Obesity Prevention and Control: Digital Health Interventions for Adolescents with Overweight or Obesity

Summary Evidence Table

This table outlines information from the studies included in the Community Guide systematic review of Digital Health Interventions for Adolescent with Overweight or Obesity. It details study quality, population and intervention characteristics, and study outcomes considered in this review. Complete references for each study can be found in the Included Studies section of the review summary [https://www.thecommunityguide.org/findings/obesity-prevention-and-control-digital-health-interventions-adolescents-overweight-obesity].

Abbreviations Used in This Document:

- Outcomes:
    - %BF: percent body fat
    - BMI: body mass index
    - BMIz: body mass index z-score
    - FV: fruits and vegetables
    - HRQoL: health-related quality of life
    - MVPA: moderate to vigorous physical activity
    - SSB: sugar sweetened beverage

- Study design:
    - iRCT: individual randomized controlled trial
    - gRCT: group randomized trial

- Measurement terms:
    - CI: confidence interval
    - d: day
    - min: minutes
    - mmHg: millimeters of mercury
    - m: months
    - serv: servings
    - wk: week
    - yrs: years

- Other terms:
    - NA: not applicable
    - NR: not reported
    - NS: not significant
    - SES: socioeconomic status
    - T2DM: Type 2 Diabetes Mellitus

Notes:

- **Suitability of design** includes three categories: greatest, moderate, or least suitable design. Read more >> [https://www.thecommunityguide.org/about/glossary#suitability-of-design]

- **Quality of Execution** – Studies are assessed to have good, fair, or limited quality of execution. Read more >> [https://www.thecommunityguide.org/about/glossary#quality-of-execution]

- **Race/ethnicity** of the study population: The Community Guide only summarizes race/ethnicity for studies conducted in the United States.

Study	Population Characteristics	Intervention Characteristics	Results

Author, Year: Chen et al., 2017
 	
Study Design: iRCT
 	
Suitability of Design: Greatest
 	
Quality of Execution: Good (1 limitation)
	Study population: Overweight Chinese American overweight patients from a primary care setting
	
	Sample size:
	Intervention:23
	Control:17
	
	Demographics:
	Intervention
	Mean age: 15.0yrs
	Gender: 42% female
	Race/ethnicity: 100% Chinese American
	SES: low-income
	
	Control
	Mean age: 14.8yrs
	Gender: 47% female
	Race/ethnicity: 100% Chinese American
	SES: low-income
		Location (urbanicity): northern CA, USA (urban)
		
		Intervention duration: 24 weeks
		When intervention occurred: 2015-2016
		
		Intervention activities:
		Focus of Intervention: PA + weight + diet
		
		Intervention components: self-monitoring + goal setting
		
		Device(s): wearable device + mobile
		
		Intervention: Intervention was based on social cognitive theory, and utilized key concepts such as self-efficacy, outcome expectation, skill mastery, and self-regulation capabilities. The intervention included three major components, in which participants (1) used a wearable sensor for six months, (2) reviewed eight online educational modules for three months, and, after completing the modules, (3) received tailored, biweekly text messages for three months. The wearable sensor app and the online program were used to track physical activity, sedentary activity, and dietary intake progress (by recording number of serving of fruit and vegetable, sugar-sweetened drink, and glasses of water consumption per day); set realistic individualized goals; monitor progress related to attaining goals; provide tips for everyday activities; and provide strategies for maintaining healthy weight.
			Primary Outcome Measure(s): BMIz, Systolic and Diastolic BP
			
			Additional Outcome Measure(s): FV, SSB, # days active 60min, sedentary time, HRQoL
			
			How Ascertained: California Health Interview Survey (CHIS), Pediatric Quality of Life-Adolescents
			
			BMIz
			                 Intervention Control
			Pre 1.60 1.54
			Post 6m 1.42 1.80
			Change -0.18 +0.34
			Summary Effect: -0.52
			
			Systolic BP
			                 Intervention Control
			Pre 116.7 115.7
			Post 6m 114.7 115.9
			Summary Effect: -2.93
			
			Diastolic BP
			                 Intervention Control
			Pre 72.7 69.9
			Post 6m 70.2 72.1
			Summary Effect: -4.79
			
