met eligibility criteria but whose families lived too far away to travel regularly to the obesity clinic.	0	0	24	Obesity clinic	X										
Reinehr, 2009 ¹⁰⁵ Fair	IG1: Obeldicks	Intensive year-long comprehensive program; 9-session parent group course, 6-session behavior therapy and nutrition education groups for children, weekly PA sessions, 3 individual family therapy sessions (more as needed)	77.5	52	12	Treatment centers	X				X	X	X	X	X	X	
	CG: Distance control	Families who lived too far away and had no means of transportation	0.25	1	12	Treatment centers	X										
Resnick, 2009 ⁷⁵ Fair	IG1: Materials + personal encounters	Five educational mailings over 30 weeks plus at least one home visit or phone call to discuss lifestyle topic of parent's choice.	1.7	3	7.5	At home	X	X		X	X		X				
	CG: Materials only	Five educational mailings over 30 weeks	0	0	7.5	At home				X	X		X				

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Resnicow, 2005 ⁹⁰ Fair	IG1: High-intensity lifestyle intervention	20-26 weekly group behavioral sessions of a culturally tailored program for girls delivered in African American churches; 12 parental sessions, two-way paging device and MI calls	45.5	29	6	Church	X	X	X		X	X	X	X	X	X	X
	IG2: Moderate-intensity lifestyle intervention	6 monthly group behavioral sessions of a culturally tailored program for girls delivered in African American churches; 3 parental sessions	9	6	6	Church	X					X	X	X	X	X	X
Resnicow, 2015 ⁷⁶ Fair	IG1: PCP + RD MI	Four brief motivational interviewing (MI) counseling sessions by PCP + 6 MI counseling sessions from RD conducted over 2 years, targeting diet and activity behaviors	2.5	10	24	Pediatric primary care clinics	X	X		X	X		X				
	IG2: PCP MI	Four brief MI counseling sessions over 2 years conducted by PCP, targeting diet and activity behaviors	1	4	24	Pediatric primary care clinics	X			X	X		X				
	CG: Usual care	PCPs attended half-day session that included current treatment guidelines; otherwise routine PCP care and standard educational materials for parents	NR	0	24	Pediatric primary care clinics	X			X					X		
Saelens, 2013 ¹³³ Fair	IG1: Family-based tx with family-set goals	20 weekly 20-30 min individual family sessions and separate 40-50 min child and parent group sessions; MI-based style to encourage more family autonomy and self-efficacy around behavioral skills use	40	20	5.5	NR	X				X	X	X	X	X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Family-based tx with study-set goals	20 weekly 20-30 min individual family sessions and separate 40-50 min child and parent group sessions; interventionist reinforced behavioral skills use and set weekly child and parent goals without family input	40	20	5.5	NR	X				X	X	X	X	X		
Savoye, 2007 ¹⁰⁶ Fair	IG1: Bright Bodies	Twenty-six weekly nutrition education and behavioral management sessions using Smart Moves Workbook, twice-weekly physical activity sessions tapering to twice-monthly after 6 months	82.33	64	12	Pediatric obesity clinic	X			X		X	X	X	X	X	
	CG: Semi-annual individual counseling	Two semi-annual sessions: diet and exercise counseling by dietitians and physicians along with brief psychological counseling with social worker	0.5	2	12	Pediatric obesity clinic	X				X						
Stark, 2011 ¹⁰⁷ Fair	IG1: LAUNCH	Nine clinic-based 90-min comprehensive behavioral lifestyle group sessions for parents and children separately plus 9 home vis; vegetable taste tests, pedometers, parents received 2 weeks' worth of vegetables, child sessions included 15-min PA.	38.25	18	6	Cincinnati Children's Hospital Medical Center	X				X	X	X	X	X		
	CG: Enhanced standard of care	One 45-min meeting with pediatrician to discuss child's growth chart, provide healthy lifestyle advice, 1-page health food and activity brochure	0.75	1	12	Pediatric primary care	X										

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Stark, 2014 ¹⁰⁸ Fair	IG1: LAUNCH-clinic	Ten 90-min comprehensive behavioral lifestyle group sessions for parents and children separately; vegetable taste tests, pedometers, parents received 2 weeks' worth of vegetables, child sessions included 15-min of moderate-to-vigorous PA.	30	10	6	Cincinnati Children's Hospital	X				X	X	X	X			
	CG: Enhanced standard of care	One 45-minute meeting with pediatrician to discuss child's growth chart, provide healthy lifestyle advice, 1-page health food and activity brochure	0.75	1	12	Cincinnati Children's Hospital	X			X					X		
Steele, 2012 ¹³⁴ Fair	IG1: Family-based behavioral group treatment	Ten 90-minute weekly "Positively Fit" group treatment sessions including nutrition/PA education and behavior therapy; parents and children met separately for most of session but jointly attended goal-setting sessions	28.3	10	2.5	NR	X					X	X	X	X		
	IG2: Brief individual family intervention	Trim Kids: 3 60-minute individual family visits with a registered dietitian and manual with assigned reading	3	3	2.5	NR	X			X	X				X		
Stettler, 2014 ¹⁰⁹ Fair	IG1: Multiple-behavior change	Twelve 15-25 min sessions targeting healthy beverages, increased PA, and reduced sedentary activity, incorporating behavior change techniques	4	12	12	Pediatric primary care practices	X				X				X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG2: Combined	Twelve 15-25 min sessions incorporating behavior change techniques targeting healthy beverages, increased PA, and reduced sedentary activity (IG2), or targeting health beverage consumption only (IG3)	4	12	12	Pediatric primary care practices	X				X				X		
	IG3: Beverage-only intervention	Twelve 15-25 min sessions to reduce intake of sugary drinks and increase intake of water and milk, incorporating behavior change techniques	4	12	12	Pediatric primary care practices	X				X				X		
	CG: Attention control (bullying prevention)	Twelve 15-25 min clinician, child, and parent sessions to help children develop strategies to improve friendship-making skills and anger management. Same schedule/contact time as IG conditions	4	12	12	Pediatric primary care practices	X			X	X				X		
Taveras, 2011 ¹¹⁰ Good	IG1: MI + enhanced EMR and training	4 25-min in-person + 3 15-min phone motivational interviewing sessions with nurse practitioner. Pediatricians endorsed messages during well-child visits. Tailored materials, behavior monitoring tools, enhanced electronic medical record.	2.67	8	12	Pediatric primary care	X	X	X	X	X				X		
	CG: Usual care	Usual care	0.5	2	12	Pediatric primary care	X								X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Taveras, 2015 ¹¹¹ Good	IG1: CDS+coaching	Computerized clinical decision support system with point of care prompts at well-child visit, motivational interview, pt materials + 4 phone motivational interviewing sessions by health coach and optional text message program	1.25	5	12	Pediatric clinics	X	X	X	X	X		X		X		
	IG2: CDS	Computerized clinical decision support system with point of care prompts at well-child visit, motivational interview, pt materials	0.25	1	12	Pediatric clinics	X		X	X	X				X		
	CG: Usual care	Usual Care	0.25	1	12	Pediatric Clinics	X								X		
Taylor, 2015 ¹¹² Good	IG1: Tailored lifestyle support	One individual 1-2 hour multidisciplinary session with parents followed by 16 brief contacts for tailored behavioral lifestyle change support.	7.2	14	24	University clinic and home	X	X			X		X				
	CG: Brief feedback and advice	Two individual family appointments for generalized advice and feedback on child's habits, using publicly-available resources (45-75min total).	1	2	6	University research clinic and home	X				X				X		
Toruner, 2010 ⁷⁷ Fair	IG1: Weight-management program	School-based intervention consisting of seven 40-70 minute group child sessions, 2 parent group sessions and 30-50 minute individual parent counseling	9.75	7	2.5	School	X				X	X	X	X			
	CG: Waitlist	Waitlist control	0	0	12	School											

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Van Grieken, 2013 ⁷⁸ Fair	IG1: Be Active Eat Right	Prevention protocol involving motivational interviewing during a well-child visit. 3 additional structured healthy lifestyle counseling sessions matched to parents' stage of change could be offered.	2	4	12	Youth Health Care Centers	X			X	X				X		
	CG: Usual care	Parents informed of overweight status of their child, then usual care	0.5	1	24	Youth Health Care Centers	X								X		
Vos, 2011 ¹¹³ Fair	IG1: Family-based multidisciplinary lifestyle intervention	Two individual family assessment and advice visits followed by 7 2.5-hr group comprehensive behavioral lifestyle meetings, parents and children usually separate, plus 2-3 booster group sessions yearly	46.25	19	24	Not reported--assumed health care	X				X	X	X	X	X	X	
	CG: Waitlist	Waitlist	0.25	1	12	Not reported--assumed health care	X				X			X			
Wake, 2009 ⁷⁹ Good	IG1: LEAP-2	Four GP consultations using brief solution-focused family therapy for healthy lifestyle goals; 16-page folder of materials including topic sheets, wall chart, reward stickers, and shopping tips	1	4	3	Family medical practices	X			X	X				X		
	CG: Usual care	Usual care	0	0	12	Family medical practices	X								X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
Wake, 2013 ¹¹⁴ Good	IG1: HopSCOTCH	One hour-long family visit with obesity specialist team to develop plan and goals, followed by GP visits every 4-8 weeks using brief solution-focused techniques; web-based software (HopSCOTCH) used to track progress and link specialist team with GP	2.5	6	12	Primary care and tertiary weight management service	X				X				X		
	CG: Usual care	Usual care	NA	0	12	Primary care	X				X				X		
Weigel, 2008 ¹¹⁵ Fair	IG1: Sea Lion Club	Twice weekly 45-60-min child group sessions for 12 months, including PA, dietary education, and coping strategies; 12 separate monthly 2-hour parent support meetings that included some parent-child activities	114.1	104	12	Local sports center and health association	X					X	X	X	X	X	
	CG: Brief advice	Two pediatrician visits with parent and child that included written recommendations for PA, diet, and coping strategies and verbal explanation	1	2	12	Outpatient clinic	X			X	X				X		
Wilfley, 2007 ¹¹⁸ Good	IG1: Combined maintenance group	20-session Family-based comprehensive weight management program + either behavioral skills or social facilitation maintenance	60	36	9	University research setting	X				X	X	X	X	X		
	IG2: Behavioral skills maintenance	20-session Family-based comprehensive weight management program + behavioral skills maintenance component	60	36	9	University research setting	X				X	X			X		

Author, Year and Quality	Group	Description	Est hours	# Sessions	Duration, mos	Setting	Delivery				Format		Target			Supervised PA	Cultural Tailor.
							In-Person	Phone	Web-based	Print	Individual	Group	Parent	Child	Family		
	IG3: Social facilitation maintenance	20-session Family-based comprehensive weight management program + social facilitation maintenance component	60	36	9	University research setting	X				X	X	X	X	X		
	CG: No maintenance	20-session Family-based comprehensive weight management program with no maintenance component	33.3	20	4	University research setting	X				X	X	X	X	X		
Williamson, 2006 ¹¹⁶ Fair	IG1: Interactive behavior therapy	2-year internet-based family weight management program, including website access, 4 face-to-face counseling sessions during first 12 weeks and on-going email-based counseling, culturally tailored for African-American families.	4	4	24	Internet-based	X		X		X		X	X	X		X
	CG: Passive health education	Access to educational website and 4 face-to-face counseling sessions with dietitian during first 12 weeks, but were not prescribed behavioral tasks for weight loss.	4	4	24	Internet-based	X		X		X		X	X	X		

Abbreviations: CDS = clinical decision support; CG = control group; ed = education; EMR = electronic medical records; hr = hour; GP = general practice; IG = intervention group; min = minute; MI = motivational interview; NHS = National Health System; PA = physical activity; PCP = primary care provider; pt = patient; RD = registered dietitian; SMS = short messaging service; tx = treatment

Table 4. Intervention provider information and training of included studies

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Banks, 2012 ⁸⁰	IG1: Primary care-based	X		Practice nurse, dietitian, exercise specialist	Other professional with training	Professional in field	Professional in field

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Fair	IG2: Hospital-based obesity clinic	X		Obesity clinic consultant (not further specified), dietitian, exercise specialist	Other professional (training NR) or non-professional	Professional in field	Professional in field
Bathrellou, 2010 ¹¹⁹	IG1: Child-and-parent group			Dietitians, supported by pediatricians and child psychiatrist	Other professional with training	Professional in field	NR
Fair	IG2: Child only			Dietitians, supported by pediatricians and child psychiatrist	Other professional with training	Professional in field	NR
Berkowitz, 2012 ⁸¹	IG1: Group-based lifestyle modification program			Health coach (nurse, NP, dietitian, master's level counselors or doctoral-level psychologists)	Professional in field	Professional in field	NR
Fair	IG2: Individual family counseling + printed curriculum			Health coach (nurse, NP, dietitian, master's level counselors or doctoral-level psychologists)	Professional in field	Professional in field	NR
Berry, 2014 ⁹²	IG1: Nutrition/exercise education and coping skills	X		Nurse practitioner, registered dietitian, certified exercise trainer	Other professional (training NR) or non-professional	Professional in field	Professional in field
Fair	CG: Waitlist			NA	NA	NA	NA
Bocca, 2012 ⁹³	IG1: Multidisciplinary intervention	X	X	Dietician, physiotherapist, psychologist	Professional in field	Professional in field	Professional in field
Fair	CG: Control			Pediatrician	NA	NA	NA
Broccoli, 2016 ⁹⁴	IG1: Motivational Interviewing			Family pediatrician	Other professional with training	NR	NR
Good	CG: Obesity prevention booklet			Pediatrician	Other professional with training	NR	NR

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Bryant, 2011 ⁹⁵ Fair	IG1: WATCH IT	X		WATCH IT trainers, sports coaches; support and supervision by nurse, dietitian, psychologist, and pediatrician	Other professional with training	Other professional with training	Professional in field
	CG: Waitlist			NA	NA	NA	NA
Coppins, 2011 ⁹⁶ Fair	IG1: Multi-disciplinary program	X	X	Dietician, PA health promotion officer, educational or clinical psychologist, PA instructors	Professional in field	Professional in field	Professional in field
	CG: Waitlist			NA	NA	NA	NA
Davis, 2012 ¹¹⁷ Fair	IG1: Maintenance (Group classes)			Trained research staff; certified personal trainer	Other professional with training	NR	Professional in field
	CG: Newsletters			NA	NA	NA	NA
de Niet, 2012 ¹²⁰ Fair	IG1: Healthy lifestyle intervention + SMS	X	X	Psychologist, dietitian, pediatrician, and physiotherapist	Professional in field	Professional in field	Professional in field
	IG2: Healthy lifestyle intervention only	X	X	Psychologist, dietitian, pediatrician, and physiotherapist	Professional in field	Professional in field	Professional in field
DeBar, 2012 ⁶⁹ Good	IG1: Multicomponent behavioral intervention	X	X	Nutritionists, health educators and clinical psychologists; primary care physicians	Professional in field	Professional in field	NR
	CG: PCP Meeting + materials			Primary care provider	NA	NA	NA
Epstein, 1985a ⁸² Fair	IG1: Family-based lifestyle + PA sessions			Therapist	Professional in field	NR	NR
	IG2: Family-based lifestyle			Therapist	Professional in field	NR	NR
Epstein, 1985b ⁸³ Fair	IG1: Healthy lifestyle education + parent behavior change skills			Therapist	Professional in field	NR	NR

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
	IG2: Healthy lifestyle education only			Therapist	Professional in field	NR	NR
Epstein, 1994 ⁸⁴ Good	IG1: Individualized progression			Staff member	NR	NR	NR
	IG2: Paced progression			Staff member	NR	NR	NR
Epstein, 1995 ⁸⁵ Fair	IG1: Decrease sedentary+ increase physical activity			Therapist	Professional in field	NR	NR
	IG2: Increase physical activity			Therapist	Professional in field	NR	NR
	IG3: Decrease sedentary behavior			Therapist	Professional in field	NR	NR
Epstein, 2000a ¹²¹ Good	IG1: High dose sedentary activity reduction			Therapist	Professional in field	NR	NR
	IG2: High dose physical activity increase			Therapist	Professional in field	NR	NR
	IG3: Low dose sedentary activity reduction			Therapist	Professional in field	NR	NR
	IG4: Low dose physical activity increase			Therapist	Professional in field	NR	NR
Epstein, 2000b ¹²² Fair	IG1: Problem-solving for parent and child			Group leader, therapist	Professional in field	NR	NR
	IG2: Problem-solving for child only			Group leader, therapist	Professional in field	NR	NR
	IG3: Family-based treatment			Group leader, therapist	Professional in field	NR	NR
Epstein, 2004 ¹²³	IG1: Reinforced reduced sedentary behaviors			Therapist	Professional in field	NR	NR

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Good	IG2: Stimulus control of sedentary behaviors			Therapist	Professional in field	NR	NR
Epstein, 2008b ¹²⁴	IG1: Increase healthy foods			Case manager	NR	NR	NR
Fair	IG2: Reduce high energy-dense foods			Case manager	NR	NR	NR
Epstein, 2014 ¹²⁵	IG1: Family-based treatment			Case manager	NR	NR	NR
Fair	IG2: Parent-child treated separately			Case manager	NR	NR	NR
Estabrooks, 2009 ¹²⁶	IG1: Workbook + group sessions + IVR system			Dietitian	NR	Professional in field	NR
Fair	IG2: Workbook + group sessions			Dietitian	NR	Professional in field	NR
	IG3: Workbook only			NA	NA	NA	NA
Garipagaoglu, 2009 ¹²⁷	IG1: Family-based group treatment	X		Pediatric dietitian, pediatrician, endocrinologist, cardiologist	Other professional with training	Professional in field	NR
Fair	IG2: Individual treatment			Pediatric dietitian, pediatrician, endocrinologist, cardiologist	Other professional with training	Professional in field	NR
Gerards, 2015 ⁹⁷	IG1: Lifestyle Triple P			Health professionals (not further specified)	Other professional with training	NR	NR
Fair	CG: Control			NA	NA	NA	NA
Goldfield, 2001 ¹²⁸	IG1: Individualized + group treatment			Therapist (most had Master's in psychology, nutrition, or exercise science)	Professional in field	Professional in field	Professional in field
Fair	IG2: Group treatment			Therapist (most had Master's in psychology, nutrition, or exercise science)	Professional in field	Professional in field	Professional in field

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Golley, 2007 ⁷⁰ Fair	IG1: Triple P + healthy lifestyle group			Dietitian; nonexpert staff	Other professional with training	Professional in field	Other professional (training NR) or non-professional
	IG2: Triple P			Dietitian	Other professional with training	Professional in field	NR
	CG: Waitlist			NA	NA	NA	NA
Grey, 2004 ⁸⁶ Fair	IG1: Nutrition ed + PA sessions + coping skills training	X		Registered dietitian, licensed personal trainer, research assistant, advanced practice nurse	Other professional with training	Professional in field	Professional in field
	IG2: Nutrition ed + PA sessions	X		Registered dietitian, licensed personal trainer, research assistant, advanced practice nurse	Other professional with training	Professional in field	Professional in field
Hughes, 2008 ⁹⁸ Fair	IG1: Individualized behavior program			Experienced pediatric dietitians	Other professional with training	Professional in field	NR
	CG: Standard dietetic care			Pediatric dietitians	NR	Professional in field	NR
Hystad, 2013 ¹²⁹ Fair	IG1: Structured weight management group	X	X	Psychologists, pediatricians, clinical dietitians, physiotherapists	Professional in field	Professional in field	Professional in field
	IG2: Parent-led support group	X		Health professional	NA	NA	NA
Israel, 1985 ⁹⁷ Fair	IG1: Behavioral weight reduction + parent training		X	Advanced graduate student in clinical psychology, cotherapists, undergraduate students	Professional in field	NR	NR
	IG2: Behavioral-weight reduction		X	Advanced graduate student in clinical psychology, cotherapists, undergraduate students	Professional in field	NR	NR

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Johnston, 2010 ¹³⁰ Fair	IG1: Instructor-led intervention			Undergraduate student trained in physical activity/nutrition; bachelor-level instructor trained in nutrition	Other professional (training NR) or non-professional	Other professional (training NR) or non-professional	Other professional (training NR) or non-professional
	IG2: Self-help intervention			Parent-guided manual	NA	NA	NA
Johnston, 2013 ¹³¹ Fair	IG1: Instructor-led intervention			Bachelor level instructor trained in nutrition; all instructors trained to use contingency mgmt, reinforcement, and modeling to encourage adherence	Other professional (training NR) or non-professional	Other professional (training NR) or non-professional	NR
	IG2: Self-help intervention			Parent-guided manual	NA	NA	NA
Kalarchian, 2009 ⁷¹ Fair	IG1: Family-based lifestyle intervention			Lifestyle coach	NA	NA	NA
	CG: Nutrition consultation			NR	NA	NA	NA
Kalavainen, 2007 ⁹⁹ Fair	IG1: Health-promoting lifestyle			Dietitian (parent sessions); advanced clinical nutrition students (child sessions)	Other professional (training NR) or non-professional	Professional in field	NR
	CG: Brief education + booklets			School nurse	NR	NR	NR
Larsen, 2015 ⁸⁸ Fair	IG1: Educational program + GP consultations	X	X	General practitioner, dietitian, physical exercise instructor, psychologist	Professional in field	Professional in field	Professional in field
	IG2: GP consultations			General practitioner	NA	NA	NA

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Magarey, 2011 ⁸⁹	IG1: Triple P + healthy lifestyle group	X		Dietitian, physical activity educators	Other professional with training	Professional in field	Professional in field
Fair	IG2: Healthy lifestyle group	X		Dietitian, physical activity educators	Other professional with training	Professional in field	Professional in field
McCallum, 2007 ⁷²	IG1: LEAP			General practitioner	NR	NR	NR
Good	CG: Usual care			General practitioner	NA	NA	NA
Nemet, 2005 ¹⁰⁰	IG1: Dietitian + PA sessions	X		Physicians, dietitians, youth coaches	Other professional (training NR) or non-professional	Professional in field	Professional in field
Fair	CG: Nutrition referral			Nutritionist	NA	NA	NA
Nguyen, 2012 ¹³²	IG1: Loozit + additional therapeutic contact			Dietitian	Other professional with training	Professional in field	NR
Fair	IG2: Loozit only			Dietitian	Other professional with training	Professional in field	NR
Norman, 2015 ⁷³	IG1: Stepped-down Care	X		Physician, health education counselor	Other professional with training	Other professional with training	Other professional with training
Fair	CG: Enhanced Usual Care			Pediatrician, health educator	Other professional with training	Other professional with training	Other professional with training
Nowicka, 2008 ¹⁰¹	IG1: Family Weight School	X		Pediatrician, dietitian/sports trainer, pediatric nurse, family therapist	Professional in field	Professional in field	Professional in field
Fair	CG: Waitlist			NA	NA	NA	NA
Patrick, 2013 ¹⁰²	IG1: Website + group sessions			Health counselor	Other professional (training NR) or non-professional	Other professional with training	Other professional with training
Fair	IG2: Website + SMS			Health counselor	Other professional (training NR) or non-professional	Other professional with training	Other professional with training
	IG3: Website only			NA	Other professional (training NR) or non-professional	Other professional with training	Other professional with training
	CG: Usual care			NA	NA	NA	NA

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Quattrin, 2014 ⁷⁴ Fair	IG1: Weight management + additional parent contact			Practice Enhancement Assistant (psychology, nutrition, exercise science or equivalent degree; or RD)	Professional in field	Professional in field	Professional in field
	CG: Weight management			Practice Enhancement Assistant (psychology, nutrition, exercise science or equivalent degree; or RD)	Professional in field	Professional in field	Professional in field
Raynor, 2012b ¹⁰³ Fair	IG1: TRADITIONAL + Growth Monitoring			Research-staff therapist (master or doctoral-level with expertise in nutrition or exercise and behavior modification)	Professional in field	Other professional with training	Other professional with training
	IG2: SUBSTITUTES + Growth Monitoring			Research-staff therapist (master or doctoral-level with expertise in nutrition or exercise and behavior modification)	Professional in field	Other professional with training	Other professional with training
	CG: Monthly newsletters + growth monitoring			Research staff	NA	NA	NA
Reinehr, 2006 ¹⁰⁴ Fair	IG1: Obeldicks	X	X	Pediatrician, dietitian, psychologist, exercise physiologist	Professional in field	Professional in field	Professional in field
	CG: Distance control			NA	NA	NA	NA
Reinehr, 2009 ¹⁰⁵ Fair	IG1: Obeldicks	X	X	Pediatricians, diet-assistants, psychologists, and exercise physiologists	Professional in field	Professional in field	Professional in field

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
	CG: Distance control			NA	NA	NA	NA
Resnick, 2009 ⁷⁵	IG1: Materials + personal encounters			Trained community health workers	Other professional with training	Other professional with training	Other professional with training
Fair	CG: Materials only			NA	NA	NA	NA
Resnicow, 2005 ⁹⁰	IG1: High-intensity lifestyle intervention	X	X	Dietitian, exercise physiologist, support staff, counselors (masters or doctorate in psychology or public health)	Professional in field	Professional in field	Professional in field
Fair	IG2: Moderate-intensity lifestyle intervention	X		Dietitian, exercise physiologist, support staff	Other professional with training	Professional in field	Professional in field
Resnicow, 2015 ⁷⁶	IG1: PCP + RD MI			PCP (pediatrician and NPs) and RD	Other professional with training	Professional in field	NR
Fair	IG2: PCP MI			PCP (pediatrician and NPs)	Other professional with training	NR	NR
	CG: Usual care			PCP (pediatrician and NPs)	NA	NA	NA
Saelens, 2013 ¹³³	IG1: Family-based tx with family-set goals			Doctoral, masters-level or doctoral candidates w/ experience in behavioral interventions	Other professional with training	NR	NR
Fair	IG2: Family-based tx with study-set goals			Doctoral, masters-level or doctoral candidates w/ experience in behavioral interventions	Other professional with training	NR	NR
Savoye, 2007 ¹⁰⁶	IG1: Bright Bodies	X		Dietitian or social worker; exercise physiologists	Professional in field	Professional in field	Professional in field
Fair	CG: Semi-annual individual counseling			Registered dietitian, physicians, social worker	Professional in field	Professional in field	Other professional (training NR) or non-professional

