

1 Table 1: Characteristics of Selected Studies

Authors & Year	Study Design	Country	Participants				Retention Rate (%)
			Number in Analysis 1) Intervention 2) Control	Gender	Age (years): Range or Mean (SD)	Characteristics	
Adamo et al., 2010	RCT	Canada	1) 13 2) 13	M+F	12–17	- Overweight or obese (CDC definition)	86.7
Chen et al., 2011	RCT	USA	1) 26 2) 24	M+F	12–15 12.52 (3.15)	- Normal weight, overweight or obese (CDC definition) - Chinese-American	93
Ezendam et al., 2012	Cluster RCT	Netherlands	1) 400 (11 schools) 2) 342 (9 schools)	M+F	12–13	- Students recruited from 20 schools - Analysis was conducted for the total study population and repeated for at risk students (those not meeting behavioural recommendations at baseline) - At risk students were normal, overweight or obese (IOTF definition)	86

Jones et al., 2008	RCT	USA	1) 44 2) 43	M+F	15.1 (1.0)	- High school students - Overweight or obese (CDC definition) - Binge eating or overeating behaviours - African American, Hispanic or Other	82.3
Maddison et al., 2011	RCT	New Zealand	1) 160 2) 162	M+F	10-14 11.6 (1.1)	- Overweight or obese (IOTF definition) - Play ≥ 2 hours of video games per week - Māori, Pacific Islanders, European or Other	100
Nawi & Jamaludin., 2015	Cluster RCT	Malaysia	1) 47 (4 schools) 2) 50 (2 schools)	M+F	16	- Students with a BMI > 25 kg/m ² - Malaysian or Non-Malaysian	100
Nguyen et al., 2013	RCT	New Zealand	1) 78 2) 73	M+F	13-16	- Overweight to moderately obese (BMI z-score: 1.0-2.5) - African American, Caucasian or Hispanic	80

Staiano et al., 2017	RCT	USA	1) 20 2) 18	F	14-18 16 (1.4)	- Overweight or obese (CDC definition) - African American or Caucasian	92.7
Trost et al., 2014	Cluster RCT	USA	1) 34 (4 YMCAs and 2 schools) 2) 41 (3 YMCAs and 2 schools)	M+F	8-12 10 (1.7)	- Overweight or obese (CDC definition) - African American or Caucasian, Hispanic, Asian or Mixed	92
Wagener et al., 2012	RCT	USA	1) 20 2) 20	M+F	12-18 14 (1.66)	- Obese (CDC definition) - African American, Caucasian, Hispanic or Biracial	98
Williamson et al., 2006	RCT	USA	1) 29 2) 28	F	11-15 13.2 (1.4)	- African American girls with one overweight (BMI>27) or obese (BMI>30) biological parent - Overweight or obese (CDC definition)	70.2

2 Abbreviations – SD: standard deviation, RCT: randomised controlled trial, USA: United States of America, M: male, F: female, CDC: Centres for Disease
3 Control and Prevention, IOFT: International Obesity Task Force, BMI (kg/m²): body mass index (kilograms/meters²)

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5 Table 2: Intervention and Control Characteristics, Outcomes, Follow-up Time Points and Key Findings for Studies Investigating the Effects of Active Video
6 Games

Authors & Year	Interventions	Intervention Intensity & Duration	All Outcomes	Follow-up Time Points	Key Findings	Weight-related Outcomes	Between Group Mean Difference (95% CI)	P-Value*
Adamo et al., 2010	1) GameBike - interactive video game and stationary cycling 2) Stationary cycling to music	Twice weekly 60-minute sessions for 10 weeks	1) Exercise adherence and behaviour 2) Aerobic fitness 3) Body composition 4) Metabolic profile 5) Diet	Post treatment	- The music group attended a statistically significantly higher percentage of sessions compared to the video game group (92 vs. 86, p<0.05) - Minutes spent at vigorous intensity (24.9 ± 20 vs. 13.7 ± 12.8 , p<0.05) and average distance (km) pedalled per session (12.5 ± 2.8 vs. 10.2 ± 2.2 , p<0.05) were statistically significantly greater in the music group - No difference in all other outcomes between groups - Both groups had a statistically significant reduction in peak HR, an improvement in peak workload and a reduction in time to exhaustion from pre to post intervention (p<0.05)	BMI (kg/m ²) BMI percentile Body weight (kg) WC (cm) % BF	-3.9 (-11.1, 3.3) - 0.3 (-1.89, 1.29) -13.1 (-30.52, 4.32) -4.3 (-16.46, 7.86) 1.4 (-6.24, 9.04)	0.3 0.74 0.15 0.53 0.72