			FV: +0.85 servings of FV/day
			SSB: Decrease 0.91 servings of SSB/day
			# days per week active 60 min:
			Increase 0.77 d/w
			Sedentary time: Decrease 42 min/day
			HRQoL (higher score indicates increased QoL): Increase 6.0
			
			Paper conclusions: "A culturally appropriate smartphone-based intervention has great potential to reduce obesity and improve adherence to a healthy lifestyle. Reducing sugary

Study	Population Characteristics	Intervention Characteristics	Results
		Intervention Deliverer: researchers and primary care provider Confidentiality: NR **Comparison**: Participants were given a pedometer and a blank food-and-activity diary; the adolescents were asked to record and track physical activity, sedentary activity, and food intake in the diary for three months and were asked to access an online program that consisted of eight modules related to general adolescent health issues (e.g., diet and nutrition, dental care, safety, common dermatology care, and risk-taking behaviors).	beverages and fast food intake and decreasing sedentary time are associated with decreased BMI among adolescents who are overweight or obese."
Author, Year: Doyle et al., 2008 **Study Design:** iRCT **Suitability of Design**: Greatest **Quality of Execution**: Good (1 limitation)	**Study population:** overweight 12-18 yrs **Sample size:** Intervention: 42 Control: 41 **Demographics:** Intervention Mean age: 14.9 yrs Gender: 65% female Race/ethnicity: white: 52.5%; black: 27.5%; Hispanic: 7.5%; other: 12.5% SES: NR Control Mean age: 14.1 yrs Gender: 60% female Race/ethnicity: white: 47.5%; black: 25.0%; Hispanic: 17.5%; other: 10.0% SES: NR	**Location (urbanicity):** San Diego, CA and St. Louis, MO (urban and suburban) **Intervention Duration:** 16 weeks **When intervention occurred**: 2003-2006 **Intervention Details:** Focus of Intervention**:** PA + weight + diet Intervention Components: self-monitoring + goal setting + social support + parental involvement/education Device(s): computer *Intervention:* Student Bodies 2: Internet delivered education (portion sizes, recommended daily activity; guided behavior modification for weight control (self-monitoring with feedback) and cognitive exercises for improving body	**Primary Outcome Measure(s):** BMIz **Additional Outcome Measure(s):** Weight concern, shape concern, eating concern, restraint **How Ascertained:** Eating Disorder Examination-Questionnaire (EDE-Q) **Results** **BMIz** Intervention Control Pre 2.19 2.19 Post 4m 2.11 2.20 Change -0.08 +0.01 **Summary Effect: -0.09** 4 month follow-up 4 m f/u 2.10 2.15 Change -0.09 -0.04 **Summary Effect: -0.05** **EDE-Q** Weight Concern: -0.04

Study	Population Characteristics	Intervention Characteristics	Results
		image. Weekly email containing individualized feedback regarding food, physical activity, and weight journals. Social support: website served as the forum for a moderated discussion group for the adolescents. Parental Support: monthly newsletter mailed to parents and moderator available via telephone Intervention Deliverer: clinical psychology doctoral student Confidentiality: Password protected *Comparison*: color handouts containing basic information on nutrition and physical activity, were not provided instructions on behavior modification.	Shape Concern: +0.16 Eating Concern: +0.01 Restraint: +0.89 **Paper conclusions**: "Internet-delivered intervention yielded a modest reduction in weight status that continued four months following treatment and that eating disorder attitudes/behaviors were not significantly improved."
Author, Year: Fonseca et al., 2016 **Study Design:** iRCT **Suitability of Design**: Greatest **Quality of Execution**: Good (1 limitation)	**Study population:** overweight 12-18 yrs **Sample size:** Intervention:40 Control: 40 **Demographics:** Intervention Mean age:14.5 yrs Gender: 55.0% female SES: NR Control Mean age: 14.5 yrs Gender: 47.5% female SES: NR	**Location (urbanicity):** Lisbon, Portugal (urban) **Intervention duration:** 12 weeks **When intervention occurred:** 2014-2015 **Intervention activities:** Focus of Intervention: PA + weight + diet Intervention components: self-monitoring + goal setting Device(s): Computer *Intervention*: The primary goals of the intervention were (1) to reduce binge eating, (2) to maintain weight, (3) to increase healthy eating, (4) to increase	**Primary Outcome Measure(s)**: BMI **Additional Outcome Measure(s):** HRQoL **How Ascertained:** HRQoL Impact of Weight on Quality of Life-Lite **Results** **BMI:** Intervention Control Pre 30.95 31.42 **Summary Effect at 3m: -0.27 (reported in Ho et al systematic review)** **HRQoL**: no significant effect **Paper conclusions**: "Our findings provide little support for the effectiveness of internet-based weight management programs as an add-on to