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Stark, 2011 ¹⁰⁷ Fair	IG1: LAUNCH		X	Licensed clinical psychologist, post doc and research coordinator	Professional in field	NR	NR
	CG: Enhanced standard of care			Pediatrician	Other professional with training	Other professional with training	Other professional with training
Stark, 2014 ¹⁰⁸ Fair	IG1: LAUNCH-clinic		X	Clinical psychologist, pediatric psychologist, research coordinator	Professional in field	NR	NR
	CG: Enhanced standard of care			Pediatrician	Other professional with training	Other professional with training	Other professional with training
Steele, 2012 ¹³⁴ Fair	IG1: Family-based behavioral group treatment	X	X	Clinical psychology therapists (masters level), registered dietitian	Professional in field	Professional in field	NR
	IG2: Brief individual family intervention			Registered dietitian	NR	Professional in field	NR
Stettler, 2014 ¹⁰⁹ Fair	IG1: Multiple-behavior change			Trained primary care clinician	Other professional with training	NR	NA
	CG: Attention control (bullying prevention)			Trained primary care clinician	Other professional with training	NR	NR
Taveras, 2011 ¹¹⁰ Good	IG1: MI + enhanced EMR and training			Nurse practitioner (primary interventionist), pediatrician	Other professional with training	NR	NR
	CG: Usual care			Pediatrician	NA	NA	NA
Taveras, 2015 ¹¹¹ Good	IG1: CDS+coaching			Pediatrician, health coach	Other professional with training	NR	NR
	IG2: CDS			Pediatrician	Other professional with training	NR	NR
	CG: Usual care			Pediatrician	NA	NA	NA
Taylor, 2015 ¹¹² Good	IG1: Tailored lifestyle support	X	X	Mentor, nutritionist/dietician, exercise specialist/trainer, clinical psychologist	Professional in field	Professional in field	Professional in field
	CG: Brief feedback and advice			Trained researcher	NA	NA	NA

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Toruner, 2010 ⁷⁷	IG1: Weight-management program			NR	NR	NR	NR
Fair	CG: Waitlist			NA	NA	NA	NA
Van Grieken, 2013 ⁷⁸	IG1: Be Active Eat Right			Youth Health Care Team (pediatrician, nurse, assistant)	Other professional with training	NR	NR
Fair	CG: Usual care			Youth Health Care Team (pediatrician, nurse, assistant)	NA	NA	NA
Vos, 2011 ¹¹³	IG1: Family-based multidisciplinary lifestyle intervention	X	X	Dietician, child physiotherapist, child psychologist, social worker	Professional in field	Professional in field	Professional in field
Fair	CG: Waitlist			NA	NA	NA	NA
Wake, 2009 ⁷⁹	IG1: LEAP-2			General practitioner	Other professional with training	NR	NR
Good	CG: Usual care			General practitioner	NA	NA	NA
Wake, 2013 ¹¹⁴	IG1: HopSCOTCH	X		General practitioner, obesity specialist team (pediatrician and dietician)	Other professional with training	Professional in field	NR
Good	CG: Usual care			General practitioner	NA	NA	NA
Weigel, 2008 ¹¹⁵	IG1: Sea Lion Club	X	X	Dietitians, psychologists, sports coaches	Professional in field	Professional in field	Professional in field
Fair	CG: Brief advice			Pediatrician	NA	NA	NA
Wilfley, 2007 ¹¹⁸	IG1: Combined maintenance group			Therapist	Professional in field	NR	NR
Good	IG2: Behavioral skills maintenance			Therapist	Professional in field	NR	NR
	IG3: Social facilitation maintenance			Therapist	Professional in field	NR	NR
	CG: No maintenance			NA	NA	NA	NA

Author, Year and Quality	Group	Multidisc. Team Approach	Psychologist on Team	Provider(s)	Training in Behavioral Techniques	Training in Diet	Training in PA
Williamson, 2006 ¹¹⁶ Fair	IG1: Interactive behavior therapy		X	Case manager who was a graduate-level clinical psychology students specializing in weight management	Professional in field	Other professional with training	Other professional with training
	CG: Passive health education			Registered dietitian	Other professional (training NR) or non-professional	Professional in field	Other professional (training NR) or non-professional

Abbreviations: CDS = clinical decision support; CG = control group; ed = education; EMR = electronic medical records; GP = general practice; IG = intervention group; IVR = interactive voice response; MI = motivational interview; NA = not applicable; NP = Nurse Practitioner; NR = not reported; PA = physical activity; PCP = primary care provider; RD = registered dietitian; SMS = short messaging service; tx = treatment

Table 5. Behavioral components of interventions in included studies

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Banks, 2012 ⁸⁰ Fair	IG1: Primary care-based	Primary care-based sociocognitive intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (practice nurse, dietitian, and exercise specialist)	2.5										
	IG2: Hospital-based obesity clinic	Hospital-based childhood obesity clinic sociocognitive intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (consultant, dietitian, and exercise specialist)	2.5										
Bathrellou, 2010 ¹¹⁹ Fair	IG1: Child-and-parent group	21-session multidisciplinary individual weight management program, with parent support for child's weight loss	21	X	X		X		X	X			X
	IG2: Child only	19-session child-only multidisciplinary individual weight management program (no parent support)	19	X	X		X		X	X			
Berkowitz, 2012 ⁸¹ Fair	IG1: Group-based lifestyle modification program	Detailed print curriculum for family with 6 45-minute individual family clinic visits and 17 group child sessions with concurrent parent group sessions	38.5	X			X		X	X			
	IG2: Individual family counseling + printed curriculum	Detailed print curriculum for family with 6 45-minute individual family clinic visits	4.5	X			X		X	X			

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Berry, 2014 ⁹² Fair	IG1: Nutrition/exercise education and coping skills	21-session nutrition/exercise education and coping skills weight management program for parents and children	36.75	X	X							X	
	CG: Waitlist	Waitlist	NA										
Bocca, 2012 ⁹³ Fair	IG1: Multidisciplinary intervention	25-session multidisciplinary intervention consisting of dietician visits, PA sessions for children, and behavioral therapy sessions for parents	30	X	X		X		X	X			X
	CG: Control	Control	2.25										
Broccoli, 2016 ⁹⁴ Good	IG1: Motivational Interviewing	Five individual motivational interviewing sessions with parent and child and pediatrician; families decided on goals, progress discussed at subsequent meetings	3.75	X	X	X					X		
	CG: Obesity prevention booklet	Obesity prevention booklet	0.25										
Bryant, 2011 ⁹⁵ Fair	IG1: WATCH IT	16 weekly 30-min individual sessions for support and encouragement and 1-hr PA group sessions; motivational enhancement and solution-focused approach to lifestyle change	24		X	X					X		
	CG: Waitlist	12 month waitlist control	0										
Coppins, 2011 ⁹⁶ Fair	IG1: Multi-disciplinary program	Two family-based multidisciplinary workshops (8 total hours) and 2 PA sessions/week	48	X		X							X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		during the school term; workshops involved separate group sessions for parents and children with some joint content											
	CG: Waitlist	Waitlist	0										
Davis, 2012 ¹¹⁷ Fair	IG1: Maintenance (Group classes)	Eight 90-min group classes for adolescents after completion of weight loss program, reinforcing the content previously covered; 4 additional motivational telephone calls to explore and resolve ambivalence; separate parent classes, asked to attend 2.	16			X					X		
	CG: Newsletters	Eight monthly newsletters and 2 check-in calls to confirm newsletter was received and verify contact information	0										
de Niet, 2012 ¹²⁰ Fair	IG1: Healthy lifestyle intervention + SMS	11-session comprehensive group healthy lifestyle intervention for children and parents + SMS messages	47.5	X			X						X
	IG2: Healthy lifestyle intervention only	11-session comprehensive group healthy lifestyle intervention for children and parents without SMS messages	47.5	X			X						X
DeBar, 2012 ⁶⁹ Good	IG1: Multicomponent behavioral intervention	Sixteen 90-min group developmentally-tailored multicomponent behavioral intervention sessions for adolescent girls; 12 with concurrent parent sessions; trained PCP to	36.5	X	X	X	X			X	X		X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		support behavioral weight management goals; 2 PCP meetings											
	CG: PCP Meeting + materials	Met with PCP, received packet of print materials, including parent guide, local resources, and suggested books and online resources for healthy lifestyle change.	0.25										
Epstein, 1985a ⁸² Fair	IG1: Family-based lifestyle + PA sessions	18-session comprehensive weight management group and individual family intervention and 18 phone calls, plus 24 exercise sessions for children	66.5	X			X	X	X	X		X	X
	IG2: Family-based lifestyle	18-session comprehensive weight management group and individual family intervention and 18 phone calls, with no exercise sessions	42.5	X			X	X	X	X		X	X
Epstein, 1985b ⁸³ Fair	IG1: Healthy lifestyle education + parent behavior change skills	25-session (including child PA sessions) family-based weight management group and individual family intervention covering diet and physical activity education + parent management techniques	64	X			X	X	X	X		X	X
	IG2: Healthy lifestyle education only	25-session (including child PA sessions) family-based weight management group and individual family intervention covering diet	64							X		X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		and physical activity education											
Epstein, 1994 ⁸⁴ Good	IG1: Individualized progression	32-session comprehensive family-based lifestyle group and individual family intervention with skills mastery approach, families systematically moving through 5 levels of goals for 7 behaviors, only moving to next goal when mastery achieved.	64	X			X	X	X	X		X	X
	IG2: Paced progression	32-session comprehensive family-based lifestyle group and individual family intervention without skills mastery approach; families systematically moving through 5 levels of goals for 7 behaviors, progressing in goals according to skill mastery rate of IG1	64	X			X	X	X	X		X	X
Epstein, 1995 ⁸⁵ Fair	IG1: Decrease sedentary+ increase physical activity	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for decreasing sedentary activity and increasing physical activity	40.5	X			X	X	X	X		X	X
	IG2: Increase physical activity	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for increasing physical activity	40.5	X			X	X	X	X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
	IG3: Decrease sedentary behavior	18-session comprehensive family-based weight management group and individual family intervention, participants reinforced for decreasing sedentary activity	40.5	X			X	X	X	X		X	X
Epstein, 2000a ¹²¹ Good	IG1: High dose sedentary activity reduction	20-session comprehensive family-based weight management group and individual family intervention, goal ≤10 hr/week of (non-schoolwork) sedentary activity	30	X			X	X	X	X		X	X
	IG2: High dose physical activity increase	20-session comprehensive family-based weight management group and individual family intervention, goal energy equivalent of 32.2 km (20 miles)/week increase in exercise	30	X			X	X	X	X		X	X
	IG3: Low dose sedentary activity reduction	20-session comprehensive family-based weight management group and individual family intervention, goal ≤20 hr/week of (non-schoolwork) sedentary activity	30	X			X	X	X	X		X	X
	IG4: Low dose physical activity increase	20-session comprehensive family-based weight management group and individual family intervention, goal energy equivalent of 16.1 km (10 miles)/week increase in exercise	30	X			X	X	X	X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Epstein, 2000b ¹²² Fair	IG1: Problem-solving for parent and child	20-session comprehensive family-based weight management group and individual family intervention with problem-solving for parent and child	30	X			X	X	X	X		X	X
	IG2: Problem-solving for child only	20-session comprehensive family-based weight management group and individual family intervention with problem-solving for child	30	X			X	X	X	X		X	X
	IG3: Family-based treatment	20-session comprehensive family-based weight management group and individual family intervention, no problem-solving	30	X			X	X	X	X		X	X
Epstein, 2004 ¹²³ Good	IG1: Reinforced reduced sedentary behaviors	20-session family-based comprehensive weight management program plus point system with rewards to reinforce meeting sedentary behavior targets (final goal ≤15 hrs/wk)	30	X			X	X	X	X		X	X
	IG2: Stimulus control of sedentary behaviors	20-session family-based comprehensive weight management program plus families encouraged to change home environment (e.g., limit access to TV), children reinforced for self-monitoring	30	X			X	X	X	X		X	X
Epstein, 2008b ¹²⁴ Fair	IG1: Increase healthy foods	13-session comprehensive family-based weight management group and individual family intervention, focus on increasing healthy foods	32.5	X			X	X	X	X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		IG2: Reduce high energy-dense foods	32.5	X			X	X	X	X		X	X
Epstein, 2014 ¹²⁵ Fair	IG1: Family-based treatment	15-session comprehensive family-based weight management group intervention, parents and children treated both separately and together	26.25	X			X	X	X	X		X	X
	IG2: Parent-child treated separately	15-session comprehensive family-based weight management group intervention, parents and children treated separately	30	X			X	X	X	X		X	
Estabrooks, 2009 ¹²⁶ Fair	IG1: Workbook + group sessions + IVR system	Family Connections self-help workbook + 2 group sessions with parents covering healthy lifestyle information and parenting skills + 10 telephone-based interactive voice response system calls	4	X						X		X	X
	IG2: Workbook + group sessions	Family Connections self-help workbook + 2 group sessions with parents covering healthy lifestyle information and parenting skills	4	X						X		X	X
	IG3: Workbook only	Family Connections self-help workbook only	NA	X						X		X	X
Garipagaoglu, 2009 ¹²⁷ Fair	IG1: Family-based group treatment	Seven 90-minute family-based group treatment sessions with multidisciplinary team	10.5	X						X			

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
	IG2: Individual treatment	Seven 30-minute individual family-based treatment sessions with multidisciplinary team	3.5	X						X			
Gerards, 2015 ⁹⁷ Fair	IG1: Lifestyle Triple P	10 90-minute group sessions and four individual 15-30 minute phone sessions aimed at changing parenting practices and styles with specific strategies around lifestyle change; workbook, recipes and active games booklet	16.5	X	X	X	X		X	X		X	X
	CG: Control	Brochures and internet-based knowledge quiz	0										
Goldfield, 2001 ¹²⁸ Fair	IG1: Individualized + group treatment	Thirteen group (40 minute) each for parents and children separately plus and individual (15-20 minute) family sessions in comprehensive weight management program	21.67	X			X	X	X	X		X	X
	IG2: Group treatment	Thirteen 60-minute comprehensive family-based weight management group and individual family sessions	21.67	X			X	X	X	X		X	X
Golley, 2007 ⁷⁰ Fair	IG1: Triple P + healthy lifestyle group	Four 2-hr group sessions + 7 individual phone calls aimed at changing parenting practices and general parenting styles, and 7-session behavioral healthy lifestyle group for	23.75	X		X	X		X	X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		parents and concurrent child PA sessions											
	IG2: Triple P	Four 2-hr group sessions and 7 individual phone followup sessions aimed at changing parenting practices and general parenting styles (no behavioral lifestyle component); workbook, and healthy lifestyle pamphlet	9.75	X			X		X			X	X
	CG: Waitlist	Waitlist + healthy lifestyle pamphlet	0.33										
Grey, 2004 ⁸⁶ Fair	IG1: Nutrition ed + PA sessions + coping skills training	16 weekly 45-minute culturally-tailored nutrition education sessions for parents and children together, 32 twice-weekly PA sessions for children, 12 followup phone calls + coping skills training	39	X	X							X	
	IG2: Nutrition ed + PA sessions	16 weekly 45-minute culturally-tailored nutrition education sessions for parents and children together, 32 twice-weekly PA sessions for children, 3 followup phone calls	36.75	X	X							X	
Hughes, 2008 ⁹⁸ Fair	IG1: Individualized behavior program	Eight individual family appointments w/ dietitian (7 outpatient, 1 home visit) over 6 months (total contact time of 5 hours) for family behavior change counseling.	5	X	X	X	X		X		X		X
	CG: Standard dietetic care	3-4 sessions of standard didactic dietetic care	1.5										

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Hystad, 2013 ¹²⁹ Fair	IG1: Structured weight management group	Fifteen 2-hour parent therapist-led group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietitian and physiotherapist.	65	X			X		X				X
	IG2: Parent-led support group	Fifteen 2-hour parent self-help group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietitian and physiotherapist.	65	X									
Israel, 1985 ⁸⁷ Fair	IG1: Behavioral weight reduction + parent training	Two 1-hour child management skills classes for parents, nine 90-minute weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions	35.5	X			X		X				X
	IG2: Behavioral-weight reduction	Nine 90-minute weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions	33.5	X			X		X				
Johnston, 2010 ¹³⁰ Fair	IG1: Instructor-led intervention	12-week daily (Mon-Fri) instructor-led healthy lifestyle intervention class during school hours with PA sessions and 12 weeks bi-weekly followup; monthly parent information meetings	47.25	X			X		X	X			

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
	IG2: Self-help intervention	Parent-guided self-help book	0	X			X	X	X	X		X	X
Johnston, 2013 ¹³¹ Fair	IG1: Instructor-led intervention	12-week daily (Mon-Fri) instructor-led healthy lifestyle intervention class during school hours with PA sessions and 12 weeks bi-weekly followup; monthly parent information meetings	47.25	X			X		X	X			
	IG2: Self-help intervention	Parent-guided self-help book	0	X			X	X	X	X		X	X
Kalarchian, 2009 ⁷¹ Fair	IG1: Family-based lifestyle intervention	Twenty 60-min separate adult and child group sessions including weekly family meeting with lifestyle coach; adult also set goals, modeled behavior change; 6 booster sessions (3 group, 3 phone)	43.75	X	X		X		X	X		X	
	CG: Nutrition consultation	2 nutrition consultation sessions to develop an individual nutrition plan based on Stoplight Eating Plan	1										
Kalavainen, 2007 ⁹⁹ Fair	IG1: Health-promoting lifestyle	15 90-min group sessions, parents and children mostly separate; parents targeted as main agents of change; interactive activities and PA for children; manuals for parents, workbooks for children and homework assigned	43.5	X				X		X		X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
	CG: Brief education + booklets	Two 30-minute individual sessions with child and school nurse (parent could also attend); booklets for families covered weight management and healthy lifestyle; workbook for children	1										
Larsen, 2015 ⁸⁸ Fair	IG1: Educational program + GP consultations	Three 3-hr group education sessions, monthly GP consultations for one year, then bi-monthly for one year; focus on lifestyle habits, diet, and PA	18										
	IG2: GP consultations	Monthly GP consultations for one year, then bi-monthly for one year; focus on lifestyle habits, diet, and PA	9										
Magarey, 2011 ⁸⁹ Fair	IG1: Triple P + healthy lifestyle group	4 2-hr group sessions and 4 individual phone followup sessions aimed at changing parenting practices and general parenting styles and 8-session behavioral healthy lifestyle group for parents and optional concurrent child PA sessions	33	X		X	X		X	X		X	X
	IG2: Healthy lifestyle group	Eight 90-minute group lifestyle support sessions and 4 phone calls for parents and optional concurrent child fun, non-competitive PA sessions.	25	X					X			X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
McCallum, 2007 ⁷² Good	IG1: LEAP	Four GP consultations using brief solution-focused family therapy for healthy lifestyle goals; 16-page folder of materials including topic sheets, wall chart, reward stickers, and shopping tips	1	X			X		X			X	
	CG: Usual care	Usual care	0										
Nemet, 2005 ¹⁰⁰ Fair	IG1: Dietitian + PA sessions	4 evening lectures for parents, 6 dietitian meetings, and twice-weekly PA sessions for 3 months	32.5	X						X		X	
	CG: Nutrition referral	Referred to nutritional consultation, encouraged to perform PA 3 times per week on their own	0.5										
Nguyen, 2012 ¹³² Fair	IG1: Loozit + additional therapeutic contact	Seven 75-minute weekly Loozit group sessions (Phase 1) separately for adolescents and parents; then adolescents attended 7 60-minute booster sessions, had 14 brief phone sessions and SMS messaging through 24 months	26.8	X	X		X					X	
	IG2: Loozit only	Seven 75-minute weekly Loozit group sessions (Phase 1) separately for adolescents and parents; then adolescents attended 7 60-minute booster sessions	24.5	X	X		X					X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Norman, 2015 ⁷³ Fair	IG1: Stepped-down Care	Brief PCP visits + "stepped-down" care tailored to progress of individuals; Step 1: 4 health ed visits + 8 calls, Step 2: 2 vists + 8 calls, Step 3: 4 calls	8.25	X			X	X		X			
	CG: Enhanced Usual Care	Enhanced usual care	0.75										
Nowicka, 2008 ¹⁰¹ Fair	IG1: Family Weight School	Four 4-hr family group comprehensive behavioral lifestyle meetings, emphasizing communication skills, mutual support, consistency, establishing appropriate limits; 10-min individual meeting with pediatrician each session	16	X	X								X
	CG: Waitlist	Waitlist	0										
Patrick, 2013 ¹⁰² Fair	IG1: Website + group sessions	Access to website and tutorials to promote weight loss and healthy behaviors + 12 monthly 90-minute group sessions for adolescents and parents and brief bi-monthly phone calls for adolescent	38	X			X	X	X				
	IG2: Website + SMS	Weekly check-in/reminder emails and access to website and tutorials to promote weight loss and healthy behaviors + 3 SMS messages weekly and option to contact health counselor as needed.	0	X			X	X	X				
	IG3: Website only	Weekly check-in/reminder emails and access to website and tutorials to	0	X			X	X	X				

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		promote weight loss and healthy behaviors.											
	CG: Usual care	Usual care	3										
Quattrin, 2014 ⁷⁴ Fair	IG1: Weight management education + additional parent contact	Sixteen 60-minute parent group sessions, 16 brief individual parent meetings, 13 phone calls for weight management education program, plus 16 child active game sessions	39.25	X			X		X	X		X	X
	CG: Weight management education	Sixteen 60-minute parent group sessions, 13 phone calls for weight management education program, plus 16 child active game sessions	32.25										
Raynor, 2012b ¹⁰³ Fair	IG1: TRADITIONAL + Growth Monitoring	Eight 45-minute parent group sessions covering behavioral strategies to increase PA and reduce sugar-sweetened beverage consumption; growth assessed at 0, 3, 6 months with accompanying letter providing anthropometric information and interpretation	6	X			X			X		X	X
	IG2: SUBSTITUTES + Growth Monitoring	Eight 45-minute parent group sessions covering behavioral strategies to increase low-fat milk and decrease TV as substitute behaviors; growth assessed at 0, 3, 6 months with accompanying letter providing anthropometric	6	X			X			X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		information and interpretation											
	CG: Monthly newsletters + growth monitoring	Monthly healthy diet and PA newsletter; growth assessed at 0, 3, and 6 months with accompanying letter providing anthropometric information with interpretation	0.25										
Reinehr, 2006 ¹⁰⁴ Fair	IG1: Obeldicks	Intensive year-long comprehensive program; 9-session parent group course, 6-session behavior therapy and nutrition education groups for children, weekly PA sessions, 6 individual family therapy sessions (more as needed)	77.5	X				X	X			X	
	CG: Distance control	Children who met eligibility criteria but whose families lived too far away to travel regularly to the obesity clinic.	0										
Reinehr, 2009 ¹⁰⁵ Fair	IG1: Obeldicks	Intensive year-long comprehensive program; 9-session parent group course, 6-session behavior therapy and nutrition education groups for children, weekly PA sessions, 3 individual	77.5	X				X	X			X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		family therapy sessions (more as needed)											
	CG: Distance control	Families who lived too far away and had no means of transportation	0.25										
Resnick, 2009 ⁷⁵ Fair	IG1: Materials + personal encounters	Five educational mailings over 30 weeks plus at least one home visit or phone call to discuss lifestyle topic of parent's choice.	1.7										
	CG: Materials only	Five educational mailings over 30 weeks	0										
Resnicow, 2005 ⁹⁰ Fair	IG1: High-intensity lifestyle intervention	20-26 weekly group behavioral sessions of a culturally tailored program for girls delivered in African American churches; 12 parental sessions, two-way paging device and MI calls	45.5	X	X						X		
	IG2: Moderate-intensity lifestyle intervention	6 monthly group behavioral sessions of a culturally tailored program for girls delivered in African American churches; 3 parental sessions	9										
Resnicow, 2015 ⁷⁶ Fair	IG1: PCP + RD MI	Four brief motivational interviewing (MI) counseling sessions by PCP + 6 MI counseling sessions from RD conducted over 2 years,	2.5	X	X	X	X				X		

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		targeting diet and activity behaviors											
	IG2: PCP MI	Four brief MI counseling sessions over 2 years conducted by PCP, targeting diet and activity behaviors	1	X	X	X	X				X		
	CG: Usual care	PCPs attended half-day session that included current treatment guidelines; otherwise routine PCP care and standard educational materials for parents	NR										
Saelens, 2013 ¹³³ Fair	IG1: Family-based tx with family-set goals	20 weekly 20-30 min individual family sessions and separate 40-50 min child and parent group sessions; MI-based style to encourage more family autonomy and self-efficacy around behavioral skills use	40	X	X		X		X	X	X		
	IG2: Family-based tx with study-set goals	20 weekly 20-30 min individual family sessions and separate 40-50 min child and parent group sessions; interventionist reinforced behavioral skills use and set weekly child and parent goals without family input	40	X			X		X	X			
Savoye, 2007 ¹⁰⁶ Fair	IG1: Bright Bodies	Twenty-six weekly nutrition education and behavioral management sessions using Smart Moves Workbook, twice-weekly	82.33	X					X	X		X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Stark, 2011 ¹⁰⁷ Fair		physical activity sessions tapering to twice-monthly after 6 months											
	CG: Semi-annual individual counseling	Two semi-annual sessions: diet and exercise counseling by dietitians and physicians along with brief psychological counseling with social worker	0.5										
	IG1: LAUNCH	Nine clinic-based 90-min comprehensive behavioral lifestyle group sessions for parents and children separately plus 9 home vis; vegetable taste tests, pedometers, parents received 2 weeks' worth of vegetables, child sessions included 15-min PA.	38.25	X			X		X	X		X	X
	CG: Enhanced standard of care	One 45-min meeting with pediatrician to discuss child's growth chart, provide healthy lifestyle advice, 1-page health food and activity brochure	0.75										
Stark, 2014 ¹⁰⁸ Fair	IG1: LAUNCH-clinic	Ten 90-min comprehensive behavioral lifestyle group sessions for parents and children separately; vegetable taste tests, pedometers, parents received 2 weeks' worth of vegetables, child sessions included 15-min of moderate-to-vigorous PA.	30	X			X		X	X		X	X

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
	CG: Enhanced standard of care	One 45-minute meeting with pediatrician to discuss child's growth chart, provide healthy lifestyle advice, 1-page health food and activity brochure	0.75										
Steele, 2012 ¹³⁴ Fair	IG1: Family-based behavioral group treatment	Ten 90-minute weekly "Positively Fit" group treatment sessions including nutrition/PA education and behavior therapy; parents and children met separately for most of session but jointly attended goal-setting sessions	28.3	X					X	X		X	
	IG2: Brief individual family intervention	Trim Kids: 3 60-minute individual family visits with a registered dietitian and manual with assigned reading	3	X			X	X	X	X		X	X
Stettler, 2014 ¹⁰⁹ Fair	IG1: Multiple-behavior change	Twelve 15-25 min sessions targeting healthy beverages, increased PA, and reduced sedentary activity, incorporating behavior change techniques	4	X			X		X	X		X	
	CG: Attention control (bullying prevention)	Twelve 15-25 min clinician, child, and parent sessions to help children develop strategies to improve friendship-making skills and anger management. Same schedule/contact time as IG conditions	4	X			X		X				

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
Taveras, 2011 ¹¹⁰ Good	IG1: MI + enhanced EMR and training	4 25-min in-person + 3 15-min phone motivational interviewing sessions with nurse practitioner. Pediatricians endorsed messages during well-child visits. Tailored materials, behavior monitoring tools, enhanced electronic medical record.	2.67	X		X	X				X		
	CG: Usual care	Usual care	0.5										
Taveras, 2015 ¹¹¹ Good	IG1: CDS+coaching	Computerized clinical decision support system with point of care prompts at well-child visit, motivational interview, pt materials + 4 phone motivational interviewing sessions by health coach and optional text msg program	1.25	X		X					X		
	IG2: CDS	Computerized clinical decision support system with point of care prompts at well-child visit, motivational interview, pt materials	0.25	X		X					X		
	CG: Usual care	Usual Care	0.25										
Taylor, 2015 ¹¹² Good	IG1: Tailored lifestyle support	One individual 1-2 hour multidisciplinary session with parents followed by 16 brief contacts for tailored behavioral lifestyle change support.	7.2	X	X							X	X
	CG: Brief feedback and advice	Two individual family appointments for generalized advice and feedback on child's habits,	1										