Maddison et al., 011	1) Active video games 2) Sedentary video games	Children were encouraged to play for 60 minutes most days of the week, for a period of 24 week	1)Weight 2) BMI 3) BMI z-score 4) % BF 5) WC 6)PA 7) Cardiorespiratory fitness 8) Video game play 9) Food snacking	12 and 24 weeks	At 24 weeks, statistically significantly more children in the intervention group than the control group had: - decreased their BMI (-0.24, p=0.02), BMI z-score (-0.06, p=0.04), BF % (-0.83, p=0.02) and body weight (-0.72, p=0.02) - increased average daily time of active video game play (10.03, p=0.0001) - no difference in all other outcomes between groups	BMI (kg/m ²) BMI z-score Body weight (kg) WC (cm) % BF	-0.24 (-0.44, -0.04) 0.06 (-0.12, -0.03) -0.72 (-1.33, -0.10) -1.21 (-2.45, 0.03) -0.83 (-1.54, -0.12)	0.02 0.03 0.02 0.22 0.02
Staiano et al., 2017	1) Group-based dance exergaming 2) Self-directed care control condition	Three 1-hour sessions per week for 12 weeks	1) Body composition: BMI percentile, BMI z-score, WC, %BF, regional BF, visceral and subcutaneous abdominal adiposity 2) Cardiovascular risk factors	Within 2.5 weeks post-intervention	- There were no statistically significant group differences in any body composition or cardiovascular risk factor outcome	BMI z-score BMI percentile WC (cm) % BF	-0.01 (-0.069, 0.049) -0.02 (-0.78, 0.39) -0.04 (-3.37, 3.29) -0.3 (-1.28, 0.68)	0.74 0.51 0.98 0.55

Trost et al., 2014	1) Paediatric weight management programme plus active video gaming 2) Programme only	16 weeks Intensity not stated	1) Daily moderate-to-vigorous and vigorous PA 2) % overweight 3) BMI z-score	8 and 16 weeks	- At week 16, compared to the programme only group, the programme plus active video gaming group had statistically significant increases in moderate-to-vigorous (8.0, p=0.04) and vigorous (3.1, p=0.02) PA - At week 16, both groups had statistically significant reductions in % overweight and BMI z-score but the programme plus active gaming group had statistically significantly greater reductions (-10.9, p=0.02),(-0.25, p<0.001)	BMI z-score	-0.16 (-0.19, -0.13)	<0.001
Wagener et al., 2012	1) Group dance-based exergaming programme 2) Wait-list control group	3 sessions a week for 10 weeks: 1 st session: 40 minutes 2 nd and 3 rd session: 75 minutes each	1) BMI z-scores 2) Self-reported psychological adjustment and perceived competence to exercise 3) Maternal reported adolescent psychological adjustment	10 weeks	- Compared with control group, participants in the dance-based exergaming group statistically significantly increased in self-reported perceived competence to exercise - Maternal report of adolescent externalizing and internalizing symptomatology also decreased from baseline to end-of-treatment - No differences in BMI z-score within or between conditions	BMI-z score	0.01 (-0.12, 0.13)	0.87

7 *P-values in bold are statistically significant at 5% significance level

8 Abbreviations - BMI (kg/m²): body mass index (kilograms/meters²), WC (cm): waist circumference (centimetres), % BF: percentage body fat, WHtR: waist-to-
9 hip ratio, HR: heart rate, PA: physical activity

11 Table 3: Intervention and Control Characteristics, Outcomes, Follow-up Time Points and Key Findings for Studies Investigating the Effects of Internet-based
 12 Interventions

Authors & Year	Interventions	Intervention Intensity & Duration	All Outcomes	Follow-up Time Points	Key Findings	Weight-related Outcomes	Between Group Mean Difference (95% CI)	P-Value*
Chen et al., 2011	1) Taored web-based intervention 2) General health, web-based information	Weekly online sessions for 8 weeks	1) BMI 2) WHtR 3) BP 4) Dietary intake 5) PA; knowledge and self-efficacy 6) Nutrition	2, 6, and 8 months	Statistically significantly more adolescents in the intervention group than the control group had: - decreased their WHtR (-0.01, p=0.02) - decreased their DBP (-1.12, p=0.02) - increased PA as measured by the actigraph (12.46, p=0.01) - increased FV intake (0.14, p=0.001) - increased knowledge of PA (0.16, p=0.008) and nutrition (0.18, p=0.001) - Statistically significant within group changes for the intervention group included WHtR, DBP, PA, FV intake and knowledge related to PA and nutrition (p<0.05) -There were no statistically significant changes for any outcomes in the control group	BMI (kg/m ²) WHtR % BF	0.01 (-0.03, 0.04) -0.01 (-0.01, -0.001) 0.24 (-0.49, 0.01)	0.84 0.02 0.06