Study	Population Characteristics	Intervention Characteristics	Results
		physical activity, and (5) to reduce sedentary activities. The program introduced a new topic each week. The online program included interactive components such as self-monitoring journals for dietary intake, physical activity, weight, personal thoughts, and goals, as well as discussion group moderated by a research assistant. Social Support: group chats and discussion forums Parental Support: none Intervention Deliverer: a nurse was the case manager and could request support of an interdisciplinary team Confidentiality: NR Comparison: standard clinical intervention, including individual appointments with the pediatrician, dietitian and exercise physiologist every 3 months.	the standard intervention. However, it showed improvement in secondary outcomes that have been identified as relevant for an effective weight management."
Author, Year: Jones et al., 2008 **Study Design:** gRCT **Suitability of Design**: Greatest **Quality of Execution**: Fair (3 limitations)	**Study population:** overweight high school students **Sample size:** Intervention: 52 Control: 53 **Demographics:** Intervention Mean age: 15.0 yrs Gender: 73.0% female Race/ethnicity: White: 67.%; Black: 4%; Hispanic: 23%; other: 6%	**Location (urbanicity):** ID and CA, US (not reported) **Intervention duration:** 16 weeks **When intervention occurred:** Cohort 1: spring of 2005 - summer 2005; Cohort 2: fall 2005 - winter 2006 **Intervention activities:** Focus of Intervention: PA + weight + Diet	**Primary Outcome Measure(s):** BMIz **Additional Outcome Measure(s):** Fat intake, sugar intake, binge eating, weight and shape concerns, depression **How Ascertained:** Fat and sugar intake: PACE+ dietary fat screening a 21-item inventory assesses intake over 1 week; Binge eating and Weight and Shape Concerns: semi-structured diagnostic interview using modified Eating Behavior Inventory adapted from Eating Disorder Examination; Depression: Center for Epidemiologic Studies Depression Scale

Study	Population Characteristics	Intervention Characteristics	Results
	SES: Mother education>HS: 26% Father education>HS: 24% <u>Control</u> Mean age: 15.2 yrs Gender: 66.0% female Race/ethnicity: White: 60%; Black: 11%; Hispanic: 19%; other: 10% SES: Mother education>HS: 30% Father education>HS: 30%	Intervention components: self-monitoring + goal setting + peer support + social support Device(s): computer *Intervention*: Internet-facilitated program that includes self-monitoring, goal-setting, stimulus control, and appetite awareness and introduces emotion regulation skills. The primary goals of the intervention were (1) to reduce binge eating, (2) to maintain weight, (3) to increase healthy eating, (4) to increase physical activity, and (5) to reduce sedentary activities. In addition to psycho-educational material, the online program included interactive components such as self-monitoring journals for dietary intake, physical activity, weight, personal thoughts, and goals. Students were given a packet of the monitoring forms to complete off-line, followed by entering the data into their online journal. In addition, intermittent motivational messages were mailed to participants to increase program adherence. Second cohort give option of face-to-face sessions. Social Support: discussion group moderated by research assistant Parental Support: handbook and weekly letters were sent to participants to reinforce program Intervention Deliverer: trained research assistant supervised by licensed psychologist and psychiatrist	**Results** **BMIz** Intervention Control Pre 1.81 1.79 Post 4m 1.56 1.68 Change -0.24 -0.11 **Summary Effect: -0.13** 5 m Follow-up Follow-up 4m 1.60 1.76 Change -0.21 -0.03 **Summary Effect: -0.18** Fat intake: -4.65 dietary fat screening score Sugar intake: "no significant effect" Binge eating OBEs (objective binge eating) and SBE (subjective binge eating): -12.77 Weight and Shape Concerns: -0.17 Depression: -1.57 Center for Epidemiologic Studies Depression Scale **Paper conclusions**: "Internet-facilitated intervention is moderately effective in short-term weight loss and weight maintenance and yields a large reduction in binge eating."