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		using publicly-available resources (45-75min total).											
Toruner, 2010 ⁷⁷ Fair	IG1: Weight-management program	School-based intervention consisting of seven 40-70 minute group child sessions, 2 parent group sessions and 30-50 minute individual parent counseling	9.75	X								X	
	CG: Waitlist	Waitlist control	0										
Van Grieken, 2013 ⁷⁸ Fair	IG1: Be Active Eat Right	Prevention protocol involving motivational interviewing during a well-child visit. 3 additional structured healthy lifestyle counseling sessions matched to parents' stage of change could be offered.	2	X							X		
	CG: Usual care	Parents informed of overweight status of their child, then usual care	0.5										
Vos, 2011 ¹¹³ Fair	IG1: Family-based multidisciplinary lifestyle intervention	Two individual family assessment and advice visits followed by 7 2.5-hr group comprehensive behavioral lifestyle meetings, parents and children usually separate, plus 2-3 booster group sessions yearly	46.25	X		X			X	X		X	X
	CG: Waitlist	Waitlist	0.25										
Wake, 2009 ⁷⁹ Good	IG1: LEAP-2	Four GP consultations using brief solution-focused family therapy for healthy lifestyle goals; 16-page folder of materials including topic sheets, wall	1	X			X		X			X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		chart, reward stickers, and shopping tips											
	CG: Usual care	Usual care	0										
Wake, 2013 ¹¹⁴ Good	IG1: HopSCOTCH	One hour-long family visit with obesity specialist team to develop plan and goals, followed by GP visits every 4-8 weeks using brief solution-focused techniques; web-based software (HopSCOTCH) used to track progress and link specialist team with GP	2.5	X			X	X					
	CG: Usual care	Usual care	NA										
Weigel, 2008 ¹¹⁵ Fair	IG1: Sea Lion Club	Twice weekly 45-60-min child group sessions for 12 months, including PA, dietary education, and coping strategies; 12 separate monthly 2-hour parent support meetings that included some parent-child activities	114.1				X						
	CG: Brief advice	Two pediatrician visits with parent and child that included written recommendations for PA, diet, and coping strategies and verbal explanation	1										
Wilfley, 2007 ¹¹⁸ Good	IG1: Combined maintenance group	20-session Family-based comprehensive weight management program + either behavioral skills or social facilitation maintenance	60	X			X		X	X		X	
	IG2: Behavioral skills maintenance	20-session Family-based comprehensive weight management program +	60	X			X		X	X		X	

Author, Year and Quality	Group	Description	Est hours	Goals & Planning	Collaborative Goals	Comparison of Outcomes	Self-Monitoring	Self-Monitoring	Contingent Reward	Stimulus Control	MI	Parental Modeling	Parenting Skills
		behavioral skills maintenance component											
	IG3: Social facilitation maintenance	20-session Family-based comprehensive weight management program + social facilitation maintenance component	60	X			X		X	X		X	
	CG: No maintenance	20-session Family-based comprehensive weight management program with no maintenance component	33.3	X			X		X	X		X	
Williamson, 2006 ¹¹⁶ Fair	IG1: Interactive behavior therapy	2-year internet-based family weight management program, including website access, 4 face-to-face counseling sessions during first 12 weeks and on-going email-based counseling, culturally tailored for African-American families.	4	X	X		X		X			X	
	CG: Passive health education	Access to educational website and 4 face-to-face counseling sessions with dietician during first 12 weeks, but were not prescribed behavioral tasks for weight loss.	4										

Abbreviations: CDS = clinical decision support; CG = control group; ed = education; EMR = electronic medical records; hr = hour; GP = general practice; IG = intervention group; IVR = interactive voice response; MI = motivational interview; min = minute; NR = not reported; PA = physical activity; PCP = primary care provider; RD = registered dietician; SMS = short messaging service; tx = treatment

Table 6. Detailed intervention descriptions of included studies

Author, Year and Quality	Group	Detailed Description
Banks, 2012 ⁸⁰ Fair	IG1: Primary care-based	Primary care-based intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (practice nurse, dietitian, and exercise specialist). At each appointment, the nurse weighed and measured the child, plotted data on growth chart, discussed overall progress and focused on factors facilitating or inhibiting weight loss. The family then saw the dietitian and exercise specialist where a sociocognitive approach was used that took into account social factors, specific family issues, and child's needs/wishes; emphasis on age-specific strategies and activities that were enjoyable, fostered an effort-benefit return, and developed confidence that could be supported by the family. Diet consultations used the 'Eatwell plate' showing proportions of different foods for a balanced diet.
	IG2: Hospital-based obesity clinic	Hospital-based childhood obesity clinic intervention consisting of 5 individual family appointments over 1 year conducted by multidisciplinary team (consultant, dietitian, and exercise specialist). Initial consultation was with the consultant (not further described) and family would see the dietitian and/or exercise specialist as directed by the consultant. A sociocognitive approach was used in dietitian and exercise specialist sessions that took into account social factors, specific family issues, and child's needs/wishes; emphasis on age-specific strategies and activities that were enjoyable, fostered an effort-benefit return, and developed confidence that could be supported by the family. Diet consultations used the 'Eatwell plate' showing proportions of different foods for a balanced diet.
Bathrellou, 2010 ¹¹⁹ Fair	IG1: Child-and-parent group	<p>12 developmentally-appropriate 60-minute weekly individual sessions followed by 6 monthly sessions and one additional booster 6 months later (month 15). Parents attended 2 nutrition sessions with a dietitian. Topics included dietary- and physical activity-related issues and individualized, realistic, and specific goals related to weekly topic were set. Dietary approach based on a non-dieting approach (complete meals, dietary quality, meal patterns, encouraging consumption of F/V, snacking, portion size, etc.). Children also encouraged to increase in physical activity and decrease in sedentary bx (e.g., budget of TV hours). CBT techniques included goal setting, self-monitoring, verbal reinforcement and sticker rewards (and reward larger than sticker for some children), problem-solving, food-related stimulus control, cognitive restructuring and relapse prevention. At each session, 3-5 individualized goals set which were monitored and reviewed (feedback); identified alternatives and barriers; age-appropriate rewards for quality rather than quantity of behavior.</p> <p>Parent acted as helpers: apart from attending two individual sessions w/ dietitian, they also participated in the last 10 minutes of each session where their cooperation was actively requested in supporting their child to implement set goals such as modifying environment. Parent input in establishing goals also permitted.</p>
	IG2: Child only	<p>12 developmentally-appropriate 60-minute weekly individual sessions followed by 6 monthly sessions and one additional booster 6 months later (month 15). Topics included dietary- and physical activity-related issues and individualized, realistic, and specific goals related to weekly topic were set. Dietary approach based on a non-dieting approach (complete meals, dietary quality, meal patterns, encouraging consumption of F/V, snacking, portion size, etc.). Children also encouraged to increase in physical activity and decrease in sedentary bx (e.g., budget of TV hours). CBT techniques included goal setting, self-monitoring, verbal reinforcement and sticker rewards (and reward larger than sticker for some children), problem-solving, food-related stimulus control, cognitive restructuring and relapse prevention. At each session, 3-5 individualized goals set which were monitored and reviewed (feedback); identified alternatives and barriers; age-appropriate rewards for quality rather than quantity of behavior.</p> <p>No parental involvement; parental help was not required unless child requested it.</p>

Author, Year and Quality	Group	Detailed Description
Berkowitz, 2012 ⁸¹ Fair	IG1: Group-based lifestyle modification program	Detailed print curriculum for family with 6 45-minute individual family clinic visits and 17 group child sessions with concurrent parent group sessions. Print curriculum asked children to consume nutritionally balanced diet of 1300-1500 kcal/day, increase PA to 60 min or 10,000 steps per day, and to decrease sedentary behaviors to <2 hours/day. Behavior change techniques included: self-monitoring, target goals, stimulus control, stress management, problem solving, contingency management, cognitive restructuring, and parental support. Six 45-minute individual family visits with health coach promoted adherence to goals plus 17 additional group child sessions with concurrent parent sessions to review progress in completing lessons from treatment manual, interactive discussions, and peer support.
	IG2: Individual family counseling + printed curriculum	Detailed print curriculum for family with 6 45-minute individual family clinic visits. Print curriculum asked children to consume nutritionally balanced diet of 1300-1500 kcal/day, increase PA to 60 min or 10,000 steps per day, and to decrease sedentary behaviors to <2 hours/day. Behavior change techniques included: self-monitoring, target goals, stimulus control, stress management, problem solving, contingency management, cognitive restructuring, and parental support. Six 45-minute individual family visits with health coach promoted adherence to goals; parents and teens instructed to read and complete lessons in treatment manual and review them together on weekly basis at home.
Berry, 2014 ⁹² Fair	IG1: Nutrition/exercise education and coping skills	Twelve weekly group sessions followed by 9 monthly group followup sessions, attended by both child and parent. Based on social cognitive theory to increase self-efficacy and improve health behaviors. Included skill development for parents and children in goal setting, problem solving, conflict resolution (including between parents and child over diet/nutrition issues), cognitive restructuring, and assertiveness training. Didactic and interactive hands-on and role playing activities. At weekly sessions, parents and children reported progress on previous week's goals and identified a goal for the following week. Parents expected to change their own health behaviors and act as role models for children. Phase 1, children and parents attended classes together, 12 sessions (60 minutes nutrition/exercise education and coping skills; 45 minutes physical activity). Received a pedometer. During Phase 2, children and parents met once a month for 9 months for 60 minutes of class and 45 minutes of exercise.
	CG: Waitlist	Received usual care and offered the nutrition/exercise education, coping skills training, and exercise intervention 18 months after enrollment
Bocca, 2012 ⁹³ Fair	IG1: Multidisciplinary intervention	6 30-minute sessions with dietician where a normocaloric diet was advised and personal goals set with feedback provided. Families advised to eat breakfast every morning, abstain from soft drinks, and have ≤ 3 snacks/day. 12 60-min group PA sessions focused on active lifestyle and mimicking elementary school exercise; motor skills taught and sessions aimed at having fun. Participants asked to reduce sedentary activities and parents asked to stimulate child's PA to 60 mins/day. 6 120-minute behavioral therapy sessions for parents focused on being a healthy role model, and using feasible goals and healthy rewards. Parents taught to change family attitudes, learn practical ways to remove food triggers, use sticker charts to motivate children, and know the difference between hunger and cravings.
	CG: Control	Children and parents followed-up by a pediatrician over period of 16 weeks. During this period, seen 3 times for 30 to 60 minutes each time. Information on healthy eating behavior was provided and they were advised to perform PA for 1 hour per day. Children were advised to play outside every day, walk or bike to school, and watch TV or play with computer at most 2 hours per day. In both groups, PA measured with a pedometer. Anthropomorphic measurements performed at BL, 16 weeks, and 12 months.
Broccoli, 2016 ⁹⁴ Good	IG1: Motivational Interviewing	Family pediatrician-led MI consisting of 5 individual meetings based on transtheoretical model of addiction and behavior change; child and parents always had to leave the meeting having agreed on two objectives (1 food, 1 physical activity); during each subsequent interview, degree of achievement of the objectives set at previous meeting assessed; objectives reinforced or redefined and recorded. Pediatricians attended 20-hr training course on motivational interviewing prior to study start.

Author, Year and Quality	Group	Detailed Description
	CG: Obesity prevention booklet	Received a booklet with the main information on obesity prevention, then usual care currently offered by pediatricians (i.e., opportunistic advice if the pediatrician is seeing the child for other reasons).
Bryant, 2011 ⁹⁵ Fair	IG1: WATCH IT	Encourage lifestyle changes by taking motivational enhancement and solution focused approach. Included 16 weekly 30-min individual appointments for child and parent together for encouragement, support and motivational counseling using HELP manual. Session included healthy diet and physical activity information as well as discussions on the degree to which behavior change is important to the individual, their confidence in their ability to achieve behavior change, the degree to which change is a priority; views the patient as the expert in "what works" for them. Activities make links between thoughts and emotional responses that contribute to overeating. 16 1-hr weekly group physical activity sessions. Optional further 4 or 8 months of continuing sessions offered. Group parenting sessions mentioned in source article (number NR, may be part of optional additional 4 to 8 months' treatment, unclear if offered in current study).
	CG: Waitlist	12 month waitlist control
Coppins, 2011 ⁹⁶ Fair	IG1: Multi-disciplinary program	Two family-based multidisciplinary Saturday morning workshops (8 total hours) and 2 PA sessions per week (1 hour/week) during the school term. Workshops involved separate group sessions for parents and children with some joint content. Siblings (6-14 years) encouraged to participate. Parents received information on childhood obesity, nutrition and healthy choices, problem solving around barriers to PA, internal and external food triggers, dealing with bullying and how to raise resilient children, and food labeling information with practical demonstrations. Children received practical cooking session with tasting, PA and healthy diet information, problem solving around bullying and body image, and rock-climbing, yoga and trampolining sessions. Weekly PA sessions included bikes, weights, circuits, trampolining and other sports.
	CG: Waitlist	Waitlist group received no intervention during first year; after 1 year, the IG and CG groups crossed over
Davis, 2012 ¹¹⁷ Fair	IG1: Maintenance (Group classes)	<p>Prior to randomization, participant completed either nutrition only (N) or nutrition + strength training (N+ST) classes that included a cooking component, a snack, nutrition lesson (focused on reducing sugar and increasing fiber intake), and a 45-minute strength training session (for those in N +ST) led by a certified personal trainer. Participants were encouraged to eat healthy and do strength training on their own at home throughout the entire program. All participants received a variety of cooking utensils and gadgets (cutting boards, apple cutters, etc.) throughout the program. Participants in the N+ST group also received resistance bands and an instructional video of exercises to do with the bands. Parents and children had separate classes. For current study, randomized adolescents attended 8 monthly 90-minute weight loss maintenance group classes, similar to those received during the 4-month intervention preceding this maintenance trial. Participants also received 4 motivational interviewing sessions over the phone and lasting approximately 15 minutes designed to help participants resolve ambivalence and engage in healthier eating and strength training in their own home.</p> <p>Parents were also offered separate monthly classes, which were held simultaneously with the teen group classes with the same curriculum that the youth were receiving. Parents were asked to attend a minimum of 2 classes.</p>
	CG: Newsletters	8 monthly newsletters that matched previous 4-month intervention group assignment (nutrition or nutrition plus strength training). Newsletters included dietary tips and recipes, information about benefits of strength training and sample exercises, and information on community resources. Participants were called twice to make sure newsletters were received and to verify contact information; no lifestyle content was delivered. Anthropomorphic measurements taken before and after maintenance phase.

Author, Year and Quality	Group	Detailed Description
de Niet, 2012 ¹²⁰ Fair	IG1: Healthy lifestyle intervention + SMS	<p>Eight 2.5-hour child cognitive behavioral group sessions followed by exercising and minimum of three parent sessions during the first 3 months. Child sessions involved 90 minutes devoted to healthy eating, exercise and strategies to deal w/ difficulties associated w/ eating or physical activity; used techniques such as goal-setting, problem solving, and self-regulation to address healthy eating and exercise behavior. Also addressed psychosocial aspects of obesity such as being picked on by peers. Last hour for exercise led by physiotherapist. Parent sessions focused on healthy lifestyle information and aimed to improve parent-child interactions by teaching parents how to support their child instead of controlling them, give positive feedback, and apply positive reinforcement. Three additional group sessions for parents and children provided at 6, 9, and 12 months after start as well as individual appointments (not further described). At parent sessions, parents learned about healthy diet, exercise, psychosocial aspects of obesity and risks of obesity. Taught parents how to support child w/ positive feedback and reinforcement.</p> <p>All pts received a mobile phone and asked to send weekly self-monitoring messages for 9 months (number of hours of physical activity, days of healthy eating, days felt happy). Could also used messages to communicate positive or negative life events. Template for feedback message chosen from a bank of messages, and tailored based on child's individual pattern of change via an algorithm. Also responded to extra text messages from youth. Feedback messages to promote social support, encourage/motivate, reinforce positive changes, and suggest/encourage behavior modification and self-management.</p>
	IG2: Healthy lifestyle intervention only	<p>Eight 2.5-hour child cognitive behavioral group sessions followed by exercising and minimum of three parent sessions during the first 3 months. Child sessions involved 90 minutes devoted to healthy eating, exercise and strategies to deal with difficulties associated with eating or physical activity; used techniques such as goal-setting, problem solving, and self-regulation to address healthy eating and exercise behavior. Also addressed psychosocial aspects of obesity such as being picked on by peers. Last hour for exercise led by physiotherapist. Parent sessions focused on healthy lifestyle information and aimed to improve parent-child interactions by teaching parents how to support their child instead of controlling them, give positive feedback, and apply positive reinforcement. Three additional group sessions for parents and children provided at 6, 9, and 12 months after start as well as individual appointments (not further described). At parent sessions, parents learned about healthy diet, exercise, psychosocial aspects of obesity and risks of obesity. Taught parents how to support child with positive feedback and reinforcement.</p>

Author, Year and Quality	Group	Detailed Description
DeBar, 2012 ⁶⁹ Good	IG1: Multicomponent behavioral intervention	16 90-minute group meetings; weekly for 3 months than biweekly during months 4 and 5 where teens were weighed, revised dietary and physical activity self-monitoring records. Telephone sessions offered if unable to attend sessions. Multicomponent intervention included change in dietary intake and eating patterns (e.g., decreasing portion sizes, limiting energy-dense foods, consume lower energy-dense foods); increasing physical activity by using developmentally tailored forms of exercise (e.g., exergaming equipment, yoga, strength training, pedometers, developing goal of 30-60 minutes at least 5 days per week, limiting screen time to 2 hours per day); addressing issues associated w/ obesity in adolescent girls (mood regulation, body image, self esteem, media education, sleep); and training the primary care physician to support behavioral weight management goals. Each sessions reviewed goals, problem solving to overcome barriers and challenges in increased activity. Specific behavioral and cognitive tools for coping included regular self monitoring of dietary intake, physical activity and screen time; stimulus control and environmental changes, stepwise goal-setting and problem solving; setting goals for increasing pleasant activities; and cognitive restructuring techniques to combat negative self-talk. Parents invited to separate weekly group meetings in first 3 months where they learned to support their daughter and address potential barriers to success; encourage appropriate teen autonomy and improve understanding of how parents' own attitudes, eating behavior, monitoring and comments may affect daughters. Adolescents met w/ their PCPs who were trained in motivational enhancement techniques at BL and 6 months where they received a health status summary and targeted areas of improvement (e.g., physical activity); PCPs encouraged to help pt select 1-2 of these targets.
	CG: PCP Meeting + materials	Received a packet of materials, including approaches to weight management, a parents' guide to help teens make healthy lifestyle changes, local resources for weight management and healthy activity, and suggested books and online materials on healthy lifestyle change. Met with PCP at study onset to encourage healthy lifestyle changes.
Epstein, 1985a ⁸² Fair	IG1: Family-based lifestyle + PA sessions	<p>8-week treatment program followed by 10 monthly maintenance sessions. Parents and children attended separate meetings and families were also seen individually by therapist before each meetings to review habit book, provide new materials and give feedback. Parents completed 18 phone calls between meetings to answer questions and review habit books.</p> <p>Traffic light diet; daily caloric intake of 900-1200 calories; rules to stay w/in caloric range and eat no more than four RED foods/week. Encouraged to remove RED foods from home. Behavioral techniques included self-monitoring for diet/PA and weight, praise, modeling, and contracting. For contracting, families deposited \$80 before treatment, which was returned based on participation. Also, parents contracted with children using a point-based system to earn non-monetary rewards for meeting weight loss, diet, and PA goals.</p> <p>Children met for exercise program an additional three mornings/week during initial 6 weeks of treatment; during monthly maintenance sessions, children and parents jointly participated in exercise program after separate meetings. Aerobic exercise program that included 10 minutes of stationary aerobic exercise, warm up games, and a 3-mile run/walk. Parents instructed to model and support program; parents walked once a week w/ therapist and instructed to walk for exercise two other times during the week w/ children. During maintenance phase, parents and children walked 3-miles three times/week.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: Family-based lifestyle	<p>8-week treatment program followed by 10 monthly maintenance sessions. Parents and children attended separate meetings and families were also seen individually by therapist before each meetings to review habit book, provide new materials and give feedback. Parents completed 18 phone calls between meetings to answer questions and review habit books.</p> <p>Traffic light diet; daily caloric intake of 900-1200 calories; rules to stay within caloric range and eat no more than four RED foods/week. Encouraged to remove RED foods from home. Behavioral techniques included self-monitoring for diet and weight, praise, modeling, and contracting. For contracting, families deposited \$80 before treatment, which was returned based on participation. Also, parents contracted with children using a point-based system to earn non-monetary rewards for meeting weight loss, diet, and PA goals.</p>
Epstein, 1985b ⁸³ Fair	IG1: Healthy lifestyle education + parent behavior change skills	<p>Three meetings per week (two morning sessions for child, one evening session with separate child and parent meetings) for 5 weeks plus 1 introductory session, followed by nine monthly maintenance sessions. Traffic light diet; daily caloric intake of 900 to 1,000 (children < 7 years) or 1,200 (older children and parents) calories; rules to stay w/in caloric range and eat no more than four RED foods/week. Encouraged to remove RED foods from home. Information on exercise designed to increase caloric expenditure above each individual's typical daily expenditure. Morning child sessions included free play period during which active play was verbally reinforced during some weeks, and structured play periods interspersed with classroom activities and lunch. Cooper Aerobic Point System used, family instructed to exercise six times/week and given activity point goals; point goals increased twice over a 12 week period.</p> <p>Parent management techniques and social learning principles including self-monitoring (food, exercise, and daily weight record books for parents and children), praise, modeling, contracting. For contracting, families deposited \$90 before treatment, which was returned based on participation. Also, parents contracted with children using a point-based system to earn non-monetary rewards for meeting weight loss, diet, and PA goals.</p>
	IG2: Healthy lifestyle education only	<p>Three meetings per week (two morning sessions for child, one evening session with separate child and parent meetings) for 5 weeks plus 1 introductory session, followed by nine monthly maintenance sessions. Traffic light diet; daily caloric intake of 900 to 1,000 (children < 7 years) or 1,200 (older children and parents) calories; rules to stay w/in caloric range and eat no more than four RED foods/week. Encouraged to remove RED foods from home. Morning child sessions included free play period during which active play was verbally reinforced during some weeks, and structured play periods interspersed with classroom activities and lunch. Information on exercise designed to increase caloric expenditure above each individual's typical daily expenditure. Cooper Aerobic Point System used, family instructed to exercise six times/week and given activity point goals; point goals increased twice over a 12 week period. No behavioral treatment. Given additional health information (e.g., label reading, shopping, health risks of obesity)</p>

Author, Year and Quality	Group	Detailed Description
Epstein, 1994 ⁸⁴ Good	IG1: Individualized progression	<p>26 weekly meetings and 6 monthly meetings with families systematically moving through 5 levels of goals for 7 behaviors, only moving to next goal when mastery achieved. Program included weight measurement and a didactic lecture focused on weight control or behavior change; all participants provided same information regarding self-monitoring, diet, exercise, training in behavior management and parenting education. Subjects progressed through treatment at their own rate, based on mastery of information and behavioral skills, and were reinforced based on individual progress. Behavioral components included positive and negative reinforcement to increase appropriate behavior, modeling, stimulus control, contracting, response cost and punishment, and problem-solving. Quizzes for parents and children, lottery for parents with entries based on parent skills mastery. Manualized modules (22 in total) with a 5-level skill mastery system with specific goals for each level, in 7 areas: weight loss, nightly parent-child meetings to reinforce child behavior change, entries on a weight graph, calories, RED foods and activities; parents also had goals for praise statements and stimulus control. Families met w/ staff member to review progress and determine if they could advance to next level.</p> <p>Traffic Light Diet w/ caloric goals from 900-1800 (Level 1) to 900-1200 (Level 4) then to maintain (Level 5). Restrict RED foods from no restrictions (Level 1) to 7 RED foods/week (Level 5). Exercise goals from 50 expected calories per day/ 7 days per week (Level 2) to 300 calories/day, 5 days per week (Level 5).</p>
	IG2: Paced progression	<p>26 weekly meetings and 6 monthly meetings with families systematically moving through 5 levels of goals for 7 behaviors, and movement to next goal level set on basis of achievement in IG1. Program included weight measurement and a didactic lecture focused on weight control or behavior change; all participants provided same information regarding self-monitoring, diet, exercise, training in behavior management and parenting education. Subjects' progression through treatment was yoked to the median progress in IG1. Behavioral components included positive and negative reinforcement to increase appropriate behavior, modeling, stimulus control, contracting, response cost and punishment, and problem-solving. Quizzes for parents and children, lottery for parents with entries not contingent attendance rather than skill level. Manualized modules (22 in total) with a 5-levels of specific goals in 7 areas: weight loss, nightly parent-child meetings (without instruction for reinforcement), entries on a weight graph, calories, RED foods and activities; parents also had goals for praise statements and stimulus control. Families met w/ staff member to review progress and determine if they could advance to next level.</p> <p>Traffic Light Diet with caloric goals from 900-1800 (Level 1) to 900-1200 (Level 4) then to maintain (Level 5). Restrict RED foods from no restrictions (Level 1) to 7 RED foods/week (Level 5). Exercise goals from 50 expected calories per day/ 7 days per week (Level 2) to 300 calories/day, 5 days per week (Level 5).</p>

Author, Year and Quality	Group	Detailed Description
Epstein, 1995 ⁸⁵ Fair	IG1: Decrease sedentary+ increase physical activity	<p>16 weekly individual family and separate parent and child group meetings of comprehensive family-based program followed by two monthly meetings. Mastery approach used to change lifestyle behaviors and learn behavioral management principles, with graded goals embedded in detailed treatment manual with quizzes to check knowledge. Parents and children were together weighed and counseled by therapist to review habit books, provide feedback, and give earned contract rewards, then attended separate group meetings. Parents also trained to negotiate and write contracts w/ children. Traffic Light Diet w/ instruction to consume 1000-1200 calories/day, limit RED foods to ≤ 7 per week, and to maintain balanced nutrient diet; no caloric restriction for normal weight parents but asked to limited RED foods. Behavioral principles included self-monitoring of weight, diet, sedentary activities, and physical activity; stimulus control; and reinforcement, including praise and reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met).</p> <p>Received information positive effects of physical activity and negative effects of sedentary behavior, and participants reinforced for both increasing active and decreasing sedentary behaviors. Sedentary goal to decrease from 35 hours or less per week to 15 hours or less per week, decreasing in 5-hour increments. Physical activity goal to increase from 30 points per week to 150 points per week, increased in 30-point increments. 10 points equivalent to 100-calorie expenditure for a 150-pound person.</p>
	IG2: Increase physical activity	<p>16 weekly individual family and separate parent and child group meetings of comprehensive family-based program followed by two monthly meetings. Mastery approach used to change lifestyle behaviors and learn behavioral management principles, with graded goals embedded in detailed treatment manual with quizzes to check knowledge. Parents and children were together weighed and counseled by therapist to review habit books, provide feedback, and give earned contract rewards, then attended separate group meetings. Parents also trained to negotiate and write contracts w/ children. Traffic Light Diet w/ instruction to consume 1000-1200 calories/day, limit RED foods to ≤ 7 per week, and to maintain balanced nutrient diet; no caloric restriction for normal weight parents but asked to limited RED foods. Behavioral principles included self-monitoring of weight, diet, sedentary activities, and physical activity; stimulus control; and reinforcement, including praise and reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met).</p> <p>Received information positive effects of physical activity and negative effects of sedentary behavior, and participants reinforced only for increasing active behaviors, with goal to increase from 30 points per week to 150 points per week, increased in 30-point increments. 10 points equivalent to 100-calorie expenditure for a 150-pound person.</p>