Ezendam et al., 2012	<p>1) FATaintPHAT-computer-tailored intervention</p> <p>2) No intervention control group</p>	15 minutes allocated for each of 8 lessons timetabled into regular school curriculum over 10 weeks	<p>1) Self-reported behaviours (diet, PA, sedentary behaviour)</p> <p>2) Pedometer counts</p> <p>3) BMI</p> <p>4) WC</p> <p>5) Fitness</p>	4 months and 2 years	<p>Among the students at risk, those in the intervention group, compared to the control group:</p> <ul style="list-style-type: none"> - reported eating more FV at 4-month follow-up (0.3, p=0.02) - reported more steps at 2-year follow-up (12389, p=0.03) - The intervention had no effects on anthropometric outcomes or on sedentary behaviour 	<p>BMI (kg/m²)</p> <p>WC (cm)</p>	<p>0.25 (-0.29, 0.79)</p> <p>1.3 (-0.12, 2.72)</p>	<p>0.37</p> <p>0.08</p>
Jones et al., 2008	<p>1) SB2-BED - an internet-based weight maintenance program</p> <p>2) Wait-list control group</p>	Over 16 weeks, a new topic was introduced weekly with previous content accessible at any time	<p>1) BMI</p> <p>2) Binge eating behaviours</p> <p>3) Dietary fat and sugar intake</p> <p>4) Depression</p> <p>5) Programme adherence</p>	Post treatment and 9 months	<p>- Compared to the wait-list control group, the SB2-BED group had significantly reduced weight and shape concerns from baseline assessment to follow-up assessment at 9 months (-0.33, p=0.03)</p> <p>- No difference in all other outcomes between groups</p> <p>- Statistically significant reductions in OBEs and SBEs from baseline assessment to posttreatment assessment (p<0.01) and from baseline assessment to follow-up assessment (p<0.05) were observed among SB2-BED participants</p>	<p>BMI (kg/m²)</p> <p>BMI z-score</p>	<p>-1.4 (-3.87, 1.05)</p> <p>-0.16 (-0.41, 0.09)</p>	<p>0.26</p> <p>0.21</p>

Nawi & Jamaludin., 2015	1) ObeseGO! – healthy lifestyle website 2) Health education pamphlets	12 weeks Intensity not stated	1) BMI 2) WC 3) % BF	Post treatment and at 12 weeks post-intervention	- There was no statistically significant reduction in BMI, WC or BF % between the intervention and control groups - The mean BMI, WC and % BF in the obeseGO! group were statistically significantly lower after the intervention (p<0.001, p=0.001, p=0.001)	BMI (kg/m ²) WC (cm) % BF	-0.49 (-2.41, 1.42) -1.57 (-6.18, 3.03) 0.09 (-2.14, 2.33)	0.61 0.5 0.93
Williamson et al., 2006	1) Interactive behavioural internet programme 2) Passive internet health education programme	Programmes continuously available for use over 24 months	1) BMI 2) BMI percentile 3) Body weight 4) % BF 5) Weight loss behaviours: dieting, weight concerns, exercise, overeating, and avoidance of fattening foods 6) Website use	6, 12, 18 and 24 months	- In comparison with the control group, adolescents in the behavioural programme statistically significantly reduced their % BF (-1.12 (0.47) vs 0.43 (0.47), p<0.05) during the first 6 months. However, after 2 years, % BF did not differ between the two groups (-0.08 (0.71) vs. 0.84 (0.72), p>0.05) - Adolescents in both the treatment and control groups reported improvement in exercise and overeating, in comparison with baseline (p<0.05)	BMI (kg/m ²) % BF BMI percentile	- 0.47 (-2.29, 1.35) -0.9 (-2.9, 1.06) -0.003 (-0.011, 0.0053)	0.61 0.37 0.48

13 *P-values in bold are statistically significant at 5% significance level

14 Abbreviations - BMI: body mass index, WHtR: waist to height ratio, BP: blood pressure, PA: physical activity, DBP: diastolic blood pressure, FV: fruit and
15 vegetables, WC: waist circumference, SB2-BED: Student Bodies 2 – BED, OBEs: objective binge episodes, SBEs: subjective binge episodes, % BF: percentage
16 body fat

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18 **Table 4:** Intervention and Control Characteristics, Outcomes, Follow-up Time Points and Key Findings for a Single Study Investigating the Effects of Mobile
 19 Phone-based Communications

Authors & Year	Interventions	Intervention Intensity & Duration	Outcomes	Follow-up Time Points	Key Findings	Weight-related Outcomes	Mean Difference	P-Value*
Nguyen et al., 2013	1) Behavioural lifestyle programme plus: telephone/SMS/email 2) Programme only	2 years During Phase 2 (22 months) adolescents received 14 telephone coaching sessions and 32 SMS +/- emails	1) Weight 2) BMI 3) BMI z-score 4) WC 5) WHtR 6) SBP & DBP 7) Metabolic profile 8) Self-reported psychosocial and lifestyle changes	2 months (end of Phase 1) 12 months 24 months (end of Phase 2)	- In both arms the programme produced statistically significant reductions in BMI z-score, WHtR and several metabolic and psychosocial improvements - Compared to the programme alone, the additional communication had no statistically significant impact on outcomes	Body weight (kg) BMI (kg/m ²) BMI z-score WC (cm) WHtR	-2.1 (-7.14, 2.94) -1.0 (-2.45, 0.45) -1.0 (-0.24, 0.04) -0.5 (-4.36, 3.36) 0.00 (-0.02, 0.02)	0.42 0.18 0.18 0.18 1

20 *P-values in bold are statistically significant at 5% significance level

21 Abbreviations - SMS: short message service, BMI: body mass index, WC: waist circumference, WHtR: waist to height ratio, SBP: systolic blood pressure,
 22 DBP: diastolic blood pressure

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