Study	Population Characteristics	Intervention Characteristics	Results
		Confidentiality: HIPAA compliant **Comparison**: waitlist control	
Author, Year: Mameli et al., 2018 **Study Design:** iRCT **Suitability of Design**: Greatest **Quality of Execution**: Fair (3 limitations)	**Study population:** obese patients from an obesity clinic **Sample size:** Intervention: 23 Control: 20 **Demographics:** <u>Intervention</u> Mean age: 12.6 yrs Gender: 31.2% female SES: not low income <u>Control</u> Mean age: 12.4 yrs Gender: 42.9% female SES: not low income	**Location (urbanicity):** Milan, Italy (urban and suburban) **Intervention duration**: 12 weeks **When intervention occurred:** March-July 2015 **Intervention activities:** Focus of Intervention: PA + weight + Diet Intervention components: self-monitoring + goal setting + professional support (dietitian, physician) Device(s): Wearable device + app *Intervention*: Participants wore wristband (WB) and used an APP. The WB measured energy expenditure and the APP measured energy intake. The APP allowed recording of food consumption. It contained a visual database of foods and three portion sizes. Pediatric endocrinologists, sports medicine doctors and registered dietitian developed personalized lifestyle programs. Weekly feedback on diet and PA was sent via SMS. Positive feedback was included in the SMS every time a participant reached at least one goal. 12 SMS per child were sent during study. Intervention Deliverer: healthcare provider Confidentiality: password protected	**Primary Outcome Measure(s): BMIz** Intervention Control Pre 2.20 2.09 Post 3m 2.17 2.05 Change -0.22 0.0 **Summary Effect: +0.01 (95%CI: -0.15, 0.18)** **Paper conclusions**: "A personalized lifestyle program based on a WB and an APP was not superior to a standard lifestyle program at promoting weight loss in obese children."

Study	Population Characteristics	Intervention Characteristics	Results
		Comparison: Advised to consume the Mediterranean diet and instruction to practice PA and minimize sedentary activity to follow during the 3 months study period.	
Author, Year: Nawi et al., 2015 **Study Design:** gRCT **Suitability of Design**: Greatest **Quality of Execution**: Fair (2 limitations)	**Study population:** obese secondary school students **Sample size:** Intervention: 47 Control: 50 **Demographics:** Intervention Mean age: 16y Gender: 53.2% female SES: not reported Control Mean age: 16y Gender: 40% female SES: not reported	**Location (urbanicity):** Kuala Lumpur, Malaysia (urban) **Intervention duration:** 12 weeks **When intervention occurred:** NR, but 2013-2015 **Intervention activities:** Focus of Intervention: PA + weight + Diet Intervention components: self-monitoring Device(s): computer or mobile *Intervention*: All participants given website address and signed up as a member in the website. The website consists of information on healthy lifestyle, diet, and ways to overcome obesity. The contents of the website were developed by a panel expert consisting of a psychologist, public health specialist, two dietitians, and a nurse. Participants were notified with any updates and information. Interactive sessions were conducted in the chat toolbar in the website. Any negative comment was not approved by the admin. Participants were advised to weigh themselves at home and calculate their BMI every two weeks or as required by using the BMI calculator provided in the website.	**Primary Outcome Measure(s):** %BF **How Ascertained:** bioelectrical impedance analysis **Additional Outcome Measure(s):** HRQoL **How Ascertained:** NR **Results** **%BF** Intervention Control Pre 29.65 28.98 Post 3m 29.18 29.00 Change -0.47 +0.02 **Summary Effect: -0.49** physical functioning: -2.04 emotional functioning: +7.33, <0.05 social functioning: -4.14 school functioning: -0.78 psychosocial health: +0.39 **Paper conclusions**: "The internet-based intervention program can be an effective medium for promoting healthy diet and physical activity among the obese adolescents."