Author, Year and Quality	Group	Detailed Description
	IG3: Decrease sedentary behavior	<p>16 weekly individual family and separate parent and child group meetings of comprehensive family-based program followed by two monthly meetings. Mastery approach used to change lifestyle behaviors and learn behavioral management principles, with graded goals embedded in detailed treatment manual with quizzes to check knowledge. Parents and children were together weighed and counseled by therapist to review habit books, provide feedback, and give earned contract rewards, then attended separate group meetings. Parents also trained to negotiate and write contracts w/ children. Traffic Light Diet w/ instruction to consume 1000-1200 calories/day, limit RED foods to ≤ 7 per week, and to maintain balanced nutrient diet; no caloric restriction for normal weight parents but asked to limited RED foods. Behavioral principles included self-monitoring of weight, diet, sedentary activities, and physical activity; stimulus control; and reinforcement, including praise and reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met).</p> <p>Received information positive effects of physical activity and negative effects of sedentary behavior, and participants reinforced for decreasing sedentary behaviors. Sedentary goal to decrease from 35 hours or less per week to 15 hours or less per week, decreasing in 5-hour increments.</p>
Epstein, 2000a ¹²¹ Good	IG1: High dose sedentary activity reduction	<p>16 weekly meetings, 2 biweekly meetings, 2 monthly meeting. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, specific activity program, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume btwn 4184-5021 kJ/day, limit RED foods to 10 or fewer per week and maintain nutrient balanced diet; when reached nonobese, calories increased 418 kJ until weight gain occurred then maintained. Nonoverweight parents had no caloric restrictions but asked to limited RED foods. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation. Pre-planning was taught to facilitate decision making and problem-solving in difficult situations.</p> <p>Decrease targeted sedentary activity to 10 hours per week and were reinforced for reducing sedentary bx that compete w/ being active or set the occasion for eating (watching TV, videos, computer games, talking on the phone or board games); sedentary activities could be substituted w/ nontargeted ones. School- and homework not targeted.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: High dose physical activity increase	<p>16 weekly meetings, 2 biweekly meetings, 2 monthly meeting. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, specific activity program, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume btwn 4184-5021 kJ/day, limit RED foods to 10 or fewer per week and maintain nutrient balanced diet; when reached nonobese, calories increased 418 kJ until weight gain occurred then maintained. Nonoverweight parents had no caloric restrictions but asked to limited RED foods. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation. Pre-planning was taught to facilitate decision making and problem-solving in difficult situations.</p> <p>Increase physical activity equivalent to the expenditure of 32.2 km per week and were reinforced for increasing physical activity in addition to those engaged in at the onset of the program. Physical activities done as part of the school or work day were not counted in goals.</p>
	IG3: Low dose sedentary activity reduction	<p>16 weekly meetings, 2 biweekly meetings, 2 monthly meeting. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, specific activity program, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume btwn 4184-5021 kJ/day, limit RED foods to 10 or fewer per week and maintain nutrient balanced diet; when reached nonobese, calories increased 418 kJ until weight gain occurred then maintained. Nonoverweight parents had no caloric restrictions but asked to limited RED foods. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation. Pre-planning was taught to facilitate decision making and problem-solving in difficult situations.</p> <p>Decrease targeted sedentary activity to 20 hours per week and were reinforced for reducing sedentary bx that compete w/ being active or set the occasion for eating (watching TV, videos, computer games, talking on the phone or board games); sedentary activities could be substituted w/ nontargeted ones. School- and homework not targeted.</p>

Author, Year and Quality	Group	Detailed Description
	IG4: Low dose physical activity increase	<p>16 weekly meetings, 2 biweekly meetings, 2 monthly meeting. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, specific activity program, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume btwn 4184-5021 kJ/day, limit RED foods to 10 or fewer per week and maintain nutrient balanced diet; when reached nonobese, calories increased 418 kJ until weight gain occurred then maintained. Nonoverweight parents had no caloric restrictions but asked to limited RED foods. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation. Pre-planning was taught to facilitate decision making and problem-solving in difficult situations.</p> <p>Increase physical activity equivalent to the expenditure of 16.1 km per week and were reinforced for increasing physical activity in addition to those engaged in at the onset of the program. Physical activities done as part of the school or work day were not counted in goals.</p>
Epstein, 2000b ¹²² Fair	IG1: Problem-solving for parent and child	<p>16 weekly meetings, 2 monthly meetings, followup treatment at 12 and 24 months. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 1200 calories/day, but adjusted if pts lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation.</p> <p>Didactic problem solving training in group sessions for parents and children. Group leaders and therapists used problem-solving methods when a question was asked. Provided problem-solving worksheets and homework.</p>
	IG2: Problem-solving for child only	<p>16 weekly meetings, 2 monthly meetings, followup treatment at 12 and 24 months. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 1200 calories/day, but adjusted if pts lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation.</p> <p>Didactic problem solving training in group sessions for children only. Group leaders and therapists used problem-solving methods when a question was asked. Provided problem-solving worksheets and homework.</p>

Author, Year and Quality	Group	Detailed Description
	IG3: Family-based treatment	<p>16 weekly meetings, 2 monthly meetings, followup treatment at 12 and 24 months. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 1200 calories/day, but adjusted if pts lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, contracting. Contracting included reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met) and families depositing \$75 before treatment, which was returned based on participation.</p> <p>No problem solving; group leaders and therapists used didactic methods to address problems to make the contrast with problem solving groups as distinct as possible. Similar homework assignments but not based on problem-solving.</p>
Epstein, 2004 ¹²³ Good	IG1: Reinforced reduced sedentary behaviors	<p>16 weekly meetings, 2 biweekly meetings and 2 monthly meetings during 6-month intensive treatment. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 800-1200 calories/day with goal to reduce number of RED foods per week to 15 or fewer, but calories adjusted if participants lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, and reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met).</p> <p>Target to reduce sedentary activity to 15 or fewer hours per week. Provided points for reducing sedentary behavior to no more than 15 hours per week; initial goals of 25, 20, and 15 hours per week were rewarded. Praise and contract goals used. Reinforcement contingent on reducing target sedentary behaviors.</p>
	IG2: Stimulus control of sedentary behaviors	<p>16 weekly meetings, 2 biweekly meetings and 2 monthly meetings during 6-month intensive treatment. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 800-1200 calories/day with goal to reduce number of RED foods per week to 15 or fewer, but calories adjusted if participants lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, reciprocal contracting (parents provide mutually agreed-on reinforcers for children, and children provide reinforcers for parents when behavioral criteria are met).</p> <p>Target to reduce sedentary activity to 15 or fewer hours per week. Instructed to change environment and set rules to prevent children from engaging in sedentary behaviors. Received additional suggestions to aid behavior change such as posting screen time limits/rules and unplugging devices. Participants positively reinforced for recording sedentary behavior, not for behavior change.</p>

Author, Year and Quality	Group	Detailed Description
Epstein, 2008b ¹²⁴ Fair	IG1: Increase healthy foods	<p>Weekly meetings for 2 months, biweekly for 2 months, and 1 monthly meeting; included group and individual sessions for parents and children totaling 1.5 hours. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 1000-1500 calories/day with goal to reduce number of RED foods per week to 15 or fewer, but calories adjusted if participants lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Physical activity goal $\geq$ 60 minutes of moderate-to-vigorous exercise per day for 6 days per week; shaped in 15 minute increments beginning at 15 minutes of moderate-to-vigorous exercise per day. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, problem-solving, and contingent reinforcement through point system.</p> <p>Goals were increasing F/V intake by at least 1 serving/day above normal consumption, increased to at least 5 servings per day after two weeks; at least two low-fat dairy servings per day. Stimulus control such as arranging food environment, increasing accessibility, serving/buying healthier foods, and not purchasing less health foods, food preparation and eating out behaviors. Parents encouraged to model healthy behaviors and provide praise.</p>
	IG2: Reduce high energy-dense foods	<p>Weekly meetings for 2 months, biweekly for 2 months, and 1 monthly meeting; included group and individual sessions for parents and children totaling 1.5 hours. Workbooks included introduction to weight control, self monitoring, Traffic Light Diet, lifestyle physical activity, behavior change techniques and maintenance. At each meeting, participants were weighed, met individually with therapist for 15-30 min where progress reviewed and then attended separate 30-minute parent and child group meetings. Children to consume 1000-1500 calories/day with goal to reduce number of RED foods per week to 15 or fewer, but calories adjusted if participants lost too much weight too quickly; if reach non-obese range, maintenance calorie level followed. No caloric restriction on non-overweight parents but asked to reduce RED foods and increase physical activity. Physical activity goal $\geq$ 60 minutes of moderate-to-vigorous exercise per day for 6 days per week; shaped in 15 minute increments beginning at 15 minutes of moderate-to-vigorous exercise per day. Behavior change techniques included self-monitoring (food, exercise, and daily weight record books for parents and children), praise, parental modeling, pre-planning, problem-solving, and contingent reinforcement through point system.</p> <p>Goal of decreasing intake of high sugar (RED) foods by at least two/day below usual consumption, with final goal of no more than two RED foods per day. Stimulus control suggestions reducing purchasing of RED foods, altering food preparation, and limiting eating out.</p>

Author, Year and Quality	Group	Detailed Description
Epstein, 2014 ¹²⁵ Fair	IG1: Family-based treatment	<p>15 60-minute sessions (12 weekly sessions, two biweekly sessions and 1 monthly session). Each session consisted of separate large groups for parents and children (45-50 minutes) and small group counseling w/ 3-4 families and a case manager (15-20 minutes).</p> <p>Traffic Light Diet, lifestyle exercise program, and behavior change that focuses on self-monitoring, stimulus control, problem solving, and parenting. Goal to maintain daily caloric intake 1,000-1,500 calories per day, maintain nutritionally balanced diet, with final goal of reducing to two RED foods per day; caloric intake adjusted if reached nonobese range and encouraged to maintain weight. Instructed about benefits physical activity and encouraged to increase physical activity (initial goal additional 10 minutes of MVPA per day increasing to 60 minutes per day at least 5 days per week), decrease sedentary behaviors and increase other healthy lifestyle activity. Self-monitoring of weight, diet and activity; taught pre-planning and problem solving. Home-based point system for reinforcement based on behavior change. Manual provided with program materials and modules; topics discussed in larger groups while smaller group sessions designed to identify behaviors that influence weight change, evaluate goals, problem solve and preplan to meet goals. Parents trained on assisting child, parental modeling, positive reinforcement (home-based point system for goal attainment), and praise.</p>
	IG2: Parent-child treated separately	<p>15 60-minute sessions (12 weekly sessions, two biweekly sessions and 1 monthly session). Each session consisted of large groups for parents and children (45-50 minutes) and separate small group counseling w/ 3-4 families and a case manager (15-20 minutes).</p> <p>Traffic Light Diet, lifestyle exercise program, and behavior change that focuses on self-monitoring, stimulus control, problem solving but with no parenting component. Goal to maintain daily caloric intake 1,000-1,500 calories per day, maintain nutritionally balanced diet, with final goal of reducing to two RED foods per day; caloric intake adjusted if reached nonobese range and encouraged to maintain weight. Instructed about benefits physical activity and encouraged to increase physical activity (initial goal additional 10 minutes of MVPA per day increasing to 60 minutes per day at least 5 days per week), decrease sedentary behaviors and increase other healthy lifestyle activity. Self-monitoring of weight, diet and activity; taught pre-planning and problem solving. Home-based point system for reinforcement based on behavior change.</p> <p>Manuals provided but did not focus on changes that would be coordinated between parent and child. Parents and children weighed and attended group sessions separately. Different locations for separate child and parent group sessions. Large group lectures and smaller group sessions designed to identify behaviors that influence weight change, evaluate goals, problem solve and preplan to meet goals. Parent groups focused on adult weight loss techniques. Small and large group sessions for child focused on changes to generate weight loss. Handouts provided to parents about what the child group covered.</p>
Estabrooks, 2009 ¹²⁶ Fair	IG1: Workbook + group sessions + IVR system	<p>Family Connection workbook, two small-group (10-15 parents) sessions w/ a registered dietitian (2 hours each, spaced 1 week apart) that covered behavioral/parenting skills and knowledge (including limit setting, effective communication, and role modeling), and 10 automated interactive voice response tailored followup sessions. Telephone followup calls commenced 1 week after the final group session. Participant responses and branching logic used to determine content of each call. Previous week's goal achievement rated by parent then given options of hearing tips related to goal's topic and select intervention content. Call concluded w/ a goal-setting procedure. Sixth call provided parents w/ the 5As model and parents trained to lead family through regular goal setting related to physical activity and eating. Calls 7-10 reinforced information delivered in the initial six calls.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: Workbook + group sessions	Family Connection self-help workbook and two small-group (10-15 parents) sessions w/ a registered dietitian (2-hour each, spaced 1 week apart) delivered by dietitian. First session focused on behavioral health skills and knowledge of weight, nutrition and physical activity. Key parenting skills: limit setting, effective communication, role modeling. Final session integrated knowledge from first session to address action plan experiences and strategies for restructuring the home environment. Sessions concluded w/ role playing, problem solving and action plan development (first session) and changes to home environment (final session) that would facilitate healthy eating and physical activity.
	IG3: Workbook only	Workbook only for parent. 61-pages to promote increase in physical activity and F/V consumption, decrease SSBs and sedentary activities. Part 1 targeted 3 days of intervention, Part 2 targeted 2 days, each w/ specific homework assignments. Encouraged to complete workbook in 5 days in one week. Homework intended to encourage lasting changes in families.
Garipagaoglu, 2009 ¹²⁷ Fair	IG1: Family-based group treatment	3-month weight control program for children that included seven 90 min training sessions (lectures provided by dietitians and physicians) at 2 week intervals adapted from the family-based behavioral treatment of obesity by Epstein, the weight control program of Texas Children's Hospital, and practiced by a multidisciplinary team. Sessions attended by at least 1 parent. Goal to induce healthy eating behavior, decrease sedentary habits. First session defined nutrition, diet behavior modifications, and feedback; stated motivation as important for weight loss and role of family required to battle obesity. Subsequent sessions devoted to nutritional education (e.g., food pyramid). Content included making an activity plan, controlling the environment (instead of letting it control you), positive thinking. Participants received a balanced hypocaloric diet (30% calorie deficit from reported intake or 15% less than estimated daily required intake).
	IG2: Individual treatment	3-month weight control program for children that included seven 30 minute individual training sessions (lectures provided by dietitians and physicians) at 2 week intervals adapted from the family-based behavioral treatment of obesity by Epstein, the weight control program of Texas Children's Hospital, and practiced by a multidisciplinary team. Sessions attended by at least 1 parent. Goal to induce healthy eating behavior, decrease sedentary habits. First session defined nutrition, diet bx modifications, and feedback; stated motivation as important for weight loss and role of family required to battle obesity. Subsequent sessions devoted to nutritional education (e.g., food pyramid). Pts received a balanced hypocaloric diet (30% calorie deficit from reported intake or 15% less than estimated daily required intake).
Gerards, 2015 ⁹⁷ Fair	IG1: Lifestyle Triple P	14 week parent-only program with 10 90-minute group sessions and four individual 15-30 minute phone sessions. Aimed at changing parenting practices and general parenting styles; used active skills training methods based on self-regulation. Parents individually formulated goals in the first session and were instructed in the following strategies: positive parenting skills, modeling, stimulus control, shopping and cooking, behavior charts/monitoring, managing behavior and using rewards. Telephone sessions provided parents individualized support in implementing strategies at home. Materials included a parent workbook, recipes, and active games booklet.
	CG: Control	2 brochures (1 on healthy nutrition and PA and 1 on positive parenting) and a short internet-based knowledge quiz (sent via email) including tailored advice and suggestions for active exercises at home.

Author, Year and Quality	Group	Detailed Description
Goldfield, 2001 ¹²⁸ Fair	IG1: Individualized + group treatment	<p>13 40-minute group sessions (8 weekly, 4 biweekly, 1 monthly), parent and child sessions conducted separately. Participants received parent or child manual w/ modules on diet, activity, behavior change techniques, parenting, coping w/ psychosocial problems (teasing, body image concerns). Used mastery-based approach to increase/add goals as material mastered. Traffic Light Diet w/ instruction to consume 1000-1200 calories/day, shaping in reduction in RED foods to no more than 15 per week, and to maintain a nutrient balanced diet. When weight reached the non-obese range, instructed to eat an additional 100 calories/day until weight gain occurred, then to maintain that caloric intake for maintenance. Non-overweight parents had no caloric restrictions but asked to limit RED foods. Information on food labels and shopping provided. Written manuals on physical activity. Reinforcement for increasing physical activity of moderate intensity or higher. Goals began at 30 minutes/week and increased by 30 minutes increments each time the goals were met, ultimate goal 180 minutes per week performed at moderate intensity or higher. Self-monitoring, stimulus control (e.g., keep RED foods out of home, increase access to exercise equipment), parental modeling, reinforcement (praise, point system for behavior change and weight loss).</p> <p>15-20 minute individual session w/ therapist and 40 minute of group therapy. Individual therapy designed to help pts identify the behaviors that influenced weight changes, determine accuracy of self-monitoring, evaluate goals and reinforcers earned, performance feedback, and problem solving.</p>
	IG2: Group treatment	<p>13 60-minute group sessions (8 weekly, 4 biweekly, 1 monthly), parent and child sessions conducted separately. Participants received parent or child manual w/ modules on diet, activity, behavior change techniques, parenting, coping w/ psychosocial problems (teasing, body image concerns). Used mastery-based approach to increase/add goals as material mastered. Traffic Light Diet w/ instruction to consume 1000-1200 calories/day, shaping in reduction in RED foods to no more than 15 per week, and to maintain a nutrient balanced diet. When weight reached the non-obese range, instructed to eat an additional 100 calories/day until weight gain occurred, then to maintain that caloric intake for maintenance. Non-overweight parents had no caloric restrictions but asked to limit RED foods. Information on food labels and shopping provided. Written manuals on physical activity. Reinforcement for increasing physical activity of moderate intensity or higher. Goals began at 30 minutes/week and increased by 30 minutes increments each time the goals were met, ultimate goal 180 minutes per week performed at moderate intensity or higher. Self-monitoring, stimulus control (e.g., keep RED foods out of home, increase access to exercise equipment), parental modeling, reinforcement (praise, point system for behavior change and weight loss).</p> <p>Group therapy only, 60 minutes. Children brought to parent group session for 15-20 minutes for collaboration on goals.</p>
	IG1: Triple P + healthy lifestyle group	<p>Positive Parenting Program (Triple P) (4 weekly 2-hour group sessions with 7 15-20 minute individual followup calls) followed by 7 group lifestyle support sessions for parents and concurrent child PA sessions. Lifestyle sessions focused on knowledge and skills including family-focused healthy eating including specific food recommendations, monitoring, label reading, snacks, modifying recipes, being active, and roles and responsibilities about eating, managing appetite, self-esteem and teasing. While parents attended group sessions, children attended supervised PA sessions focused on fun aerobic games designed for play and easily replicated at home; PA sessions were diversional rather than interventional. Triple P parenting component aimed at changing parenting practices and general parenting styles; used active skills training methods based on self-regulation. Core parenting skills included: parent-child relationship enhancement, encouraging desirable behavior, teaching new skills and behaviors, managing misbehavior, preventing problems in high-risk situations, self-regulation, mood management and coping, partner support and communication. Telephone sessions provided parents individualized support in implementing strategies at home. Materials included standard Triple P resources (workbook and video) and a healthy lifestyle pamphlet.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: Triple P	Positive Parenting Program (Triple P): 4 weekly 2-hour group sessions with 7 15-20 minute individual followup calls. Aimed at changing parenting practices and general parenting styles; used active skills training methods based on self-regulation. Core parenting skills included: parent-child relationship enhancement, encouraging desirable behavior, teaching new skills and behaviors, managing misbehavior, preventing problems in high-risk situations, self-regulation, mood management and coping, partner support and communication. Lifestyle-specific strategies not addressed. Telephone sessions provided parents individualized support in implementing strategies at home. Materials included standard Triple P resources (workbook and video shown during session) and a healthy lifestyle pamphlet.
	CG: Waitlist	Waitlist control for 12 months; healthy-lifestyle pamphlet and 3-4 telephone calls for retention purposes (content not specified)
Grey, 2004 ⁸⁶ Fair	IG1: Nutrition ed + PA sessions + coping skills training	16-week after school program involving weekly nutrition education classes for parents and children and twice-weekly physical activity training sessions for children. Nutrition education was family-centered culturally sensitive interactive nutrition curriculum to slow weight gain and improve glucose metabolism (45 minutes weekly). Non-diet approach to incorporate regular meals (nutritious, portion size) and creation of weekly goals. Physical activity two days per week for 45-minutes and encouraged children to partner w/ parent an additional 3 days/week to increase physical activity and decrease sedentary behaviors. Coping skills training taught by registered dietitian in nutrition classes that included culturally sensitive weight management materials for skills learning, problem-solving, self-reflection, and goal setting. During summer, advanced practice nurse and dietitian called pts each week to reinforce weekly nutrition/exercise goals and coping skills. Encouraged to set short- and long-term goals, attend summer camp or local sports program. Participants received positive feedback on each call.
	IG2: Nutrition ed + PA sessions	16-week after school program involving weekly nutrition education classes for parents and children and twice-weekly physical activity training sessions for children. Nutrition education was family-centered culturally sensitive interactive nutrition curriculum to slow weight gain and improve glucose metabolism (45 minutes weekly). Non-diet approach to incorporate regular meals (nutritious, portion size) and creation of weekly goals. Physical activity two days per week for 45-minutes and encouraged children to partner w/ parent an additional 3 days/week to increase physical activity and decrease sedentary behaviors. During summer, advanced practice nurse and dietitian called pts each monthly to assess nutrition/exercise goals. Encouraged to attend set short- and long-term goals, attend summer camp or local sports program. Pts received positive feedback on each call.
Hughes, 2008 ⁹⁸ Fair	IG1: Individualized behavior program	Eight individual family appointments w/ dietitian (7 outpatient, 1 home visit) over 6 months (total contact time of 5 hours) for family behavior change counseling. Family-centered approach involving education, exploring motivation to change, pros/cons of change, problem-solving barriers, empowerment, goal setting and behavioral contracting, rewards and positive reinforcement, self-monitoring, social support, and preventing relapse. Goals identified by child, with parents and dietitian helping with refinement using "SMART" principles (small, measureable, achievable, recorded, timed). Parents encouraged to give positive reinforcement for all lifestyle changes. Ambivalence and resistance dealt with by reflective listening and referring back to decisional balance chart and reviewing importance of change to the child. Strategies directed towards children, with parent as helper. Followed Traffic Light Diet; aimed in increase physical activity (30 minutes MVPA per day reaching 60 minutes/day 5 days a week) and decrease sedentary behavior (no more than 2 hours/day).
	CG: Standard dietetic care	Typical dietetic care; 3 to 4 outpatient appointments delivered by pediatric dietitians during 6-10 months w/ a total patient contact time of ~1.5 hours. Concentrated on dietary change, minimal focus on physical activity and sedentary behavior, and involved didactic medical model rather than a behavioral, client-centered approach. Advice on weight management directed towards parent of children. Goals set by dietitian, no lifestyle self-monitoring.