Study	Population Characteristics	Intervention Characteristics	Results
		Social Support: none Parental Support: none Intervention Deliverer: NR Confidentiality: NR **Comparison**: Received health education pamphlets.	
Author, Year: Patrick et al., 2013 **Study Design:** iRCT **Suitability of Design**: Greatest **Quality of Execution**: Good (1 limitation)	**Study population:** overweight 12-16 year-olds **Sample size:** Intervention (web only arm): 26 Intervention (web + group arm): 24 Intervention (web + SMS group): 26 Control: 25 **Demographics:** Web only arm Mean age: 14.1 yrs Gender: 61.5% female Race/ethnicity: White: 26.9%; Black: 15.4%; Hispanic: 76.9%; Native American: 0%; Asian/Pacific Islander: 3.8%; multiethnic/other: 3.8% SES: NR web + group arm Mean age: 14.3 yrs Gender: 69.2% female Race/ethnicity: White: 23.1%; Black: 7.7%; Hispanic: 76.9%; Native American: 0%; Asian/Pacific Islander: 7.7%; multiethnic/other: 3.8% SES: NR	**Location (urbanicity):** San Diego, CA, US (urban) **Intervention Duration:** 12 months **When intervention occurred**: 2006-2009 **Intervention activities:** Focus of Intervention: PA + weight + Diet Intervention components: self-monitoring + goal setting + social support + parental involvement/education + tech generated feedback + feedback from health counselor + individual case management + pedometer (not specified whether interactive) Device(s): computer (web only arm and web + group arm); computer + mobile phone (web + SMS arm) *Intervention arms:* **Web only arm:** included individual case management that included weekly check-in emails, monthly mailed tip sheets, access to program website + web tutorials; weekly emails reminders to complete the web tutorials and, if	**Primary Outcome Measure(s):** BMIz, **Additional Outcome Measure(s):** FV; MVPA; sedentary behavior: average hours/day; HLQoL; depressive symptoms, self-esteem **How Ascertained:** FV food frequency questionnaire; MVPA 7-day physical activity recall; sedentary behavior 8-item survey; HRQoL pediatric QOL inventory version 4.0; Depression Center for Epidemiologic Studies depression scale short-form questionnaire; self-esteem Rosenberg self-esteem scale **Results:** **BMIz (12 month)** Web only Web+group Web+SMS Control Pre 2.2 2.2 2.2 2.2 Post 2.1 2.0 2.1 2.2 Change -0.1 -0.2 -0.1 0.0 **Effect -0.1 -0.2 -0.1** During intervention (6 months) During 2.1 2.2 2.1 2.2 Change -0.1 -0.0 -0.1 0.0 Effect -0.1 -0.0 -0.1 **Web only arm** FV: 0.9 servings/1000 calories MVPA: 14.4 mins/d Sedentary Time: -120 min/d

Study	Population Characteristics	Intervention Characteristics	Results
	web+SMS arm Mean age: 14.3 yrs Gender: 50% female Race/ethnicity: White: 8.3%; Black: 12.5%; Hispanic: 87.5%; Native American: 4.2%; Asian/Pacific Islander: 0%; multiethnic/other: 0% SES: NR Control Mean age: 14.5 yrs Gender: 72.0% female Race/ethnicity: White: 12.0%; Black: 28.0%; Hispanic: 56.0%; Native American: 0%; Asian/Pacific Islander: 4.0%; multiethnic/other: 4.0% SES: NR	necessary, a phone call from a health counselor **Web + group arm:** includes the Web intervention + monthly 90 min group sessions of 5–10 adolescents + parents groups where they discussed behavioral skills from web tutorials; brief (20 min) bimonthly phone calls from health counselor reviewing concepts presented in web tutorial and reinforcing behavioral strategies such as goal setting and problem solving; attendance and participation in group sessions were rewarded with mileage incentives and a lottery for prizes such as cookbooks or other materials to assist with healthy behavior change + nutrition demonstrations +physical activities were also integrated in each session **Web + SMS arm:** web intervention + minimum of 3 text messages/week related to weekly challenges and intervention goals; reminder texts were sent if participant did not log onto website by 4th day of intervention. Participants could also communicate via text messages with a health counselor if they had questions. Participants were provided with cell phones and prepaid text message plans that allowed research staff to monitor SMS use Intervention Deliverer: health counselor Social Support: group sessions with other adolescents (5-10 adolescents per session)	HRQoL: score 2.2 Depressive symptoms: -1.5 **Web + group arm:** FV: 0.5 servings/1000 calories MVPA: 19.6 mins/d Sedentary Time: -42 min/d HRQoL: score 2.1 Depressive symptoms: -0.7 **Web + SMS arm:** FV: 0.5 servings/1000 calories MVPA: 14.1 min/d Sedentary Time: -12min/d HRQoL: score 1.3 Depressive symptoms: -0.4 **Paper conclusions:** "12-month obesity intervention for adolescents at risk for T2DM that utilized a website program had positive effects on sedentary behavior. Additionally, when this website program was combined with group sessions, positive effects on use of behavioral change strategies for fruit and vegetable consumption were found. However, 12 months of access to the same website program coupled with SMS or group sessions and counselor calls had no effects on sedentary behavior or behavior change strategies. Although there were no intervention effects on the main outcomes of BMI, adiposity, diet, and physical activity, the use of change strategies for fruit and vegetable consumption was positively correlated with fruit and vegetable consumption among girls."

Study	Population Characteristics	Intervention Characteristics	Results
		Parental Support: Parents participated in online activities and monthly group sessions Confidentiality: NR *Comparison*: Participants were given printed materials produced by the American Diabetes Association and the American Heart Association; encouraged to attend three 1 h group nutrition sessions at a local children's hospital during the first 6 weeks at no charge. They also received monthly tip sheets by mail. This combination of intervention elements reflected the prevailing community standard of care for adolescents judged to be at risk for type 2 diabetes.	
Author, Year: Pittman, 2018 **Study Design:** iRCT **Suitability of Design:** Greatest **Quality of Execution:** Fair (3 limitations)	**Study population:** Adolescents from a school setting **Sample size:** Intervention: 33 Control: 31 **Demographics:** Intervention Mean age: 12.3 yrs Gender: 52% female Race/ethnicity: Asian 6%; Black 21%; White 42%; Hispanic 30% SES: low Control Mean age: 12.6 yrs Gender: 58% female Race/ethnicity: Asian 3%; Black 16%; White 52%; Hispanic 29% SES: low	**Location (urbanicity):** central TX, USA (not reported) **Intervention duration:** 10 weeks **When intervention occurred:** September to December 2016 **Intervention activities:** Focus of Intervention: PA + weight + diet Intervention components: self-monitoring + technology generated feedback + social support Device(s): Wearable device + mobile *Intervention*: **Intervention activities:** (AT) wore the activity tracker at all times (unless swimming). Points were stored on the tracker and	**Primary Outcome Measure(s):** %BF **How Ascertained**: bioelectric impedance scale **Additional Outcome Measure(s):** FITNESSGRAM **How Ascertained:** FITNESSGRAM curl up and push-up **Results** **%BF** <table><tr><td></td><td>Intervention</td><td>Control</td></tr><tr><td>Pre</td><td>24.58</td><td>26.13</td></tr><tr><td>Post 2.5m</td><td>26.23</td><td>26.39</td></tr><tr><td>Change</td><td>+1.65</td><td>+0.26</td></tr></table>**Summary Effect: +1.39** FITNESSGRAM: +17.57 **Paper conclusions:** This study gives no clear support to the hypothesis that use of activity trackers and a text messaging intervention have