Author, Year and Quality	Group	Detailed Description
Hystad, 2013 ¹²⁹ Fair	IG1: Structured weight management group	<p>Fifteen 2-hour parent therapist-led group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietitian and physiotherapist. Goal of parent group to enhance parent's competence to accomplish targeted lifestyle changes. Topics included: expectancies and goal setting; communication about obesity, diet and physical activity; daily physical activity; everyday dietary habits; mastery and motivation; guidance and setting boundaries; the role of siblings and the social network; parent's history of diet and physical activity; self-concept and body image; vacations and birthday parties. Included didactic presentation, discussion, homework, and role-playing. A series of print materials, such as 'fridge notes', home activity sheets and goal attainment sheets, was developed. Child sessions led by a clinical dietitian and a physiotherapist. The aim was for the children to gain positive experiences related to physical activity and healthy eating, and the psychosocial consequences of being obese were addressed in a session led by a psychologist. Individual family counselling sessions were used to discuss the family's progress and to define new goals. Focus to establish regular mealtimes, increase intake of F/V and other high-fiber foods, reduce intake of added sugar and fat, conduct at least 1 hour of moderate physical activity per day and reduce sedentary behaviors to maximum 2 hours per day.</p> <p>All groups met simultaneously every second week for ten sessions during the first 6 months. During this 6-month period, each family also met monthly for individual counselling. Over the remaining 18 months of the 24-month intervention, the groups met five times at the hospital, and four individual family counselling sessions were conducted.</p>
	IG2: Parent-led support group	<p>Fifteen 2-hour parent self-help group sessions and simultaneous child nutrition and activity sessions, and 10 30-minute individual family sessions with a dietitian and physiotherapist. Self-help groups based on the principle of mutual help, derived from the participants' own experiences and knowledge. A health professional attended the two first and the last meeting to organize the group and facilitate group rules, but did not offer any education or guidance regarding how to reduce adiposity. Child sessions led by a clinical dietitian and a physiotherapist. The aim was for the children to gain positive experiences related to physical activity and healthy eating, and the psychosocial consequences of being obese were addressed in a session led by a psychologist. Individual family counselling sessions were used to discuss the family's progress and to define new goals. Focus to establish regular mealtimes, increase intake of F/V and other high-fiber foods, reduce intake of added sugar and fat, conduct at least 1 hour of moderate physical activity per day and reduce sedentary behaviors to maximum 2 hours per day.</p> <p>All groups met simultaneously every second week for ten sessions during the first 6 months. During this 6-month period, each family also met monthly for individual counselling. Over the remaining 18 months of the 24-month intervention, the groups met five times at the hospital, and four individual family counselling sessions were conducted.</p> <p>All children, regardless of their parents' group affiliation, participated in age-matched groups of six to twelve children led by a clinical dietitian and a physiotherapist. The aim was for the children to gain positive experiences related to physical activity and healthy eating, and the psychosocial consequences of being obese were addressed in a session led by a psychologist. All families attended five individual counselling sessions with a clinical dietitian and a physiotherapist to discuss the family's progress and to define new goals.</p> <p>All groups met simultaneously every second week for ten sessions during the first 6 months. During this 6-month period, each family also met monthly for individual counselling. Over the remaining 18 months of the 24-month intervention, the groups met five times at the hospital, and four individual family counselling sessions were conducted. Each of the fifteen group sessions lasted 2 hr, while each of the ten individual family counselling sessions lasted 30 min.</p>

Author, Year and Quality	Group	Detailed Description
Israel, 1985 ⁸⁷ Fair	IG1: Behavioral weight reduction + parent training	Two 1-hr child management skills classes for parents, nine 90-min weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions to assist parents with homework, provide motivational input, and individual treatment procedures. Child management classes based on Patterson's "Living with Children" and included three brief quizzes to see if parents read materials. Continued review of child management principles and concepts throughout weight management program. Weight management program involved four-prong "CAIR" format of cues, activities (exercise), food intake (calories, nutrition), and rewards addressed at each session and individualized to families. Families monitored food/calories, energy expenditure, and adherence to recommended weight-related habits (monitoring divided between child and parent). Homework collected and reviewed at each session. After 9 weekly sessions, families attended weigh-ins and brief problem-solving sessions at 1, 2, 4, 6, 9, and 12 months (fading period) and received monthly phone calls.
	IG2: Behavioral-weight reduction	Nine 90-minute weekly group weight management sessions with separate parent and child meetings, and phone calls between sessions to assist parents with homework, provide motivational input, and individual treatment procedures. Weight management program involved four-prong "CAIR" format of cues, activities (exercise), food intake (calories, nutrition), and rewards addressed at each session and individualized to families. Families monitored food/calories, energy expenditure, and adherence to recommended weight-related habits (monitoring divided between child and parent). Homework collected and reviewed at each session. After 9 weekly sessions, families attended weigh-ins and brief problem-solving sessions at 1, 2, 4, 6, 9, and 12 months (fading period) and received monthly phone calls.
Johnston, 2010 ¹³⁰ Fair	IG1: Instructor-led intervention	<p>Participated in an instructor/trainer-led healthy lifestyle intervention for 12 weeks daily (Monday through Friday) followed by 12 weeks bi-weekly sessions. Sessions lasted 35-40 minutes and were held during the last period of the school day. Focused on increasing healthy eating and physical activity using behavioral strategies to individualize the plans for the specific needs of the patients. During first 12 weeks, attended one indoor nutrition lesson and four outdoor physical activity lessons weekly. Instructors trained to reinforce and model behavior to encourage adherence to dietary and physical activity guidelines. Parents invited to attend monthly meetings to teach them how to adapt family meals and activities to facilitate healthy changes. Nutrition focused on healthier food choices, reading labels, portion size control, categorizing foods into safe, caution and danger based on nutrition. Bi-weekly quizzes about nutrition. Children w/ absences, low quiz grades or weight gain received further 1-on-1 education and treatment planning to promote and apply knowledge. Physical activity training during first six weeks was circuit training; weeks 7-12, stations modified to focus on skill development to school- or community-sponsored activities (e.g., team sports). Participants exercised 30-35 minutes at an intensity equivalent to 60-85% of the age-predicted maximal heart rate. Token economy system used to reinforce healthy behaviors. Participants learned self-monitoring, goal setting and overcoming barriers. Used an individualized approach taking into account food and activity preferences. Program was culturally tailored for Mexican American families and all communication was in both Spanish and English. Extended family members included. Researchers worked w/ to educate school on how to provide an environment to support healthy eating and physical activity habits, healthy snack options, ways to improve school lunch; physical activity days offered to all students.</p> <p>All children received a snack (peanuts/peanut butter and a fruit/vegetable to enhance satiety) were provided during this period.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: Self-help intervention	<p>Parent-guided self-help book "Trim Kids" with 12 weekly sessions followed by maintenance activities for improving diet and level of physical fitness in children using behavioral strategies, intended to promote child weight loss and long-term maintenance of changes. Parents instructed to contact interventionists with questions and report adverse effects. Researchers worked w/ schools to educate them on how to provide an environment to support healthy eating and physical activity habits, healthy snack options, ways to improve school lunch; physical activity days offered to all students. Self-help and nonparticipating children attended study hall as the last session of the school day (away from IG1 pts). All children received a snack (not controlled for caloric content or nutritional value) daily at school.</p> <p>12-week parent-guided manual "Trim Kids" intended to promote child weight loss and long-term maintenance of changes. Self-help and nonparticipating children attended study hall as the last session of the school day (away from IG1 pts). All children received a snack (not controlled for caloric content or nutritional value) daily at school. 12 weekly sessions followed by maintenance activities for improving diet and level of physical fitness of children. Could contact interventionist to address any questions and report adverse effects.</p>
Johnston, 2013 ¹³¹ Fair	IG1: Instructor-led intervention	<p>Participated in an instructor/trainer-led healthy lifestyle intervention for 12 weeks daily (Monday through Friday) followed by 12 weeks bi-weekly sessions. Sessions lasted 35-40 minutes and were held during the last period of the school day. Focused on increasing healthy eating and physical activity using behavioral strategies to individualize the plans for the specific needs of the patients. During first 12 weeks, attended one indoor nutrition lesson and four outdoor physical activity lessons weekly. Instructors trained to reinforce and model behavior to encourage adherence to dietary and physical activity guidelines. Parents invited to attend monthly meetings to teach them how to adapt family meals and activities to facilitate healthy changes. Nutrition focused on healthier food choices, reading labels, portion size control, categorizing foods into safe, caution and danger based on nutrition. Bi-weekly quizzes about nutrition. Children w/ absences, low quiz grades or weight gain received further 1-on-1 education and treatment planning to promote and apply knowledge. Physical activity training during first six weeks was circuit training; weeks 7-12, stations modified to focus on skill development to school- or community-sponsored activities (e.g., team sports). Participants exercised 30-35 minutes at an intensity equivalent to 60-85% of the age-predicted maximal heart rate. Token economy system used to reinforce healthy behaviors. Participants learned self-monitoring, goal setting and overcoming barriers. Used an individualized approach taking into account food and activity preferences. Program was culturally tailored for Mexican American families and all communication was in both Spanish and English. Extended family members included. Researchers worked w/ to educate school on how to provide an environment to support healthy eating and physical activity habits, healthy snack options, ways to improve school lunch; physical activity days offered to all students.</p> <p>All children received a snack (peanuts/peanut butter and a fruit/vegetable to enhance satiety) were provided during this period.</p>
	IG2: Self-help intervention	<p>Parent-guided self-help book "Trim Kids" with 12 weekly sessions followed by maintenance activities for improving diet and level of physical fitness in children using behavioral strategies, intended to promote child weight loss and long-term maintenance of changes. Parents instructed to contact interventionists with questions and report adverse effects. Researchers worked w/ schools to educate them on how to provide an environment to support healthy eating and physical activity habits, healthy snack options, ways to improve school lunch; physical activity days offered to all students. Self-help and nonparticipating children attended study hall as the last session of the school day (away from IG1 pts). All children received a snack (not controlled for caloric content or nutritional value) daily at school.</p>

Author, Year and Quality	Group	Detailed Description
Kalarchian, 2009 ⁷¹ Fair	IG1: Family-based lifestyle intervention	20 60-min group sessions during first 6 months; adult and child groups met separately and presented with complementary material. Before or after these sessions, adult and child jointly met with lifestyle coach to review self-monitoring records and set weekly goals. 6 booster sessions (3 group, 3 telephone calls) between 6 and 12 months with no further contact after 12 months. Intervention adapted from Epstein and included modified Stoplight Eating Plan with daily energy range, and goal to increase PA and decrease PA to less than 15 hours/week. Behavior change techniques included: self-monitoring, environmental changes, step-wise goal setting, stimulus control, and positive reinforcement. Instruction provided in setting realistic expectations, promoting body image, minimizing emotional eating, and coping with teasing. Adults instructed to set goals and model behavior change; overweight adults encouraged to lose weight.
	CG: Nutrition consultation	Adults and children offered 2 nutrition consultation sessions to develop an individual nutrition plan based on the Stoplight Eating Plan; offered intervention after completion of 18-month assessment. This group intended as usual care in patients with severe obesity.
Kalavainen, 2007 ⁹⁹ Fair	IG1: Health-promoting lifestyle	15 90-minute group sessions; 14 held separately for parents and children and one session held together (10 weekly sessions, and 5 every 2 weeks). Program focused on healthy lifestyle as opposed to weight management and parents were targeted as the main agents of change; lifestyle changes intended for entire family and overweight parents who desired to lose weight were encouraged. Parent sessions included education on healthy lifestyle, parenting skills, and behavior change techniques (pros and cons, goal-setting, self-monitoring, stimulus control and cue elimination, action planning, problem-solving, and relapse prevention). Child sessions involved functional activities and non-competitive PA. Parents given treatment manuals and children given workbooks; materials based on Magnificent Kids and Magnificent Teens and "Think Good-Feel Good" CBT workbook. Homework assigned to parents and children; the importance of regular weighing at home emphasized.
	CG: Brief education + booklets	Booklets for families and 2 30-minute individual sessions for each child with school nurse. Booklets contained information about weight management, eating habits and PA. Appointments intended for child only but parents allowed if willing. Themes of sessions were self-knowledge and PA; weight and height measured at each session. Children completed workbooks with school nurse and at home with parents. Booklets and workbooks based on Magnificent Kids material and "Think Good-Feel Good" CBT workbook.
Larsen, 2015 ⁸⁸ Fair	IG1: Educational program + GP consultations	Three 3-hr group educational program sessions with a dietitian, physical exercise instructor, and psychologist to promote a healthy lifestyle through knowledge and inspiration to a healthy diet and enjoyable physical activities in addition to monthly consultations in general practice during the first year to focus on lifestyle habits, diet, and PA; during second year, frequency reduced to bi-monthly, with adjustment to individual family needs; all received literature on healthy diet and physical activities.
	IG2: GP consultations	Monthly consultations in general practice during the first year to focus on lifestyle habits, diet, and PA; during second year, frequency reduced two bi-monthly with adjustment to individual family needs; all received literature on healthy diet and physical activities

Author, Year and Quality	Group	Detailed Description
Magarey, 2011 ⁸⁹ Fair	IG1: Triple P + healthy lifestyle group	Positive Parenting Program (Triple P) (4 weekly 2-hour group sessions with 4 15-20 minute individual followup calls) followed by 8 group lifestyle support sessions for parents and optional concurrent child fun, non-competative PA sessions. Lifestyle sessions focused on knowledge and skills including family-focused healthy eating including specific food recommendations, monitoring, label reading, snacks, modifying recipes, being active, and roles and responsibilities about eating, managing appetite, self-esteem and teasing. Triple P parenting component aimed at changing parenting practices and general parenting styles; used active skills training methods based on self-regulation. Core parenting skills included: parent-child relationship enhancement, encouraging desirable behavior, teaching new skills and behaviors, managing misbehavior, preventing problems in high-risk situations, self-regulation, mood management and coping, partner support and communication. Telephone sessions provided parents individualized support in implementing strategies at home. Materials included standard Triple P resources (workbook and video) and a healthy lifestyle pamphlet.
	IG2: Healthy lifestyle group	Eight 90-minute group lifestyle support sessions and 4 phone calls for parents and optional concurrent child fun, non-competative PA sessions. Lifestyle sessions focused on knowledge and skills including family-focused healthy eating including specific food recommendations, monitoring, label reading, snacks, modifying recipes, being active, and roles and responsibilities about eating, managing appetite, self-esteem and teasing. Encourage parents to set good eating and activity examples for children.
McCallum, 2007 ⁷² Good	IG1: LEAP	Four GP consultations of brief solution-focused family therapy to support healthy lifestyle goals. 20-page family folder included 7 topic sheets targeting areas of behavioral change (sedentary time, physical activity, water consumption, eating habits and lower fat food options). Topic sheets summarized supporting evidence for the target behavior, modelled solutions to common challenges, and provided suggestions for reaching the goal. Materials included wall chart, reward stickers, and shopping tips. Parents encouraged to offer family meals, engage in shared parent-child activities, use praise and non-food rewards, and use contracting for behavior change. Before first appointment, GPs received intervention materials, summary of parent's responses from baseline questionnaire regarding nutrition, physical activity and weight status concern, and child's BMI. GP also provided brief encouragement during non-counseling visits.
	CG: Usual care	Usual care. Control families notified of control status via letter and never identified to GPs. Medical records of CG children audited to assess possible contamination (i.e., discussion of weight at a medical visit).
Nemet, 2005 ¹⁰⁰ Fair	IG1: Dietitian + PA sessions	Four evening lectures w/ parents on childhood obesity, general nutrition, therapeutic nutritional approach for childhood obesity, physical activity and childhood obesity). Met w/ dietician 6 times and differed based on age of participant; if 6-8 years, parent only during first 2 sessions then child joined; if 8 year - pubertal, parent and child for all meetings; if adolescent, alternated child-only and parent-only meetings after joint 1st meeting. First session 45-60 minutes, all other sessions 30-45 minutes. Instructed on nutritional education (e.g., food pyramid), food choices, dietary/cooking habits, and motivation for weight loss. Received a balanced hypocaloric diet (5021-8368 kJ depending on age and weight), a caloric deficit of 30% from reported intake and intake 15% less than estimated daily required intake. Exercise program consisted of twice-weekly 1-hour training sessions, pts encouraged to add extra 30-45 minutes of walking or weight-bearing sports activities at least once per week. Encouraged to reduce sedentary activities.
	CG: Nutrition referral	Control subjects were referred to an ambulatory nutritional consultation at least once and were instructed to perform physical activity 3 times per week on their own.

Author, Year and Quality	Group	Detailed Description
Nguyen, 2012 ¹³² Fair	IG1: Loozit + additional therapeutic contact	<p>Seven 75-minute weekly Loozit group sessions (Phase 1) held separately for adolescents and parents. Phase 2 (2-24 months) adolescents attended seven 60-minute booster sessions once every 3 months. Program uses a cognitive behavioral approach to address healthy eating, increase physical activity, decrease sedentary behavior, and manage behavior changes through individualized goal-setting ("SMART" goals: specific, measureable, achievable, realistic, and can be attained in a fixed time frame), self-monitoring, stress management, and building self-esteem. Adolescent sessions include ~20 minutes of indoor physical activity. Parenting skills include role modeling, praise, problem-solving, and helping them provide practical support to adolescents. Parents and adolescents given summary booklets each week covering session material and providing worksheets for goals and self-monitoring.</p> <p>Additional therapeutic contact for adolescents only during Phase 2, where approximately once every 2 weeks, telephone coaching, emails, and/or SMS text messages were sent (32 electronic messages; 14 telephone sessions) to enhance knowledge, skills, and confidence to initiate and maintain behavioral changes. 10-minute telephone coaching included identifying barriers, problem-solving, and positive encouragement. Emails and SMS messages were interactive and individually tailored to provide positive reinforcement, education and encouragement.</p>
	IG2: Loozit only	<p>Seven 75-minute weekly Loozit group sessions (Phase 1) held separately for adolescents and parents. Phase 2 (2-24 months) adolescents attended seven 60-minute booster sessions once every 3 months. Program uses a cognitive behavioral approach to address healthy eating, increase physical activity, decrease sedentary behavior, and manage behavior changes through individualized goal-setting ("SMART" goals: specific, measureable, achievable, realistic, and can be attained in a fixed time frame), self-monitoring, stress management, and building self-esteem. Adolescent sessions include ~20 minutes of indoor physical activity. Parenting skills include role modeling, praise, problem-solving, and helping them provide practical support to adolescents. Parents and adolescents given summary booklets each week covering session material and providing worksheets for goals and self-monitoring.</p>
Norman, 2015 ⁷³ Fair	IG1: Stepped-down Care	<p>Based on a combination of the chronic care model and social cognitive theory; followed recommendations from AAP about treatment of childhood obesity. Consisted of 3 4-month steps with a goal of 4lb weight loss every 4 months. If the participant did not meet the goal, the step was repeated. If the 4-lb weight loss was achieved, the participant 'stepped down' to the next level of reduced intensity. At the start of the program, the physician provided brief counseling on health diet and PA behaviors. If progress is not made, a follow-up physician visit occurred at month 8 and focused on weight management strategies. Face-to-face health educator visits occurred monthly in step 1 and bi-monthly in step 2, and included discussion of weight management concepts, identification of barriers to healthy eating and PA, and brainstorming problem-solving strategies to overcome barriers. These meetings were available to child and parent, but parents were not required to attend. Phone calls (biweekly in steps 1 and 2, monthly in step 3) were used to review progress, help set new goals and discuss barriers and solutions, speak to parents to reinforce parental involvement and emphasize importance of healthy changes in the home environment to encourage goal attainment. Diet and PA education materials were distributed at health education visits at pediatric clinics. Adolescent and parents asked to keep self-monitoring logs for steps and weight that could be shared with health counselor for feedback. Pedometers were distributed at the initial visit to monitor PA and help participants set PA goals.</p>
	CG: Enhanced Usual Care	<p>Received an initial counselling visit by physician, one visit with a health educator, materials on how to improve weight-related behaviors, and monthly follow-up mailings on weight-related issues. Labelled "enhanced" because participants received more than the current standard of practice in the Children's Primary Care Medical Group for adolescents with obesity with no medical comorbidities. Participants also received pedometer at initial health educator visit</p>

Author, Year and Quality	Group	Detailed Description
Nowicka, 2008 ¹⁰¹ Fair	IG1: Family Weight School	Based on systemic family and solution-focused therapies, using a systemic interactional method. Therapist aimed to reinforce family resources and create optimal emotional climate to help obese child emphasizing parent cooperation, communication skills, mutual support, consistency and establishment of appropriate limits. 4 group meetings (up to 12 families) for 4 hours, including 10 minute individual family meetings w/ pediatric nurse or pediatrician with feedback (e.g., on child's strengths) at each session. Intervention toolbox included nutrition (regular family meal planning, adequate portion sizes, limited intake of nutrient-poor foods, increased intake of F/V, water over SSBs), physical activity (≥60 minutes per day), decreasing sedentary time (max 2 hours per day), and lifestyle modifications (select 1-2 changes for subsequent visits). Child and parents met together for at least 1 hour at all meetings, separately for 1.5 hours during meeting 2 and 3 only.
	CG: Waitlist	Once the treatment condition was filled, additionally referred children were placed on the waiting list for treatment. This group served as the control group. The control group did not receive any treatment during the 1 year study period.
Patrick, 2013 ¹⁰² Fair	IG1: Website + group sessions	Access to website (see Website only description) plus 12 monthly 90-minute group sessions for adolescents and parents to discuss behavioral skills from web tutorials, nutrition demonstration and physical activities. Adolescent received brief bi-monthly phone calls from health counselor to review concepts and support behavioral strategies. Attendance and participation rewarded. Also included monthly mailed top sheets. Attendance and participation in group sessions rewarded with mileage incentives and a lottery for prizes such as cookbooks to assist with healthy behavior change. Nutrition demonstrations and physical activities integrated into each group session.
	IG2: Website + SMS	Access to website (see Website only description) plus three text messages per week related to weekly challenges and goals. Reminder text messages sent if participant did not log onto website by 4th day of intervention. Participants could also communicate w/ health counselor if they had questions. Provided w/ cell phones and prepaid text message plans.
	IG3: Website only	Individual case management that included weekly check-in/reminder emails, monthly mailed tips, and access to program website and web tutorials; if not logging in, sent multiple reminder emails and a call from a health counselor. Website designed to promote weight loss and healthy behaviors following the stoplight approach. Educational topics and challenges based on weekly nutrition/physical activity goals, skill building exercises, rewards for encouragement, assessment of progress, weekly weigh-in and feedback. All participants received a pedometer and body weight scale. Website also included information on portion sizes, food categories, and a resource library with tips, recipes and web tutorials on several behavior change strategies such as goal setting, seeking social support and positive self-statements. Three phases: weeks 1-17, education on healthy weight loss behavior; weeks 18-34, interactive, select challenges and goals; and weeks 35-41, interactive, encourage multiple behaviors. Parents completed an adult version.
	CG: Usual care	Received printed materials produced by the American Diabetes Association and the American Heart Association. Encouraged to attend 3 1 hour group nutrition sessions at a children's hospital during the first 6 weeks of the study. Received monthly tip sheets by mail. This was determined to represent the community standard of care for adolescents at risk for type 2 diabetes.

Author, Year and Quality	Group	Detailed Description
Quattrin, 2014 ⁷⁴ Fair	IG1: Weight management education + additional parent contact	<p>13 60-minute parent group sessions over 12 months (4 weekly, 2 bimonthly, 4 monthly and 3 at 8-10 week intervals) followed by a 12 month followup w/ three meetings (at 16, 20, and 24 weeks) that delivered dietary/physical activity and sedentary activities education, children simultaneously engaged in active games. Parents instructed on appropriate serving sizes, number of services to consume recommended calories (1000-1200 calories/day depending on child's age), avoid food w/ > 5 grams of fat/serving, high in sugar or containing artificial sweeteners (adapted from Traffic Light Diet). Child weight loss goal of 0.5-1 pound per week. Child physical activity goal was 60 minutes/day in blocks of 10 minutes of longer and sedentary goal to limit TV and screen time to < 2 hours/day. Parents received 13 calls between meetings and followups.</p> <p>Behavior modification and parenting techniques discussed in group meetings included selective ignoring, time out, praising, reward, contracting, pre-planning, stimulus control, shaping, modeling, self-monitoring, changing the home environment, social support, and changing black-and-white thinking. Parents also attended individual goal-setting sessions with health coach held the same evening as the group session. Parents instructed to monitor child and own weight and received dietary, physical and sedentary activity guidelines w/ goal of a minimum 1 lb/week weight loss. List of foods w/ portion sizes and energy content information provided. Recorded intake and activity in a diary by crossing off icons which were tailored to child and parent so shaping up/down of targeted behaviors could be individualized.</p> <p>Pediatrician reviewed child's progress and followed up with standardized letter at 3 months and well-child visit at 6 months.</p>
	CG: Weight management education	<p>13 60-minute group sessions over 12 months (4 weekly, 2 bimonthly, 4 monthly and 3 at 8-10 week intervals) followed by a 12 month followup w/ three meetings (months 16, 20, and 24 months) that delivered dietary/physical activity and sedentary activities education and engaged children in active games. Parents instructed on appropriate serving sizes, number of services to consume recommended calories (1000-1200 calories/day depending on child's age), avoid food w/ > 5 grams of fat/serving, high in sugar or containing artificial sweeteners (adapted from Traffic Light Diet). Child weight loss goal of 0.5-1 pound per week. Child physical activity goal was 60 minutes/day in blocks of 10 minutes of longer and sedentary goal to limit TV and screen time to < 2 hours/day. Parents received 13 calls between meetings and followups.</p>
Raynor, 2012b ¹⁰³ Fair	IG1: TRADITIONAL + Growth Monitoring	<p>Eight 45-minute parent-only group behavioral sessions (biweekly for 2 months and monthly for months 3-6). Behavior change strategies included: self-monitoring, pre-planning, problem-solving, shaping, setting goals, positive reinforcement, stimulus control, and parental modeling. Children and parents self-monitored targeted behaviors and submitted logs at meetings. Focused on two typically targeted behaviors in pediatric weight management programs, decreasing sugar-sweetened beverages and increasing PA. Goals were 60 minutes/day of moderate-intensity PA (30 minutes/day for parents) most days of the week and for children and parents to consume ≤3 servings of sugar-sweetened beverages/week. Growth assessed at 0, 3, and 6 months. Letters providing changes in height, weight, BMI, BMI percentile, and % overweight and interpretation of changes were sent to families and the child's PCP after each growth assessment.</p>

Author, Year and Quality	Group	Detailed Description
	IG2: SUBSTITUTES + Growth Monitoring	Eight 45-minute parent-only group behavioral sessions (biweekly for 2 months and monthly for months 3-6). Behavior change strategies included: self-monitoring, pre-planning, problem-solving, shaping, setting goals, positive reinforcement, stimulus control, and parental modeling. Children and parents self-monitored targeted behaviors and submitted logs at meetings. Used behavioral economics approach to enhance the feeling of choice for engaging in and liking the targeted behaviors in order to increase long-term adherence. Goals were to watch ≤ 2 hours of TV per day (as a substitute for PA) and consume 2 servings of low-fat milk per day (as a substitute for sugar-sweetened beverages). Growth assessed at 0, 3, and 6 months. Letters providing changes in height, weight, BMI, BMI percentile, and % overweight and interpretation of changes were sent to families and the child's PCP after each growth assessment.
	CG: Monthly newsletters + growth monitoring	Monthly newsletter with information about healthy eating and leisure-time behaviors; growth assessed at 0, 3, and 6 months. Letters providing changes in height, weight, BMI, BMI percentile, and % overweight and interpretation of changes were sent to families and the child's PCP after each growth assessment. Families provided with research staff contact information and encouraged to contact staff with any questions about information in the letter.
Reinehr, 2006 ¹⁰⁴ Fair	IG1: Obeldicks	Covered physical exercise, nutrition education and behavioral therapy including individual psychological care of child and family. Intensive phase (3 months): nutritional education (traffic light system, target 30% fat, 15% protein, 55% carbohydrates) and behavior therapy groups (6 group sessions, 1.5 hours each); concurrent parent sessions; weekly PA sessions. Establishing phase (6 months): 3 parent group "talk rounds" sessions, solution-focused individual family therapy (30 min/month), weekly PA sessions. Followup phase (3 months): further individual psychological care as needed, weekly PA sessions. PA sessions included ballgames, jogging, trampoline jumping, instruction in PA as part of daily life, instruction to reduce sedentary time. Behavioral course included behavior contracts, booster systems, self-reflecting curves, impulse control techniques, self instruction, cognitive restructuring, development of problem-solving strategies, training in social competences, model learning via parents, and relapse prevention.
	CG: Distance control	Control group comprised of children who met eligibility criteria but whose families lived too far away to travel regularly to the obesity clinic.
Reinehr, 2009 ¹⁰⁵ Fair	IG1: Obeldicks	Covered physical exercise, nutrition education and behavioral therapy including individual psychological care of child and family. Intensive phase (3 months): nutritional education (traffic light system, target 30% fat, 15% protein, 55% carbohydrates) and behavior therapy groups (6 group sessions, 1.5 hours each); concurrent parent sessions; weekly PA sessions. Establishing phase (6 months): 3 parent group "talk rounds" sessions, solution-focused individual family therapy (30 min/month), weekly PA sessions. Followup phase (3 months): further individual psychological care as needed, weekly PA sessions. PA sessions included ballgames, jogging, trampoline jumping, instruction in PA as part of daily life, instruction to reduce sedentary time. Behavioral course included behavior contracts, booster systems, self-reflecting curves, impulse control techniques, self instruction, cognitive restructuring, development of problem-solving strategies, training in social competences, model learning via parents, and relapse prevention.
	CG: Distance control	The control group was made up of children with 1 year of follow up available who were not treated with the lifestyle intervention because they lived too far away and had no means of transportation. Children and their families were advised in a 15 minute consultation about healthy diet and necessary physical exercise and behaviors. Written information on nutrition with recipes was provided.
Resnick, 2009 ⁷⁵ Fair	IG1: Materials + personal encounters	Educational materials mailed at approximately 5 week intervals for a total of 6 mailings over 30 weeks plus at least one home visit or phone call to discuss lifestyle topic of parent's choice. Topics covered by materials included increase walking, read nutrition labels, shop more healthfully at grocery stores, talk with children about TV viewing, eat out healthfully; received a cookbook, physical activity book, hands-on activity about portion sizes and a pedometer. Type of personal encounter (home vs. phone) based on parent's preference. Parents selected topics discussed.