Study	Population Characteristics	Intervention Characteristics	Results
		recorded when the student synced the tracker daily via computer or mobile device. Each group had a team page; on the tracker website, which included a leaderboard (showing current point values and names of leading competitors) and allowed students to start challenges with others while seeing charted results of their progress. Students could create their own avatar and send each other encouragement. Social support: competition with other team, leader board Family support: NR Intervention Deliverer: school nurse Confidentiality: NR **Comparison**: TM only (control) Messages were sent twice weekly, and included short messages of encouragement toward daily PA	a positive effect on fitness, PA self-efficacy, or body fat percentage.
Author, Year: Riiser et al., 2014 **Study Design:** individual non-RCT **Suitability of Design**: Greatest **Quality of Execution**: Good (1 limitation)	**Study population:** overweight 13-15 yrs **Sample size:** Intervention: 75 Control: 33 **Demographics:** Intervention Mean age: 13.7 yrs Gender: 60% female SES: mixed Overweight: 68%;obese 32% Control Mean age: 13.8 yrs	**Location (urbanicity):** eastern Norway (not reported) **Intervention Duration:** 12 weeks **When intervention occurred**: 2003-2006 **Intervention Details:** Focus of Intervention**:** PA Intervention Components: self-monitoring + goal setting + counseling + journal + social support Device(s): computer and/or mobile	**Primary Outcome Measure(s)**: BMI **Additional Outcome Measure(s):** 20m shuttle run, HRQoL, body image **How Ascertained:** 20m shuttle run timed run**;** HRQoL KIDSCREEN-10, body image Norwegian body image scale **Results** **BMI** Intervention Control Pre 26.62 27.45 Post 4m 26.40 27.45 Change -0.22 0.0

Study	Population Characteristics	Intervention Characteristics	Results
	Gender: 64% female SES: mixed Overweight 64%; obese 36%	**Intervention:** Young & Active: one face-to-face meeting with researcher. All communication with counselor after initial meeting was through computer. The program offered the participant opportunities to establish personal goals and a plan for physical activity, to register physical activity, to keep a physical activity diary and to get support from a forum. It provided continuous graphical response on progress, frequently updated information on physical activity and, most importantly, weekly individualized feedback and counseling from a health professional. Additionally, the program contained a mailing system with a message box present on every page making it possible for the participant and counselor to exchange short messages independently of the diary and weekly feedback if necessary. Social Support: group forum Parental Support: none Intervention Deliverer: school nurse Confidentiality: password protected **Comparison**: follow-up as usual by the school health service. Such follow-up consisted of opportunities to meet with the nurse on the adolescent's request and in some cases participation in weekly exercise groups run by the school health service. These groups were offered as an alternative to organized sports. However, the groups did not include more than merely organized exercise comparable to	**Summary Effect: -0.39 (95% CI: -0.74, -0.05)** 20m shuttle run: 0.14 km/h (95%CI: 0.01, 0.28) HRQoL (0-100): 5.22 (95%CI: 0.9, 9.53) Body image (0-20): 1.29 (-0.26, 2.83) **Paper conclusions**: The results suggest that the Internet intervention with tailored physical activity counseling can have beneficial short-term effect on cardiorespiratory fitness, HRQoL and BMI among adolescents with overweight and obesity

Study	Population Characteristics	Intervention Characteristics	Results
		any other typical leisure time sports activity.	
Author, Year: Sousa et al., 2015 **Study Design:** non-RCT **Suitability of Design**: Greatest **Quality of Execution**: Fair (2 limitations)	**Study population:** overweight 12-18 yrs **Sample size:** Intervention: 40 Control: 40 **Demographics:** <u>Intervention</u> Mean age: 14.4 yrs Gender: 50.0% female SES: NR <u>Control</u> Mean age: 14.0 yrs Gender: 52.2% female SES: NR	**Location (urbanicity):** Lisbon, Portugal (urban) **Intervention duration:** 24 weeks **When intervention occurred**: 2014-2015 **Intervention activities:** Focus of Intervention: PA + weight + diet Intervention components: self-monitoring + goal setting Device(s): Computer *Intervention*: The primary goals of the intervention were (1) to reduce binge eating, (2) to maintain weight, (3) to increase healthy eating, (4) to increase physical activity, and (5) to reduce sedentary activities. The program introduced a new topic each week. The online program included interactive components such as self-monitoring journals for dietary intake, physical activity, weight, personal thoughts, and goals, as well as discussion group moderated by a research assistant. Social Support: group chats and discussion forums Parental support: handbook and weekly email	**Primary Outcome Measure(s):** BMIz **Additional Outcome Measure(s):** Physical activity, diet, sedentary time, HRQoL **How Ascertained:** PA and sedentary time: on-line journal; Diet: Index of Nutrition; HRQoL: Impact of Weight on Quality of Life (IWQOL) **Results** **BMIz** Intervention Control Pre 2.61 2.71 Post 6m 2.53 2.61 Change -0.08 -0.10 **Summary Effect: +0.02** PA:+20.6 min/d Sedentary Time: -12 min/d Diet: Marginally significant p=0.057 HRQoL: score -3.0 (both groups improved) **Paper conclusions**: "e-therapeutic program led to a significant increase in health responsibility, inconclusive results were found regarding the program effectiveness compared to the standard multidisciplinary intervention."