Author, Year and Quality	Group	Detailed Description
	CG: Materials only	Educational materials mailed at approximately 5 week intervals for a total of 6 mailings over 30 weeks. Specific topics included increase walking, read nutrition labels, shop more healthfully at grocery stores, talk with children about TV viewing, eat out healthfully; received a cookbook, physical activity book, hands-on activity about portion sizes and a pedometer.
Resnicow, 2005 ⁹⁰ Fair	IG1: High-intensity lifestyle intervention	20-26 weekly group behavioral sessions of a culturally tailored program for girls delivered in African American churches. Girls participated in every session, parents invited to every other session (half of the session they met separately from children for a behavioral activity and then joined children for PA and food tasting). Each child session included an experiential interactive behavioral activity, at least 30 minutes vigorous PA, and preparation and/or consumption of low-fat, portion-controlled meals or snacks. Participants taught to reshape target behaviors using principles of substitution, moderation, and abstinence; each participant focused behavior change on self-selected target foods or priority behaviors identified at baseline assessment. Content also addressed parent-child communication about weight. At beginning of intervention, participants attended 1 day retreat to create group cohesion. Two-way paging device delivered messages developed by participants based on their target foods and activity patterns. 4-6 MI telephone calls with counselor corresponded to content of group sessions.
	IG2: Moderate-intensity lifestyle intervention	6 monthly group behavioral sessions of a culturally tailored program for girls delivered in African American churches. Girls participated in every session, parents invited to every other session (half of the session they met separately from children for a behavioral activity and then joined children for PA and food tasting). Each child session included an experiential interactive behavioral activity, at least 30 minutes vigorous PA, and preparation and/or consumption of low-fat, portion-controlled meals or snacks. Group session topics were a subset of those used in IG1, including: fat facts, barriers to physical activity, fad diets, fear of new foods, and benefits of physical activity.
Resnicow, 2015 ⁷⁶ Fair	IG1: PCP + RD MI	Same as IG2 + 6 additional motivational interviewing counseling sessions conducted by RD over 2 years. RDs given flexibility in scheduling counseling sessions, though encouraged to provide more visits toward the beginning of the intervention. RD sessions delivered in-person or by phone.
	IG2: PCP MI	3 brief PCP-delivered MI counseling sessions with parents in year 1 and 1 additional "booster" visit in year 2 (flexibility allowed in session scheduling). Techniques include reflective listening, autonomy support, shared decision-making, and eliciting change talk (e.g. building discrepancy through values clarification, importance/confidence rulers). Targeted dietary and activity behaviors included: snack foods, sweetened beverages, eating in restaurants, fruits, vegetables, TV/screen time, video and computer games and PA/exercise. Target behaviors identified by a brief screener. PCPs asked to provide positive feedback on "green" behaviors and collaboratively identify with the parent "red" or "yellow" behaviors they would be willing to discuss and possibly modify. Provided materials were tailored to the chosen targeted behavior. Self-monitoring logs offered.
	CG: Usual care	Measurements at BL, 1- and 2-year F/U and provided routine care by PCP, as well as standard educational materials for parents that addressed healthy eating and exercise. Usual care PCPs attended a half-day orientation session that included current treatment guidelines.
Saelens, 2013 ¹³³ Fair	IG1: Family-based tx with family-set goals	20 weekly 20-30 min individual family sessions where parent and child meet with interventionist; separate 40-50 min child and parent group sessions either before or after individual family session. First five weeks focused on training and implementation of food and activity monitoring, contingency management with behavioral and weight loss goals, and environmental control. Eating plan based on Stoplight diet; child PA goal of 90 min/day, parent PA goal of 60 min/day, and <2 hrs/day sedentary behavior. After 5 weeks, the interventionist shifted to an MI-based style to encourage more family autonomy and self-efficacy around behavioral skills use. Interventionist assisted families in setting tailored realistic goals and encouraging family experimentation around which skills are feasible, guided by readiness to change. Interventionist initiated long-term planning with the family in week 12.

Author, Year and Quality	Group	Detailed Description
	IG2: Family-based tx with study-set goals	20 weekly 20-30 min individual family sessions where parent and child meet with interventionist; separate 40-50 min child and parent group sessions either before or after individual family session. First five weeks focused on training and implementation of food and activity monitoring, contingency management with behavioral and weight loss goals, and environmental control. Eating plan based on Stoplight diet; child PA goal of 90 min/day, parent PA goal of 60 min/day, and <2 hrs/day sedentary behavior. After 5 weeks of initial behavioral skills training and use, the interventionist evaluated and held families accountable for consistent adherence to behavioral skills use and set weekly goals for parent and child, with little or no family input for tailoring of goals. Interventionist initiated long-term planning with the family in week 17.
Savoye, 2007 ¹⁰⁶ Fair	IG1: Bright Bodies	Family group sessions twice per week for 6 months, then twice monthly for 6 months. First 6 months: two 50-min exercise sessions/week (parents and children together), 1 weekly weigh-in (both parents and children), and 1 weekly 40-min class covering nutrition (parents and children together) and behavior modification (parents and children in separate groups). Encouraged to exercise 3 additional days/week. Used motivational tools to increase attendance, such as a game accumulating points for participation in group activities and exercise. Dietician led the nutrition portion of the class using the Smart Moves workbook and emphasized a non-diet approach to healthy eating. Behavior modification portion was facilitated by dietician or social worker, and included self-awareness, goal setting, stimulus control, coping skills training, cognitive behavior strategies, and contingency management. Exercise consisted of warm-up, high-intensity and cool-down; once per month special exercise activities planned (e.g., Zumba class). During behavioral modification portion parents attended a separate coping skills training class that emphasized the important of parent as role model, led by psychologist or dietician.
	CG: Semi-annual individual counseling	Seen in pediatric obesity clinic every 6 months; Diet (decrease intake of juice, switching to diet products, bringing lunch to school) and exercise (decrease sedentary activities) counseling by RD and physician, and brief psychological counseling with social worker; caregiver involved in nutrition an activity goal-setting
Stark, 2011 ¹⁰⁷ Fair	IG1: LAUNCH	Phase 1 (intensive intervention), 12 weekly sessions that alternated btwn group-based clinic session (parent and child concurrent groups) and individual home visits; Phase 2 (maintenance), 6 sessions (every other week over 12 weeks) alternating btwn group clinic-base sessions and home sessions. Parent clinic-based sessions (90 minutes) addressed dietary education (snacks/beverages, breakfast/lunch, dinner) and kept dietary diaries for child (caloric goal 1000-1200/day); decreasing screen time (<2 hours/day) and increasing physical activity (60 minutes/day). Both parent and child provided w/ pedometers (goal 5000-10000 steps/day). Parents taught by license clinical psychologist to use child bx management skills including praise and attention to increase healthy bx, ignoring and timeouts to manage tantrums, contingency management and modeling; taught stimulus control; provided w/ 14 day supply of vegetables for taste-testing w/ child. Children received nutrition education, tried new foods during structured meals, and complete 15 minutes of moderate-to-vigorous exercise in a group format conducted by a pediatric psychology postdoc and research coordinator. In-home sessions (60-90 minutes) to support generalization of clinic-taught skills as well as clean-outs of pantry (high-calorie/low-nutrient foods) and assisted parents w/ setting a safe place in home for active play. During maintenance stage, session focused on helping families continue or maintain changes by identifying barriers and problem-solving; diet diary recording reduced to 3 days/week and pedometers worn but not longer recorded.
	CG: Enhanced standard of care	Each family met with a pediatrician for 1 45-minute session to review child's growth chart and to explain BMI, BMI percentiles, and the child's current BMI percentile. Recommendations were made in accordance with "Prevention Plus" for obese preschool children: amount of screen time, amount of active play time, amount of soda and juice , amount of fruits and vegetables, limiting eating out, and appropriate portion sizes. Received 1-page healthy food and activity brochure.

Author, Year and Quality	Group	Detailed Description
Stark, 2014 ¹⁰⁸ Fair	IG1: LAUNCH-clinic	10-session manualized intervention to produce small decreases or stabilize rate of child weight gain consistent w/ current obesity treatment recommendations. Parent-group clinic sessions (90 minutes) concurrent w/ child group sessions (90 minutes). Parent sessions (90 minutes) addressed dietary education (snacks/beverages, breakfast/lunch, dinner) and kept dietary diaries for child (caloric goal 1000-1200/day); decreasing screen time (<2 hours/day) and increasing physical activity (60 minutes/day), emphasized parental modeling of health lifestyle behaviors. Both parent and child provided w/ pedometers (goal 5000-10000 steps/day). Children received nutrition education, tried new foods during structured meals, and complete 15 minutes of moderate-to-vigorous exercise in a group format conducted by a pediatric psychology postdoc and research coordinator. Parents taught by license clinical psychologist to use child bx management skills including praise and attention to increase healthy bx, ignoring and timeouts to manage tantrums, contingency management and modeling; taught stimulus control;. At each sessions, parents provided w/ vegetables for daily taste tests (14 days worth of food) and kept food diaries. Also received a home clean-out box to use on their own to eliminate high-calorie, low-nutrient foods from home. Sessions conducted every other week during first 3 months, then monthly during next 3 months for 10 treatment sessions
	CG: Enhanced standard of care	Pediatrician met with each family to explain BMI, BMI percentiles, and to review the child's growth chart in a single 45-minute meeting. Modeled on AAP "Prevention Plus" guideline--Pediatrician made recommendations regarding daily screen time, active play, eliminating soda, fruit and vegetable servings, limiting eating out, and appropriate portion sizes for preschoolers. Received 1 page healthy food and activity brochure.
Steele, 2012 ¹³⁴ Fair	IG1: Family-based behavioral group treatment	Positively Fit program consisting of 10 90-minute weekly group treatment sessions. Sessions included 40-minutes of nutrition and PA education, 40-minutes of behavioral treatment and a 10-minute summary and goal-setting period. Parents and children attended separate group meetings for nutrition/PA and behavioral components but jointly attended last 10 minutes for summary and goal setting. Separate child sessions were held for children ages 7-12 and adolescents 13-17. Nutrition/PA session content included understanding nutritional information, portion control, planning for special occasions, and increasing knowledge of and participation in PA. Behavioral content included stimulus control, rewards, modeling, goal setting, social support and maintenance.
	IG2: Brief individual family intervention	Trim Kids program consisting of three 60-minute individual family visits with a registered dietitian spaced evenly over 10 weeks. Trim Kids manual provided at baseline assessment and families asked to read 4 chapters prior to dietician visit, with additional chapters assigned at first and second dietician visits. Topics included meal planning, basic nutritional principles, PA and energy balance.
Stettler, 2014 ¹⁰⁹ Fair	IG1: Multiple-behavior change	12 15-25 min weekly (1-4 sessions), biweekly (5, 6), monthly (7, 8) and bimonthly (9-12) with child, parent/guardian and clinician. Bx goals to reduce intake of "Whoa" sugary drinks (e.g., soda, lemonade), increase intake of "Go" drinks (water, milk), increase pedometer to 15000 steps/day, and reduce screen time $\leq$ 2 hours/day. Increase knowledge of serving sizes, benefits of water intake, detrimental effects of sugary drinks, importance of parent modeling behavior, healthy eating, screen time, and physical activity. Skill-building of self-monitoring and stimulus control. Point-system used with children for positive reinforcement for both session attendance and behavioral change, behavioral contract signed by parent, child and clinician. Role-playing and other activities (e.g., grocery receipt review, measure target HR, identify alternatives to sedentary bx).

Author, Year and Quality	Group	Detailed Description
	CG: Attention control (bullying prevention)	12 15-25 min clinician, child, and parent sessions. Bullying prevention attention control condition to aid children in developing strategies for improving friendship making skills and anger management abilities. Children received cartoons of different social situations and discussed them with the clinician. Homework assignments included similar cartoons and other creative assignments including drawing places where bullying might happen, drawing what different emotions look like, and strategies for handling negative social situations. Point-system used with children for positive reinforcement for positive social behaviors and handling friendship-making problems, but no behavioral contract. Sessions occurred on same schedule and for same length of time as IG conditions.
Taveras, 2011 ¹¹⁰ Good	IG1: MI + enhanced EMR and training	Chronic Care Model-based intervention where all practice team members were trained and electronic medical record enhanced to assist clinicians with decision support, patient tracking, follow-up, scheduling, and billing. 4 25-minute face-to-face + 3 15-min phone motivational interviewing sessions with NP which used tailored educational modules targeting TV viewing, and fast food and sugar-sweetened beverage intake. Included printed and electronic behavior monitoring tools, lists of resources for PA, and interactive website. Focus on de-emphasizing labeling, giving the parent responsibility for identifying which behaviors are problematic, encouraging parents to clarify and resolve ambivalence about behavior change, and setting goals to initiate change process. Pediatricians trained to use brief, focused negotiation (based on motivational interviewing) in routine well-child exams to endorse family behavior change. Posters in waiting rooms highlighted targeted behaviors. Behavioral goals were <1 hr/d TV or video viewing, no TV where the child sleeps, 1 or less serving per week fast food, and 1 serving or less per day sugar-sweetened beverage. 1 year intervention period followed by less intensive maintenance period (not further described).
	CG: Usual care	Current standard of care offered by the pediatric practice. This included well-child care visits and follow-up appointments for weight checks with their pediatrician or a specialist (e.g., nutritionist). Families in the UC group visited the practice for the baseline and annual well-child appointment.

Author, Year and Quality	Group	Detailed Description
Taveras, 2015 ¹¹¹ Good	IG1: CDS+coaching	<p>Modified the existing electronic health record to deploy a computerized, point-of-care clinical decision support (CDS) alert to pediatric clinicians at the time of a well-child visit for a child with a BMI at the 95th percentile or greater. Alert contained links to growth charts, evidence-based childhood obesity screening and management guidelines, and a pre-populated standardized note template specific for obesity that included options for (1) documenting and coding for BMI percentile, (2) documenting and coding for nutrition and physical activity counseling, (3) placing referrals for weight management programs, (4) placing orders for lab studies if appropriate, and (5) printing educational materials. Clinicians were trained to use brief motivational interviewing to negotiate a follow-up weight management plan with the patient and their family. A comprehensive set of educational materials were developed to be provided by pediatric clinicians to patients that focused on individual- and family-level behaviors, including (1) decreases in screen time, (2) decreases in consumption of sugar sweetened beverages, (3) increases in moderate and vigorous physical activity, and (4) improvement of sleep duration and quality. Additionally, 4 newsletters were provided throughout the intervention period that included self-guided behavior change. 4 phone motivational interview sessions (time NR) with health coach and optional text messaging program for parents (2 texts/week, one educational message about a target behavior, one self-monitoring message asking how child did with specific target behavior, with followup message after parent reply).</p> <p>Families were assigned a health coach who used motivational interviewing to support families by phone at 1, 3, 6, and 9 months. Parents were also invited to participate in an interactive text message program. Parents who chose not to receive texts had the option to receive the same messages by email. Texts were received 2x/week during the 1 year follow up period and provided support for behavior change for the patient and their family. The first text each week is an educational message about one of the recommended behaviors, and the second is a self-monitoring message that asks how the child did with a certain target behavior the day before. The outgoing text asks parents to reply to these messages, and in turn they receive an automated feedback response message tailored to how they indicated they are doing meeting that behavior goal.</p>
	IG2: CDS	Modified the existing electronic health record to deploy a computerized, point-of-care clinical decision support (CDS) alert to pediatric clinicians at the time of a well-child visit for a child with a BMI at the 95th percentile or greater. Alert contained links to growth charts, evidence-based childhood obesity screening and management guidelines, and a pre-populated standardized note template specific for obesity that included options for (1) documenting and coding for BMI percentile, (2) documenting and coding for nutrition and physical activity counseling, (3) placing referrals for weight management programs, (4) placing orders for lab studies if appropriate, and (5) printing educational materials. Clinicians were trained to use brief motivational interviewing to negotiate a follow-up weight management plan with the patient and their family. A comprehensive set of educational materials were developed to be provided by pediatric clinicians to patients that focused on individual- and family-level behaviors, including (1) decreases in screen time, (2) decreases in consumption of sugar sweetened beverages, (3) increases in moderate and vigorous physical activity, and (4) improvement of sleep duration and quality. Additionally, 4 newsletters were provided throughout the intervention period that included self-guided behavior change.
	CG: Usual care	Received the current standard of care offered by their pediatric office. No new decision support tools for obesity were made available in the electronic health records of the 4 usual care practices. Received generic health-related materials in the mail.

Author, Year and Quality	Group	Detailed Description
Taylor, 2015 ¹¹² Good	IG1: Tailored lifestyle support	One individual 1-2 hour multidisciplinary session (mentor, dietician, exercise specialist, clinical psychologist) with parents followed by regular brief contact with mentor (nutritionist or exercise trainer) tailored to family's goals and priorities, monthly for 1st year, ~ every 3 months in the 2nd year (total sessions ~14). At baseline, extensive report generated from collected data, specialists used the report to identify areas for change, but families took lead in identifying specific targets. Remaining contacts alternated between in-person visits at the university or in the home (30-40 min) and phone calls (5-10 min). Individual goals were negotiated and relevant resources, based on well-established behavioral strategies, were discussed. Resources covered parenting (talking about the study, goals, action plan, influences on child's behavior, ground rules and rewards, actions and consequences, problem solving, stress management for parents), diet ("good food guide", healthy options for fast food, food labels, feeding fussy eaters, shopping), and physical activity (getting the whole family active). Provided support and continued monitoring and adjustment to target behaviors over time. Est total intervention contact 6-7 hrs per family.
	CG: Brief feedback and advice	Met with trained researcher at baseline and 6 months. At first appt (30-45min) parents received individualized feedback about their child's diet and activity habits based on comprehensive baseline assessment. Child's results were compared with guidelines, other published data. Provided generalized advice using publicly available resources. Reviewed progress at second appt (15-30min), no new information/resources provided.
Toruner, 2010 ⁷⁷ Fair	IG1: Weight-management program	School-based intervention consisting of seven 40-70 minute group child sessions, 2 parent group sessions and 30-50 minute individual parent counseling over 2.5 months. Social cognitive theory-based intervention focusing on personal, behavioral, and environmental concepts. Personal components included improving intentions, perceptions of competency, and goal setting. Behavioral targets included improving nutrition and exercise habits and decreasing screen and sedentary time. Environmental concepts included increasing parent awareness of nutrition, PA, and sedentary lifestyle, and the importance of appropriate role modeling. Child sessions used game methods, short messages, and skills building activities. Parent sessions covered factors causing obesity, effects of obesity on health, and effective action plans against obesity. After group sessions, individual parent counseling addressed the organization of the lifestyle of children and parents within the family.
	CG: Waitlist	Waitlist control. When data collection was complete, seven training sessions delivered to children in the control group and two sessions delivered to parents.
Van Grieken, 2013 ⁷⁸ Fair	IG1: Be Active Eat Right	Prevention protocol initiated during a well-child visit, using motivational interviewing approach; 3 additional structured healthy lifestyle counseling sessions to promote overweight-prevention behaviors could be offered (approximately 3, 6, and 12 months after well-child visit). Content of additional counseling sessions was matched to parents' stage of change as assessed during initial well-child visit. 4 behaviors targeted: play outside >1 hr/day, eat breakfast daily, ≤2 glasses sweet beverages/day, and maximum 2 hrs/day sedentary behavior). Parents together with staff chose 1-2 behaviors to target. Information materials provided, diet and activity diaries discussed, and family-oriented action plans for behavior change discussed.
	CG: Usual care	Parents were informed about the overweight status of their child but usual care was given, consisting of general information about a healthy lifestyle provided as part of a normal well-child visit.

Author, Year and Quality	Group	Detailed Description
Vos, 2011 ¹¹³ Fair	IG1: Family-based multidisciplinary lifestyle intervention	2 individual family screening and counseling visits with a multidisciplinary team results in contract for behavioral goals, followed by 3-month intensive phase involving 7 group meetings, 2.5 hours each (7 child-only sessions, 5 parents-only sessions, 1 parent+child session, every 2 weeks) followed by booster sessions (2-3 per year) for 2 years. Individual visits include nutritional advice (traffic light nutrition), physical activity counseling, and psychological counseling (cognitive behavioral techniques for weight loss and help child deal with/accept their own body. Child group meetings focused on nutritional information, self-control techniques, problem solving, self-reward, self-regulation, stimulus control, self-image, coping strategies, and relapse prevention. Also included physical activity at each meeting (duration NR). Parent group meetings focused on lifestyle change, nutrition, and how to help child; parental role in family treatment conceived as therapeutic helper (positive feedback, positive support) and healthy lifestyle role model. Parenting style of strict rules but pleasant interactions encouraged. Booster sessions to maintain learned behavior through problem-solving and relapse prevention. Detailed description provided in study protocol.
	CG: Waitlist	Participants were given an initial physical activity and nutritional advice. After 12 months, they were offered multidisciplinary treatment.
Wake, 2009 ⁷⁹ Good	IG1: LEAP-2	Four GP consultations of brief solution-focused family therapy to support healthy lifestyle goals. 16-page family folder included 5 topic sheets each targeting one area of behavioral change (sedentary time, physical activity, water consumption, eating habits and lower fat food options). Topic sheets summarized supporting evidence for the target behavior, modelled solutions to common challenges, and provided suggestions for reaching the goal. Materials included wall chart, reward stickers, and shopping tips. Parents encouraged to offer family meals, engage in shared parent-child activities, use praise and non-food rewards, and use contracting for behavior change. Before first appointment, GPs received intervention materials, summary of parent's responses from baseline questionnaire regarding nutrition, physical activity and weight status concern, and child's BMI. GP also provided brief encouragement during non-counseling visits.
	CG: Usual care	Usual care. Control families notified of control status via letter and never identified to GPs. Medical records of CG children audited to assess possible contamination (i.e., discussion of weight at a medical visit).
Wake, 2013 ¹¹⁴ Good	IG1: HopSCOTCH	One hour-long family appointment with obesity specialist team (pediatrician and dietitian) followed by one 20-40 minute "long" GP consultation and 4-8 6-20 minute standard appointments; GP and specialist care linked by web-based software. Specialist team provided with individual patient summary about family and medical history, and daily diet, PA and sedentary activities. At this visit, clinicians and families agreed on an initial care plan and specific goals. Subsequent 20-40 minute GP session and regular 6-20 minute standard consultations every 4 to 8 weeks consisting of lifestyle and BMI progress review, problem solving, and goal setting using brief solution-focused techniques. All data entered into HopSCOTCH web-based software which was shared between specialist team and GP. 6 months after enrollment, specialist team accessed software to review participant progress and faxed a summary report to GP. Specialist team available to GP via email or phone.
	CG: Usual care	Participants were free to seek assistance from their GP or from any other service.
Weigel, 2008 ¹¹⁵ Fair	IG1: Sea Lion Club	Twice weekly child group sessions of 45-60 minutes for 12 months consisting of PA, dietary education, and coping strategies. The first weekly session was for PA and the second for nutrition and coping strategies. Children encouraged to complete diet and PA logs (which included parent's signature) and discuss weekly with the group. Child groups divided by age for age-appropriate training and education. Parental support provided at optional separate 2-hour monthly meetings and feedback discussions; these included child-parent activities and social reinforcement.

Author, Year and Quality	Group	Detailed Description
	CG: Brief advice	Two pediatrician visits with parent and child that included written therapeutic advice and explanation. Written materials included PA recommendations, dietary education, and coping strategies (e.g., awareness of eating behavior and recommendations for habit books); materials were explained to the family by the pediatrician and followed German obesity guidelines. Children and adolescent versions of materials also provided. After 1 year, participants were offered open, fun-based lessons in the sports center where the intervention had been performed.
Wilfley, 2007 ¹¹⁸ Good	IG1: Combined maintenance group	Behavioral skills or social-facilitation maintenance intervention (see other IG descriptions) following a 5-month (20 sessions) family-based weight loss treatment focused on dietary modification (reduce calories to 1200-1500/day to facilitate weight loss of 0.5-1 pound/week; followed Traffic Light Diet), physical activity increases (maximum goal 90 minutes/day at least 5 days per week), decrease sedentary activities, and behavioral change skills (self-monitoring, goal-setting, stimulus control and reinforcement). All sessions included 20-minutes individual family treatment and 40-minute separate parent and child group sessions.
	IG2: Behavioral skills maintenance	20-session Family-based comprehensive weight management program (see description in CG) plus behavioral skills maintenance component. Specific strategies to behavioral skills maintenance included enhancing motivation and promoting small changes to support weight maintenance (weeks 1-5, Phase 1); identifying high-risk situations, preplanning, using cognitive restructuring (weeks 6-11, Phase 2); and assessing behaviors and developing plans for permanent lifestyle change (weeks 12-16, Phase 3). Encouraged to modify caloric intake from weight loss treatment levels to individualized level consistent w/ weight maintenance; participate in individualized physical activity; maintain 3-pound weight range, 1.5 pound above or below absolute weight; continue to self-monitor.
	IG3: Social facilitation maintenance	20-session Family-based comprehensive weight management program (see description in CG) plus social facilitation maintenance component based on premise that relapse results from an absence of social environment support. Parents guided to encourage children to form friendships with physically active peers and/or ensure that children's playdates with existing friends involved physical activity (weeks 1-5, Phase 1); addressed body image concerns that might limit peer-related physical activity, and families also learned effective strategies for curtailing weight-related teasing or criticism (weeks 6-11, Phase 2); solidified children's social network to maximize efficacy in promoting long-term behavioral changes (weeks 12-16, Phase 3). Encouraged to modify caloric intake from weight loss treatment levels to individualized level consistent w/ weight maintenance; participate in individualized physical activity; maintain 3-pound weight range, 1.5 pound above or below absolute weight; continue to self-monitor.
	CG: No maintenance	Discontinued contact after 5-month (20 sessions) weight loss program. Family-based weight loss treatment focused on dietary modification (reduce calories to 1200-1500/day to facilitate weight loss of 0.5-1 pound/week; followed Traffic Light Diet), physical activity increases (maximum goal 90 minutes/day at least 5 days per week), decrease sedentary activities, and behavioral change skills (self-monitoring, goal-setting, stimulus control and reinforcement). All sessions included 20-minutes individual family treatment and 40-minute separate parent and child group sessions.

Author, Year and Quality	Group	Detailed Description
Williamson, 2006 ¹¹⁶ Fair	IG1: Interactive behavior therapy	2-year interactive internet-based weight management program, including website access, 4 face-to-face counseling sessions during first 12 weeks, and on-going email-based counseling, culturally tailored for African-American families. Participants provided with a personal computer for the home and were given free internet access. Program included provision of nutrition education plus behavior modification program that targeted lifestyle eating and physical activity habits. Website involved many interactive components, including participants submitting daily food records and receiving automated feedback. Parent and child had separate website and email accounts, but parent and child attended face-to-face counseling sessions together. Internet-based counseling accomplished via weekly emails regarding program progress with the counselor providing feedback. Interactive website for self-monitoring, goal setting, feedback (modeled after Traffic Light Diet), problem-solving to address barriers, 52 lesson plans and quizzes. Face-to-face counseling sessions encouraged adherence to behavioral principles, including problem-solving and behavioral contracting, and provided additional training related to using computers/internet and website tools, and solved any computer problems.
	CG: Passive health education	Access to educational website and 4 face-to-face counseling sessions with dietician during first 12 weeks, but were not prescribed behavioral tasks for weight loss. Counseling sessions included education on healthy nutrition and exercise, but not behavioral change principles. Internet/email-based counseling not provided. Website primarily educational in nature. Participants provided with a personal computer for the home and were given free internet access.

Abbreviations: BMI = body mass index; CDS = clinical decision support; CBT = cognitive behavioral therapy; CG = control group; EMR = electronic medical records; F/U = follow-up; F/V = fruit/vegetable; GP = general practice; hr = hour; IG = intervention group; IVR = interactive voice response; kcal = kilocalorie; lb(s) = pound(s); MI = motivational interview; MVPA = moderate-to-vigorous physical activity; NR = not reported; PA = physical activity; PCP = primary care provider; pts = participants; RD = registered dietician; SMS = short messaging service; SSBs = sugar sweetened beverages; UC = usual care

Table 7. Weight outcomes in included trials

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Banks, 2012 ⁸⁰ Fair	2.5	zBMI (BMI SDS) (z-score)	12	-0.17 (0.56)	29	-0.15 (0.27)	23	NR	
Bathrellou, 2010 ¹¹⁹ Fair	21	% excess of 85th %ile	18	-5.9 (18.73)	16	-6.0 (18.2)	16	0.311	
Berkowitz, 2012 ⁸¹ Fair	38.5	BMI (kg/m ²)	12	-0.45 (3.15)	61	-0.38 (3.38)	53	0.88	
		zBMI (BMI SDS) (z-score)	12	-0.12 (0.27)	61	-0.12 (0.28)	53	0.91	
		Weight (kg)	12	0.61 (8.82)	61	0.40 (9.76)	53	0.89	
Berry, 2014 ⁹² Fair	36.75	BMI percentile	12	-0.62 (5.10)	152	-0.99 (5.07)	145	0.287	
		BMI percentile	18	-0.62 (5.23)	152	-1.49 (5.07)	145	0.47	
Bocca, 2012 ⁹³ Fair	30	BMI (kg/m ²)	12	-1 (1.69)	32	0 (1.95)	25	0.03	
		zBMI (BMI SDS) (z-score)	12	-0.6 (0.61)	32	-0.3 (0.66)	32	0.02	
			18	NR	32	NR	32	NR, NS	
		Weight (kg)	12	1.9 (2.98)	32	3.1 (2.73)	25	0.12	
Broccoli, 2016 ⁹⁴ Good	3.75	BMI (kg/m ²)	12	0.46 (1.32)	186	0.78 (1.21)	185	0.005	
			24	1.52 (1.60)	186	1.56 (1.60)	185	0.986	
		BMI percentile	12	-3.57 (8.39)	186	-1.55 (6.73)	185	NR	
			24	-2.97 (9.28)	186	-2.47 (8.27)	185	NR	
		zBMI (BMI SDS) (z-score)	12	-0.12 (0.38)	186	-0.01 (0.35)	185	NR	
			24	-0.05 (0.45)	186	-0.03 (0.38)	185	NSD	
		Percent Overweight or Obese (% with overweight / obese)	12	137 (73.3%)	187	143 (77.3%)	185	0.169	
Bryant, 2011 ⁹⁵ Fair	24	zBMI (BMI SDS) (z-score)	12	0.03 (0.24)	35	-0.03 (0.27)	35	NR	
Coppins, 2011 ⁹⁶ Fair	48	zBMI (BMI SDS) (z-score)	12	-0.13 (0.38)	28	-0.14 (0.39)	27	0.32	Baseline measures
		Weight (kg)	12	3.9 (6.47)	28	5.1 (6.29)	27	0.31	Baseline measures
Davis, 2012 ¹¹⁷ Fair	16	zBMI (BMI SDS) (z-score)	8	NR	30	NR	23	NSD	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
de Niet, 2012 ¹²⁰	47.5	zBMI (BMI SDS) (z-score)	12	-0.25 (0.53)	73	-0.20 (0.52)	68	0.76	
DeBar, 2012 ⁶⁹ Good	36.5	BMI percentile	12	-1.90 (5.99)	90	-0.82 (2.94)	83	0.067	
		zBMI (BMI SDS) (z-score)	12	-0.15 (0.41)	90	-0.08 (0.36)	83	0.012	
		Weight (kg)	12	2.22 (16.38)	90	3.21 (16.33)	83	0.015	
Epstein, 1985a ⁸² Fair	66.5	Weight (kg)	12	-3.86 (19.35)	NR	-1.36 (18.30)	NR	NS	BL values
Epstein, 1985b ⁸³ Fair	64	BMI (kg/m ²)	12	-3.7 (2.71)	8	-1.3 (3.16)	11	<0.005	
Epstein, 1994 ⁸⁴ Good	64	% excess of 50th %ile	12	-26.5 (13.61)	17	-16.7 (18.29)	22	<0.05	
			24	-15.4 (13.61)	17	-10.6 (15.48)	22	0.29	
Epstein, 1995 ⁸⁵ Fair	40.5	% excess of 50th %ile (IG1 vs. IG2)	12	-10.29 (NR)	NR	-18.97 (NR)	NR	NR	
		% excess of 50th %ile (IG1 vs. IG3)	12	-10.29 (NR)	NR	-8.82 (NR)	NR	<0.05	
		% excess of 50th %ile (IG2 vs. IG3)	12	-8.82 (NR)	NR	-18.97 (NR)	NR	<0.05	
		Weight (kg) (IG1 vs. IG2)	24	9 (9.3)	20	9.0 (7.2)	19	NSD	
Epstein, 2000a ¹²¹ Good	30	Weight (kg) (IG1 vs. IG3)	24	9 (9.3)	20	9.1 (10.4)	19	NSD	
		Weight (kg) (IG2 vs. IG4)	24	9.0 (7.2)	19	9.1 (10.4)	19	NSD	
		Weight (kg) (IG3 vs. IG4)	24	9.1 (10.4)	19	8.9 (7.9)	18	NSD	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Epstein, 2000b ¹²² Fair	30	zBMI (BMI SDS) (z-score)	12	-1.1 (0.95)	17	-1.3 (0.9)	18	NR	
			24	-0.5 (1.01)	17	-0.9 (0.9)	18	NR	
		(IG1 vs. IG2)							
		zBMI (BMI SDS) (z-score)	12	-1.1 (0.95)	17	-1.3 (0.85)	18	NR	
			24	-0.5 (1.01)	17	-1.1 (0.92)	18	<0.03	
		(IG1 vs. IG3)							
		Weight (kg)	12	-1.2 (12.9)	17	-2.4 (12.34)	18	NR	
			24	11.9 (14.07)	17	7.2 (12.15)	18	NR	
		(IG1 vs. IG2)							
		Weight (kg)	12	-1.2 (12.9)	17	-1.3 (11.82)	18	NR	
			24	11.9 (14.07)	17	7.2 (12.4)	18	<0.03	
		(IG1 vs. IG3)							
Epstein, 2004 ¹²³ Good	30	zBMI (BMI SDS) (z-score)	12	-0.6 (1)	32	-0.9 (1)	28	NSD	
Epstein, 2008b ¹²⁴ Fair	32.5	zBMI (BMI SDS) (z-score)	12	-0.26 (0.15)	21	-0.21 (0.17)	20	0.01	
			24	-0.27 (0.41)	14	-0.11 (0.21)	13	0.04	
Epstein, 2014 ¹²⁵ Fair	30	% excess of 50 th %tile	12	-6.9 (NR)	26	2.2 (NR)	24	NR	
Estabrooks, 2009 ¹²⁶ Fair	4	zBMI (BMI SDS) (z-score)	12	-0.08 (0.30)	63	-0.06 (0.03)	36	NSD	
		(IG1 vs. IG3)							
		zBMI (BMI SDS) (z-score)	12	-0.08 (0.30)	63	-0.02 (0.04)	56	NSD	
Garipagaoglu, 2009 ¹²⁷ Fair	10.5	BMI (kg/m ²)	12	-1.2 (3.38)	39	-0.6 (3.85)	37	0.267	Age
		zBMI (BMI SDS) (z-score)	12	-0.12 (0.49)	39	-0.09 (0.44)	37	0.14	Age
Gerards, 2015 ⁹⁷ Fair	16.5	zBMI (BMI SDS) (z-score)	12	0.05 (0.26)	35	-0.08 (0.27)	32	NR	
		WC (cm)	12	3.88 (2.99)	35	3.44 (3.46)	32	NR	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Goldfield, 2001 ¹²⁸ Fair	21.67	zBMI (BMI SDS) (z-score)	12	NR (NR)	12	NR(NR)	12	NSD	
Golley, 2007 ⁷⁰ Fair	23.75	zBMI (BMI SDS) (z-score)	12	-0.24 (0.43)	31	-0.13 (0.4)	31	0.76	
		(IG1 vs. CG)							
		zBMI (BMI SDS) (z-score)	12	-0.24 (0.43)	31	-0.15 (0.47)	29	NR	
		(IG1 vs. IG2)							
		WC (z-score)	12	-0.31 (0.53)	31	-0.02 (0.58)	31	0.03	
		(IG1 vs. CG)							
Grey, 2004 ⁸⁶ Fair	39	BMI (kg/m ²)	12	0.10 (6.36)	22	0.80 (7.42)	10	0.4	
		Weight (kg)	12	11.3 (46.39)	22	15.4 (56.64)	10	0.3	
Hughes, 2008 ⁹⁸ Fair	5	zBMI (BMI SDS) (z-score)	12	-0.07 (NR)‡	45	-0.19 (NR)‡	41	0.5	
		Weight (kg)	12	7.0 (NR)‡	45	7.2 (NR)‡	41	0.9	
Hystad, 2013 ¹²⁹ Fair	65	zBMI (BMI SDS) (z-score)	24	-0.18 (0.55)	36	-0.17 (0.45)	44	NSD	
Israel, 1985 ⁸⁷ Fair	35.5	Weight (kg)	12	5.2 (19.23)	11	5.27 (7.97)	9	NSD	BL weight
Johnston, 2010 ¹³⁰ Fair	47.25	BMI (kg/m ²)	12	-0.1 (1.2)	40	1.6 (1.1)	20	NR	
			24	0.8 (3.4)	40	2.1 (1.3)	20	NR	
		zBMI (BMI SDS) (z-score)	12	-0.2 (0.2)	40	0.1 (0.1)	20	<0.001	
			24	-0.2 (0.5)	40	0.0 (0.1)	20	<0.05	
		Weight (kg)	12	3.6 (3.1)	40	7.4 (3.2)	20	NR	
			24	9.2 (10.1)	40	12.1 (4.9)	20	NR	
Johnston, 2013 ¹³¹	47.25	BMI (kg/m ²)	12	0.2 (1.5)	46	0.9 (0.7)	25	<0.05	
			24	0.5 (3.4)	46	2.4 (2.0)	25	<0.05	
			12	-0.1 (0.2)	46	0.0 (0.1)	25	<0.01	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Fair		zBMI (BMI SDS) (z-score)	24	-0.2 (0.4)	46	0.1 (0.2)	25	<0.01	
		Weight (kg)	12	4.5 (4.1)	46	5.3 (3.2)	25	NR	
			24	9.3 (11.4)	46	12.1 (7.4)	25	NR	
Kalarchian, 2009 ⁷¹ Fair	43.75	BMI (kg/m ²)	12	0.48 (2.95)	97	1.09 (2.24)	95	0.11	
			18	1.5 (2.95)	97	1.72 (2.05)	95	0.56	
		Weight (kg)	12	6.92 (7.09)	97	9.22 (5.75)	95	0.014	
			18	11.77 (6.89)	97	13.35 (5.36)	95	0.077	
		WC (cm)	12	6.18 (10.34)	97	9.59 (8.48)	95	0.014	
Kalavainen, 2007 ⁹⁹ Fair	43.5	BMI (kg/m ²)	12	-0.8 (0.91)	35	0 (1.06)	35	0.003	
			24	1.3 (1.66)	34	1.5 (1.66)	35	0.624	Sex, mother's BMI, social class, BL weight-for-height (or BMI or BMI-SDS)
			36	2.1 (1.96)	34	2.3 (2.72)	34	0.7	Sex, mother's BMI, social class, BL weight-for-height (or BMI or BMI-SDS)
		zBMI (BMI SDS) (z-score)	12	-0.3 (0.15)	35	-0.2 (0.30)	35	0.022	
			24	-0.2 (0.45)	34	-0.2 (0.30)	35	0.84	Sex, mother's BMI, social class, BL weight-for-height (or BMI or BMI-SDS)
			36	-0.3 (0.45)	34	-0.3 (0.60)	34	0.916	Sex, mother's BMI, social class, BL weight-for-height (or BMI or BMI-SDS)
		Weight (kg)	12	0.5 (1.8)	35	1.8 (2.2)	35	NR	
			24	10.7 (3.9)	34	10.7 (4.1)	35	NR	NR
			36	17.3 (5.2)	34	17.1 (7.4)	34	NR	NR
		WC (cm)	12	-0.7 (3.17)	35	0.8 (3.62)	35	0.062	
Larsen, 2015 ⁸⁸ Fair	18	zBMI (BMI SDS)	24	-0.26 (0.60)	40	-0.20 (0.56)	34	0.59	
Magarey, 2011 ⁸⁹ Fair	33	zBMI (BMI SDS) (z-score)	12	-0.31 (0.62)	59	-0.24 (0.68)	64	NR	
			18	-0.31 (0.95)	48	-0.29 (0.71)	54	NR	
			24	-0.39 (0.63)	52	-0.42 (0.76)	54	NR	
McCallum, 2007 ⁷²	1	BMI (kg/m ²)	15	1.20 (2.76)	70	1.20 (2.16)	76	1	SES, age, sex, baseline BMI

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Good		zBMI (BMI SDS) (z-score)	15	0 (0.61)	70	0.02 (0.55)	76	0.62	SES, baseline zBMI
Nemet, 2005 ¹⁰⁰	32.5	BMI (kg/m ²)	12	-1.6 (4.26)	20	0.6 (5.52)	20	<0.05	
		BMI percentile	12	-5.90 (2.86)	20	-1.1 (1.21)	20	<0.05	
Fair		Weight (kg)	12	0.60 (16.67)	20	5.20 (24.22)	20	<0.05	
Nguyen, 2012 ¹³²	26.8	BMI (kg/m ²)	12	0.6 (4.53)	57	0.0 (3.66)	50	NR, NS	Sex and baseline age
			24	0.4 (3.71)	43	1.1 (4.06)	50	NR, NS	Sex and baseline age
Fair		zBMI (BMI SDS) (z-score)	12	-0.06 (0.40)	57	-0.08 (0.31)	50	NR, NS	Sex and baseline age
			24	-0.17 (0.50)	43	-0.09 (0.36)	50	NR, NS	Sex and baseline age
		Weight (kg)	12	3.90 (17.04)	57	3.50 (12.93)	50	NR, NS	Sex and baseline age
			24	6.4 (11.33)	43	8.3 (13.07)	50	NR, NS	Sex and baseline age
Norman, 2015 ⁷³	11.5	BMI (kg/m ²)	12	0.20 (4.21)	53	0.4 (4.11)	53	NR	
Fair		zBMI (BMI SDS) (z-score)	12	-0.1 (0.36)	53	-0.1 (0.44)	53	NR	
		WC (cm)	12	-0.10 (11.48)	53	-0.1 (11.21)	53	NR	
Nowicka, 2008 ¹⁰¹	16	BMI (kg/m ²)	12	0 (4.45)	65	1.20 (4.75)	23	NR	
Fair		zBMI (BMI SDS) (z-score)	12	-0.06 (0.46)	65	0.09 (0.53)	23	NS	Age and sex
		Weight (kg)	12	3.10 (18.80)	65	8.10 (19.36)	23	NR	
Patrick, 2013 ¹⁰²	38	zBMI (BMI SDS) (z-score)	12	-0.2 (0.35)	14	0 (0.35)	16	0.824	
Fair		(IG1 vs. CG)							
		zBMI (BMI SDS) (z-score)	12	-0.2 (0.35)	14	-0.1 (0.36)	17	NR	
		(IG1 vs. IG3)							
		zBMI (BMI SDS) (z-score)	12	-0.1 (0.36)	17	-0.1 (0.36)	17	NR	
		(IG2 vs. IG3)							
Quattrin, 2014 ⁷⁴	39.25	zBMI (BMI SDS) (z-score)	12	-0.45 (0.34)	46	-0.21 (0.35)	50	<0.001	
			18	-0.45 (0.38)	46	-0.25 (0.35)	50	<0.01	
Fair			24	-0.5 (0.38)	46	-0.25 (0.35)	50	<0.007	
		Weight (kg)	12	1.70 (2.03)	46	2.9 (2.12)	50	<0.002	
		Weight (kg)	18	3.6 (2.03)	46	5 (2.12)	50	<0.001	
		Weight (kg)	24	5.5 (2.03)	46	7.1 (2.12)	50	<0.001	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Raynor, 2012b ¹⁰³ Fair	6	zBMI (BMI SDS) (z-score)	12	-0.22 (NR)	26	-0.22 (NR)	29	NSD	
		(IG1 vs. CG)							
		zBMI (BMI SDS) (z-score)	12	-0.22 (NR)	26	-0.11 (NR)	26	NR	
		(IG1 vs. IG2)							
Reinehr, 2006 ¹⁰⁴ Fair	77.5	BMI (kg/m ²)	12	0.1 (4.21)	174	2 (3.76)	37	0.013	
			24	1.20 (4.95)	174	2.9 (4.20)	37	NR	
		zBMI (BMI SDS) (z-score)	12	-0.3 (0.35)	174	0 (0.41)	37	0.007	
			24	-0.3 (0.35)	174	0 (0.41)	37	NR	
Reinehr, 2009 ¹⁰⁵ Fair	77.5	zBMI (BMI SDS) (z-score)	12	-0.22 (0.35)	288	0.15 (0.17)	186	<0.001	Age, sex, BL zBMI, and pubertal stage
		WC (cm)	12	-1 (12.53)	288	4 (10.54)	186	<0.001	Age, sex, BL zBMI, and pubertal stage
		Percent Overweight or Obese (% obese)	12	216 (74.9)	288	185 (99.3)	186	NR	
Resnick, 2009 ⁷⁵ Fair	1.7	BMI percentile	12	-2.8 (7.36)	19	-4 (9.68)	24	0.59	
Resnicow, 2005 ⁹⁰ Fair	45.5	BMI (kg/m ²)	12	0.70 (5.80)	45	0.50 (8.07)	62	0.76	
		Weight (kg)	12	2.95 (16.95)	45	2.00 *22.62)	62	0.45	
Resnicow, 2015 ⁷⁶ Fair	2.5	BMI percentile (IG1 vs. CG)	24	-4.9 (15.18)	154	-1.8 (13.79)	158	0.02	Age, race, gender, baseline BMI, household income, parent BMI, provider age, and practice effects
		BMI percentile (IG1 vs. IG2)	24	-4.9 (15.18)	154	-3.8 (13.98)	145	NR	
Saelens, 2013 ¹³³ Fair	40	zBMI (BMI SDS) (z-score)	24	-0.22 (0.43)	35	-0.15 (0.44)	37	0.25	
Savoye, 2007 ¹⁰⁶	82.33	BMI (kg/m ²)	12	-1.7 (3.14)	105	1.6 (3.18)	69	<0.001	BL outcome

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Fair		Weight (kg)	12	0.3 (8.89)	105	7.7 (9.96)	69	<0.001	BL outcome
Stark, 2011 ¹⁰⁷	38.25	BMI percentile	12	-1.1 (1.9)	7	1.6 (2.7)	9	0.04	
Fair		zBMI (BMI SDS) (z-score)	12	-0.37 (0.41)	7	0.4 (0.49)	9	0.005	
		Weight (kg)	12	0.6 (3.5)	7	4.8 (1.5)	9	0.005	
		Percent Overweight or Obese (% obese, ≥99 th percentile)	12		7		9	NR	
Stark, 2014 ¹⁰⁸	30	zBMI (BMI SDS) (z-score)	12	-0.59 (0.75)	11	-0.03 (0.36)	12	0.04	
Fair		Weight (kg)	12	2.3 (3.1)	11	5.2 (2.6)	12	0.03	
Steele, 2012 ¹³⁴	28.3	zBMI (BMI SDS) (z-score)	12	-0.27 (0.47)	30	-0.16 (0.53)	28	>0.05	
Fair									
Stettler, 2014 ¹⁰⁹	4	BMI (kg/m ²)	12	0.6 (2.65)	46	1.70 (3.31)	24	0.03	Cluster design
Fair		zBMI (BMI SDS)	12	-0.06 (0.50)	46	0.1 (0.41)	24	0.03	Cluster design
		Weight (kg)	12	5.5 (10.0)	46	8.60 (13.75)	24	0.04	Cluster design
		Percent Overweight or Obese (% obese, ≥95 th percentile)	12	15 (15)	46	9 (38)	24	0.05	Cluster design
Taveras, 2011 ¹¹⁰	2.67	BMI (kg/m ²)	12	0.31 (1.43)	253	0.49 (1.39)	192	0.15	Age, sex, race/ethnicity, parent education and overweight/obesity status at BL, household income, and time elapse from BL to followup visit
Good									

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
		zBMI (BMI SDS) (z-score)	12	NR (NR)	253	NR (NR)	192	0.28	Age, sex, race/ethnicity, parent education and overweight/obesity status at BL, household income, and time elapse from BL to followup visit
Taveras, 2015 ¹¹¹ Good	1.25	BMI (kg/m ²) (IG1 vs. CG)	12	0.80 (4.41)	164	1.20 (4.41)	171	NR	parent age and country of birth and child race/ethnicity, sex, and age at visit
		BMI (kg/m ²) (IG1 vs. IG2)	12	0.80 (4.41)	164	0.70 (4.55)	183	NR	
		zBMI (BMI SDS) (z-score) (IG1 vs. CG)	12	-0.09 (0.33)	164	-0.04 (0.32)	171	NR	parent age and country of birth and child race/ethnicity, sex, and age at visit
		zBMI (BMI SDS) (z-score) (IG1 vs. IG2)	12	-0.09 (0.33)	164	-0.11 (0.35)	183	NR	
Taylor, 2015 ¹¹² Good	7.2	BMI (kg/m ²)	12	0.1 (2.66)	91	0.4 (2.11)	90	NR	
			24	0.80 (2.98)	89	1.20 (2.29)	92	NR, significant	Baseline value, age, sex, feedback condition, and interactions btwn time and feedback condition and time and intervention condition
		zBMI (BMI SDS) (z-score)	12	-0.19 (0.52)	91	-0.08 (0.42)	90	NR	
			24	-0.27 (0.53)	89	-0.12 (0.44)	92	NR, significant	Baseline value, age, sex, feedback condition, and interactions btwn time and feedback condition and time and intervention condition
		Weight (kg)	12	2.9 (9.34)	91	3.5 (7.45)	90	NR	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
		WC (cm)	24	7.50 (10.41)	89	8.1 (8.02)	92	NR	NR
			12	1.40 (10.15)	91	2.90 (7.87)	90	NR	
			24	4.90 (11.03)	89	6.5 (8.18)	92	NR, significant	Baseline value, age, sex, feedback condition, and interactions btwn time and feedback condition and time and intervention condition
Toruner, 2010 ⁷⁷ Fair	9.75	BMI (kg/m ²)	12	-0.6 (1.91)	41	0.30 (2.45)	40	0.012	
Van Grieken, 2013 ⁷⁸ Fair	2	BMI (kg/m ²)	24	1.37 (1.53)	277	1.44 (1.71)	230	0.46	Age, cluster
		zBMI (BMI SDS) (z-score)	24					0.07	Age, cluster
		WC (cm)	24	7.2 (5.49)	262	7.33 (5.3)	222	0.506	Age, cluster
		Percent Overweight or Obese (% obese)	24		277		230	NR	
		Percent Overweight or Obese (% overweight / obese)	24		277		230	NR	
Vos, 2011 ¹¹³ Fair	46.25	zBMI (BMI SDS) (z-score)	12	-0.4 (1.29)	32	-0.1 (1.11)	35	0.02	BL differences
Wake, 2009 ⁷⁹ Good	1	BMI (kg/m ²)	12	0.60 (2.59)	127	0.70 (2.19)	115	0.5	Social disadvantage index, age, sex, BL score for outcome, raw BMI at BL
		WC (cm)	12		125		114	0.8	Social disadvantage index, age, sex, BL score for outcome, raw BMI at BL

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Wake, 2013 ¹¹⁴ Good	2.5	BMI (kg/m ²)	12	0.90 (3.39)	56	0.80 (4.19)	49	0.7	Child's age and sex at randomization, neighborhood socioeconomic disadvantage score, raw BL BMI and BL value of outcome measure where available
		zBMI (BMI SDS) (z-score)	12	-0.2 (0.5)	56	-0.1 (0.36)	49	0.2	Child's age and sex at randomization, neighborhood socioeconomic disadvantage score, raw BL BMI and BL value of outcome measure where available
		WC (cm)	12		56		49	0.1	Child's age and sex at randomization, neighborhood socioeconomic disadvantage score, raw BL BMI and BL value of outcome measure where available
Weigel, 2008 ¹¹⁵ Fair	114.1	BMI (kg/m ²)	12	-1.5 (3.04)	36	2.80 (3.86)	30	<0.001	
		zBMI (BMI SDS) (z-score)	12	-0.34 (0.48)	36	0.26 (0.57)	30	<0.01	
Wilfley, 2007 ¹¹⁸ Good	60	zBMI (BMI SDS) (z-score)	12	0.03 (0.42)	100	0.08 (0.38)	48	0.07	
			24	0.02 (0.45)	100	0.12 (0.38)	48	0.25	
		(IG1 vs. CG)							
		zBMI (BMI SDS) (z-score)	12	0.50 (0.37)	50	0.00 (0.47)	50	NSD	
			24	0.40 (0.43)	50	-0.01 (0.47)	50	NSD	
		(IG2 vs. IG3)							
	4	BMI (kg/m ²)	12	0.16 (1.64)	28	1.42 (1.67)	29	<0.05	