Study	Population Characteristics	Intervention Characteristics	Results
		Intervention deliverer: a nurse was the case manager and could request support of an interdisciplinary team Confidentiality: not reported Comparison: standard clinical intervention, including individual appointments with the pediatrician, dietitian and exercise physiologist every 3 months.	

Author, Year: Williamson et al., 2006 and 2005; White et al., 2004
 	
Study Design: iRCT
 	
Suitability of Design: Greatest
 	
Quality of Execution: Fair (2 limitations)
	Study population: overweight 11-15 yrs
	
	Sample size:
	Intervention: 28
	Control: 29
	
	Demographics:
	Intervention
	Mean age: 13.1 yrs
	Gender: 100% female
	Race/ethnicity: 100% African American
	SES: low
	
	Control
	Mean age: 13.2 yrs
	Gender: 100% female
	Race/ethnicity: 100% African American
	SES: low
		Location (urbanicity): US, (not reported)
		Intervention duration: 104 weeks
		When intervention occurred: NR, but 2006 or earlier
		
		Intervention activities:
		Focus of Intervention: PA + weight + Diet
		
		Intervention components: self-monitoring + goal setting + counseling + parental support
		
		Device(s): computer
		
		Intervention: HIP-Teens family assigned a counselor who conducted 4 face-to-face sessions (wk 1, 3, 6, and 12) and corresponded using e-mail. Communicated by e-mails weekly with counselor regarding progress and counselors provided feedback on program components (e.g., quizzes, lessons, weight graphs, goal-setting, and clinic appointments). The web site provided nutrition education and behavior modification for adults and adolescents using a family-oriented format. The web site contained
			Primary Outcome Measure(s): %BF
			
			How Ascertained: Dual energy x-ray absorptiometry
			
			Additional Outcome Measure(s): Concerns about dieting/weight, overeating change, exercise change obtained using Interview for Diagnosis of Eating Disorders IV
			
			How Ascertained: Interview for Diagnosis of Eating Disorders IV
			
			Results
			%BF
			
			             Intervention Control
			Pre 45.9 45.9
			Post (24m) NR NR
			Change -0.08 +0.84
			Summary Effect: -0.92
			
			6 month data during intervention
			               Intervention Control
			Pre 45.5 46.2
			6M (White '04) NR NR
			Change -1.04 +0.38
			Summary Effect: -1.42
			
			Concerns about dieting/weight: +1.00
			Overeating change: +1.07

Study	Population Characteristics	Intervention Characteristics	Results
		interactive components to self-monitor weight and physical activity weekly, and self-monitor food intake by entering foods consumed; receive feedback (modeled after the traffic light diet) on the number of servings and caloric content of the food. Parents and adolescents were trained to use problem-solving to overcome barriers to success. Participants were also instructed to read 52 lesson plans during the 1st year of the program. Family provided digital scales to be used for body weight. Social Support: none Parental Support: family enrolled in intervention Intervention Deliverer: counselor Confidentiality: password protected **Comparison**: received nutrition education from a registered dietitian and additional computer training but were not prescribed behavioral tasks to yield weight loss. Provided digital scales to be used for body weight.	**Paper conclusions**: "An internet-based weight management program for African-American adolescent girls and their parents resulted in weight loss during the first 6 months but did not yield long-term loss due to reduced use of the web site over time."