Author, Year & Quality	Est. hrs of contact	Outcome (unit)	Followup	IG* mean difference (SD)	IG n	Comparator† mean difference (SD)	Comparator n	Between group p-value	Adjustment details
Williamson, 2006 ¹¹⁶ Fair		Weight (kg)	18	0.7 (2.43)	28	1.29 (2.37)	29	NSD	
			24	0.73 (3.49)	28	1.2 (3.50)	29	NSD	
			12	2.35 (4.60)	28	4.29 (4.68)	29	NR	
			18	3.9 (7.20)	28	4.58 (6.78)	29	NR	
			24	4.4 (9.0)	28	6.3 (8.62)	29	NSD	Baseline weight

*Most intensive intervention

†For efficacy trials, comparator was the control group; for comparative effectiveness trials, another active intervention arm (if multiple intervention arms, comparison indicated in outcome column)

‡Median change from baseline

Abbreviations: BL = baseline; BMI = body mass index; CDC = Centers for Disease Control and Prevention; CG = control group; cm = centimeter(s); Est = estimated; hr(s) = hour(s); IG = intervention group; kg = kilogram(s); lb(s) = pound(s); m = meter(s); NR = not reported; NSD = no significant difference; SD = standard deviation; SDS = standard deviation score; SES = socioeconomic status; WC = waist circumference; yr(s) = year(s); zBMI = body mass index z-score

Table 8. Reported or calculated change in mean weight (pounds), with columns showing mean +/- one standard deviation

Age Category	Author, Year	Follow-up	Age (years)	Intervention Group					Control Group				
				BL Mean	Mean Change	SD Change	Mean -SD	Mean +SD	BL Mean	Mean Change	SD Change	Mean -SD	Mean +SD
52+ hours													
Wide Age Range	Weigel, 2008	12	11.	NR	-7.7	15.6	-23.3	7.9	NR	14.4	19.8	-5.4	34.2
	Savoye, 2007	12	12.1	191.8	0.7	19.6	-18.9	20.3	201.1	17.0	22.0	-5.0	38.9
	Reinehr, 2009	12	12.6	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Reinehr, 2006	12	10.4	NR	0.5	19.6	-19.2	20.1	NR	9.3	17.6	-8.2	26.9
26-51 hours													
Wide Age Range	Coppins, 2011	12	10.5	139.6	8.6	14.3	-5.7	22.9	122.6	11.2	13.9	-2.6	25.1
	Vos, 2011	12	13.2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Nemet, 2005	12	11.1	130.3	1.3	36.8	-35.4	38.1	139.8	11.5	53.4	-41.9	64.9
Preschool	Quattrin, 2014	12	4.5	51.6	3.7	4.5	-0.7	8.2	51.8	6.4	4.7	1.7	11.1
	Stark, 2011	12	4.1	NR	1.3	7.7	-6.4	9.0	NR	10.6	3.3	7.3	13.9
	Stark, 2014	12	4.5	58.7	5.1	6.8	-1.8	11.9	57.6	11.5	5.7	5.7	17.2
	Bocca, 2012	12	4.7	62.6	4.2	6.6	-2.4	10.8	62.0	6.8	6.0	0.8	12.9
Elementary	Kalarchian, 2009	12	10.2	154.7	15.3	15.6	-0.4	30.9	160.4	20.3	12.7	7.7	33.0
	Kalavainen, 2007	12	8.1	95.0	1.1	4.0	-2.9	5.1	89.1	4.0	4.9	-0.9	8.8
Adolescent	Patrick, 2013	12	14.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	DeBar, 2012	12	14.1	189.9	4.9	36.1	-31.2	41.0	186.7	7.1	36.0	-28.9	43.1
6-25 hours													
Wide Age Range	Bryant, 2011	12	11.4	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Norman, 2015	12	11.9	NR	1.1	22.8	-21.7	23.9	NR	2.2	22.2	-20.1	24.4
Elementary	Golley, 2007	12	8.2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Gerards, 2015	12	7.21	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Toruner, 2010	12	9.4	NR	-2.6	8.3	-10.8	5.7	NR	1.3	10.6	-9.3	11.9
	Taylor, 2015	12	6.5	67.0	6.4	20.6	-14.2	27.0	60.4	7.7	16.4	-8.7	24.1
	Raynor, 2012b	12	7.1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Adolescent	Nowicka, 2008	12	14.7	215.6	6.8	41.5	-34.6	48.3	212.3	17.9	42.7	-24.8	60.5
0-5 hours													
Wide Age Range	Williamson, 2006	12	13.2	NR	5.2	10.2	-5.0	15.3	NR	9.5	10.3	-0.9	19.8

Age Category	Author, Year	Follow-up	Age (years)	Intervention Group					Control Group				
				BL Mean	Mean Change	SD Change	Mean -SD	Mean +SD	BL Mean	Mean Change	SD Change	Mean -SD	Mean +SD
Preschool	Taveras, 2011	12	4.9	NR	0.9	4.1	-3.2	5.0	NR	1.4	4.0	-2.6	5.4
	Van Grieken, 2013	24	5.8	NR	4.8	5.4	-0.6	10.2	NR	5.1	6.0	-1.0	11.1
Elementary	Hughes, 2008	12	8.8	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Broccoli, 2016	12	6.6	NR	1.6	4.6	-3.0	6.2	NR	2.7	4.2	-1.5	6.9
	Stettler, 2014	12	10.8	103.2	12.1	22.1	-9.9	34.2	108.5	19.0	30.3	-11.4	49.3
	Resnicow, 2015	24	5.1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Wake, 2013	12	7.3	NR	3.3	12.5	-9.2	15.8	NR	2.9	15.4	-12.5	18.4
	Wake, 2009	12	7.5	NR	2.3	9.7	-7.5	12.0	NR	2.6	8.2	-5.6	10.9
	Taveras, 2015	12	9.8	NR	3.6	19.8	-16.2	23.3	NR	5.4	19.8	-14.4	25.1
	McCallum, 2007	12	7.4	NR	4.5	10.5	-5.9	15.0	NR	4.5	8.2	-3.6	12.7

Abbreviations: BL = baseline; NR = not reported; SD = standard deviation

Appendix E. Detailed Results from Sensitivity Analyses Related to Contact Dose

We conducted extensive additional analyses to explore the robustness of our findings on contact dose. First, we explored the degree to which the conclusions about our *a priori*-specified 26-hour cut-point is justified, and second, we explored how results differed if we excluded hours of supervised physical activity from our dose calculation (referred to as non-physical activity [non-PA] hours). Several trials, however, did not report sufficient information to allow us to determine non-PA hours separately from total contact hours and were dropped from the latter analysis.^{69,82,99,102,115}

As with our primary analyses, we interrogated two bodies of evidence to answer these questions. First, we examined the efficacy trials to determine the relative effects over a control group. Second, we examined the efficacy and comparative effectiveness trials altogether limited to the single most comprehensive treatment arm in the study and compared interventions that did and did not meet our *a priori* specification for clinical significance, a reduction in zBMI of 0.25 or more, regardless of the effect in the control or other treatment groups.

In the efficacy trials, both visual inspection and meta-regressions showed a positive association between total contact hours and effect size, but the slope was generally linear and gradual, with no clear bend or discontinuity to indicate a specific cut-point. Among trials with 30 or more estimated contact hours, 75 percent (12/16) found statistically significant group differences, either in our meta-analysis of unadjusted group means or study-reported adjusted analyses (**Figure 1**). Standardized mean differences (SMDs) between groups in change from baseline were 0.45 or greater in 10 of these 16 trials. Among trials with 24 or fewer estimated contact hours, 22 percent (4/18) found statistically significant group differences. SMDs were 0.45 or greater in only one of these 18 lower-contact trials. There were no efficacy trials with 25 to 29 estimated contact hours. In addition, a scatter plot that plotted total contact hours against SMDs and fitted with a quadratic line showed an essentially linear relationship between these two variables (**Figure 2**). The scatter plot shows different symbols for different age categories of children in the trials, illustrating the fact that age, like other study and population characteristics, are not evenly distributed along the continuum of contact hours, potentially limiting the robustness of these findings.

The pattern of results was similar when we removed the contact hours for supervised PA sessions, with an apparently linear and gradual positive association between non-PA hours and effect size. Among trials with 18 or more non-PA contact hours, 80 percent (8/10) found statistically significant group differences, with all eight showing SMDs of 0.45 or greater (**Figure 3**). Among trials with fewer than 18 non-PA contact hours, 30 percent (6/20) found statistically significant group differences, with only two showing SMDs of 0.45 or greater. The scatter plot also supported the gradual and linear nature of the relationship between non-PA contact hours and standardized effect size (**Figure 4**).

Meta-regressions showed that both total contact hours and non-PA contact hours had a positive association with standardized effect size as did the hours of supervised PA (**Table 1**). The association was slightly smaller for total contact hours; however the estimates for total, non-PA and PA hours were not statistically different from each other. We also conducted an analysis including both non-PA and PA hours together and found that the association between effect size and non-PA hours was attenuated when controlling for PA hours.

Table 1. Meta-regression results predicting standardized effect size from contact dose among efficacy trials, examining any weight measure

Predictor	Coefficient	95% CI	p-value	No. studies	Adjusted R ²
<i>Single predictor models</i>					
Total hours	-0.010	-0.014, -0.006	<0.001	34	69%
Non-PA hours	-0.017	-0.026, -0.008	0.001	30	37%
PA hours	-0.015	-0.022, -0.009	<0.001	30	74%
<i>Model including both variables together</i>					
Non-PA hours	-0.008	-0.018, 0.001	0.083	30	72%
PA hours	-0.012	-0.019, -0.004	0.003		

Abbreviations: CI = confidence interval; PA = physical activity

When we focus only on the intervention groups and ignore the comparison with control groups or other intervention groups we also see that greater hours of contact are associated with a greater likelihood of meeting the criterion for a clinically important improvement (**Figure 5**). We found that 92 percent (12/13) of the interventions that showed zBMI reductions of 0.25 or more offered at least 30 total hours of contact. In addition, all 13 interventions meeting this criterion offered 18 or more hours of non-PA contact time, and 69 percent (9/13) offered 28 or more hours of non-PA contact time. Of the seven interventions that **did not** show a clinically meaningful change in zBMI but offered 26 or more hours of total contact time, most of these (4/7, 57%) offered fewer than 18 hours of non-PA contact time. Overall, of the 17 interventions offering 18 or more hours of non-PA contact, 76 percent (13/17) met the criterion for clinically important improvement.

We were limited in the degree to which we could explore the full range of contact dose because trials were not evenly distributed along the full range of contact dose (e.g., we had no efficacy trials with 25 to 29 hours of contact). In addition, variability in population and other study characteristics were not evenly distributed along the spectrum of contact dose, making it impossible to fully disentangle dose from other potentially important characteristics. Also, our estimates of contact dose are imperfect: authors did not always provide the level of detail required to calculate precise contact hours; some interventions planned a range of possible contact time, based on individual participants' progress; we calculated the planned hours of intervention, but adherence was not 100 percent; and contact hours did not include time spent with electronic or print media, so text and e-mail-based interventions may appear less intensive than they really were.

In summary, we concluded that above 30 hours of estimated total contact, including at least 18 hours of non-PA contact, intervention were likely to show both greater improvements than control conditions and clinically meaningful improvements. Interventions with fewer than 25 total hours or 18 non-PA hours of contact were much less likely to show such benefits. However, our analyses of these cut-points are limited for several reasons and there was no clear demarcation showing a minimum necessary or required number of contact hours (total or non-PA).

Figure 1. Forest plot of efficacy trials of change in any weight outcome, in descending order of total contact hours, also showing contact hours excluding supervised physical activity hours.

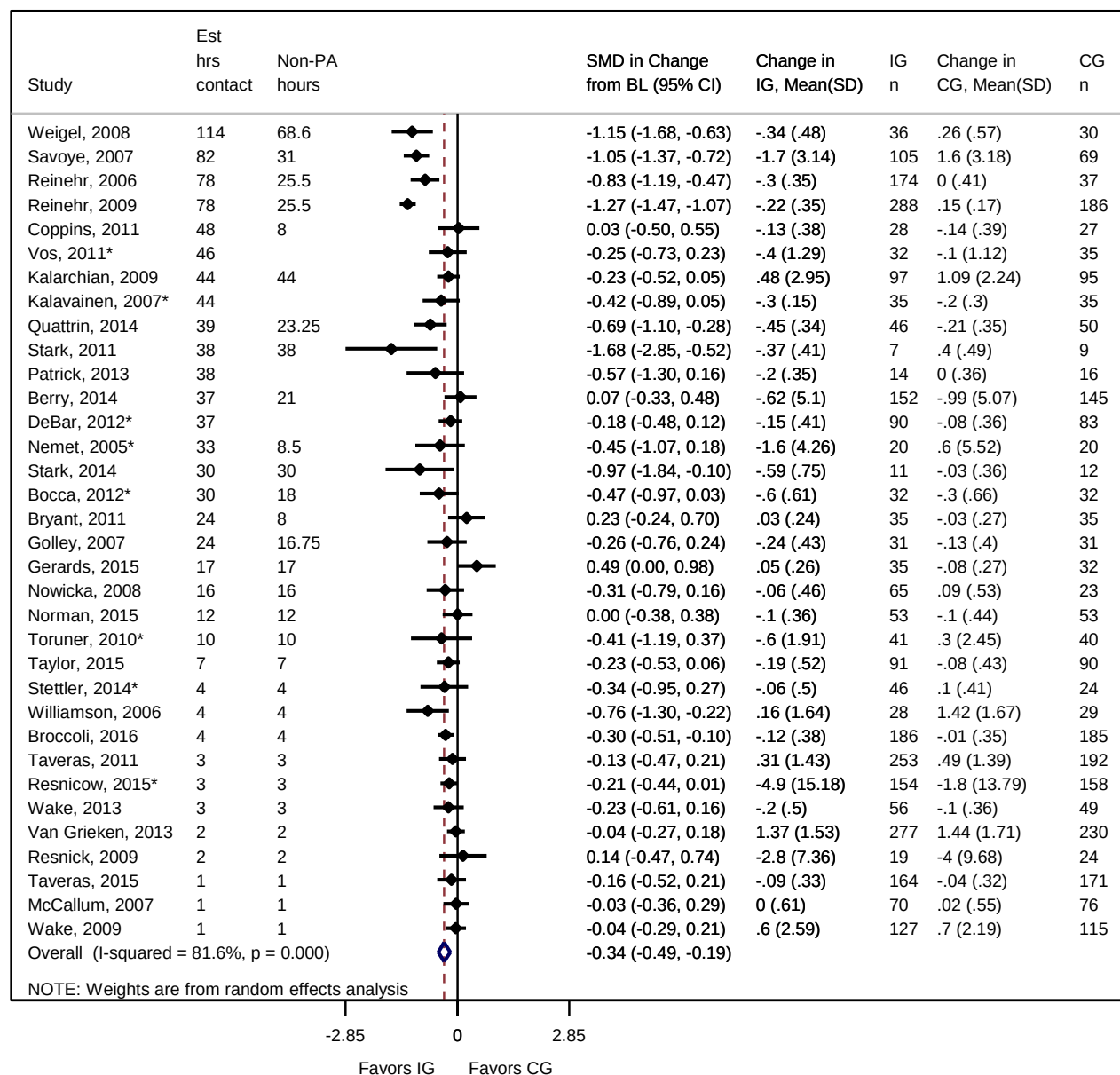


Figure 2. Scatter plot of estimated *total contact hours* (x-axis) against standardized mean difference (y-axis) between groups in change from baseline, with age groups denoted for each trial. Larger effects have larger negative values.

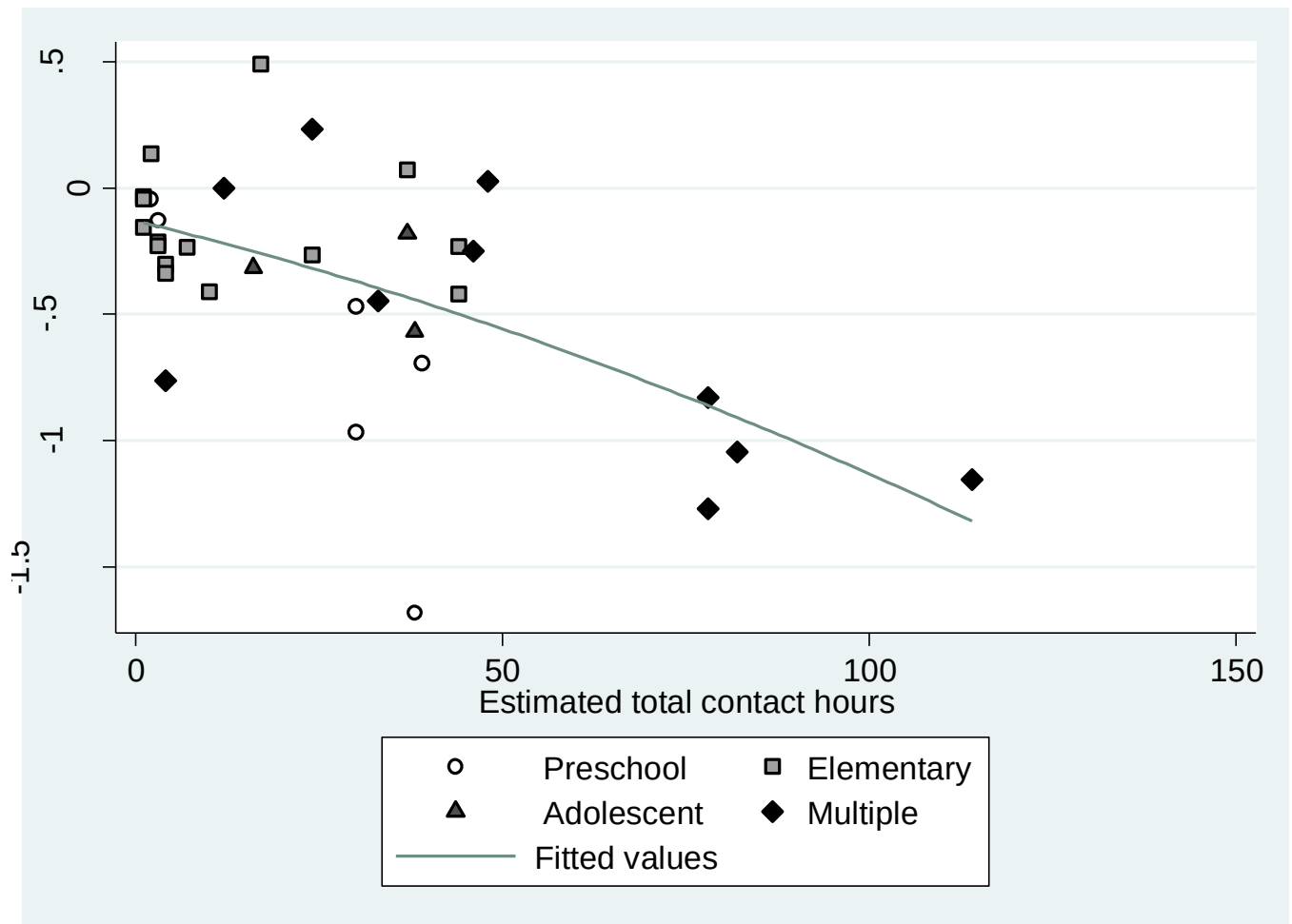


Figure 3. Forest plot of efficacy trials of change in any weight outcome, in descending order of contact hours excluding supervised physical activity hours.

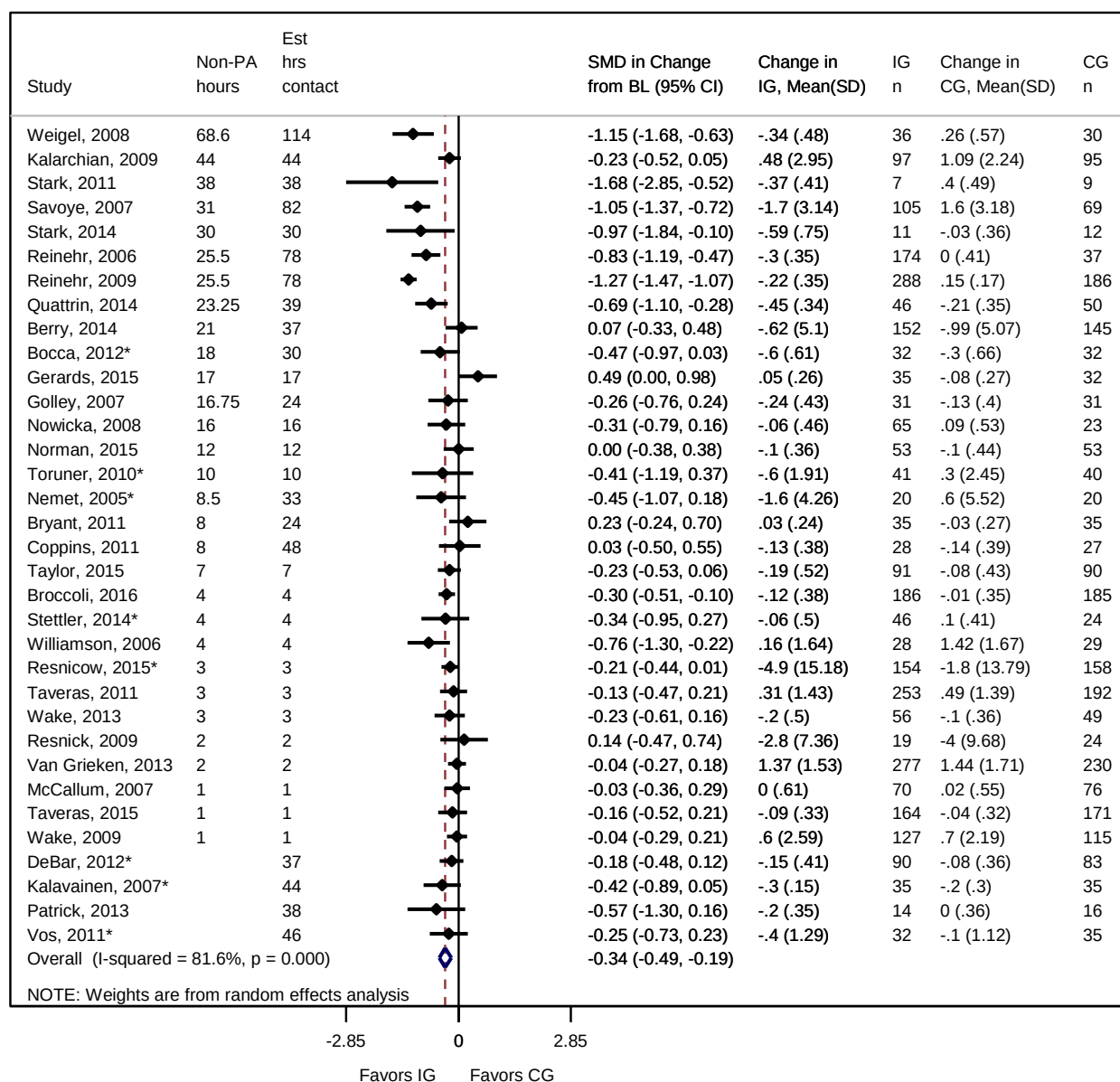


Figure 4 Scatter plot of estimated contact hours *excluding supervised physical activity hours* (x-axis) against standardized mean difference (y-axis) between groups in change from baseline, with age groups denoted for each trial. Larger effects have larger negative values.

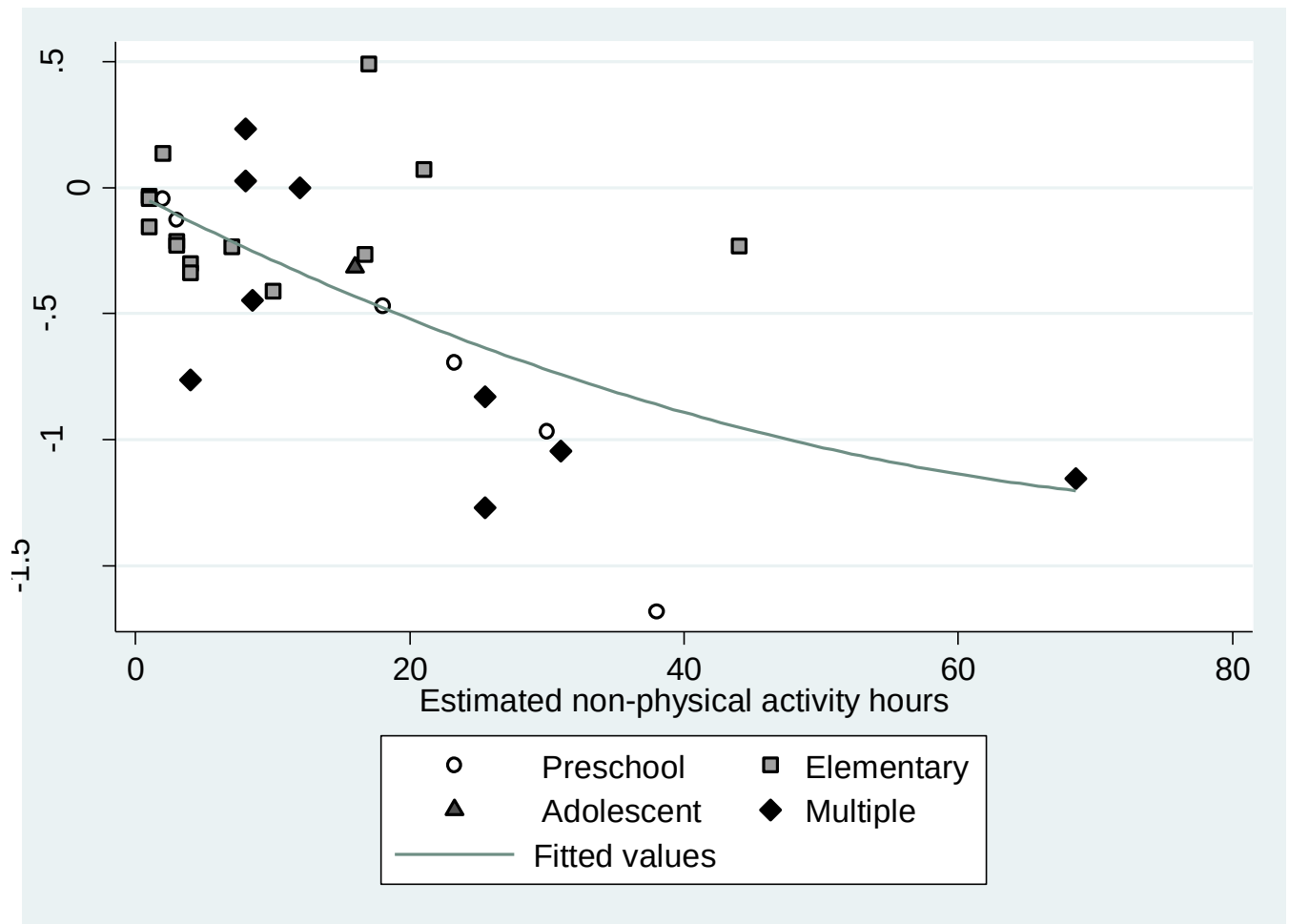


Figure 5. Estimated hours of contact, separated into supervised physical activity and non-physical activity, for all interventions that targeted reduction in excess weight and reported change in zBMI, rank-ordered by effect size.

