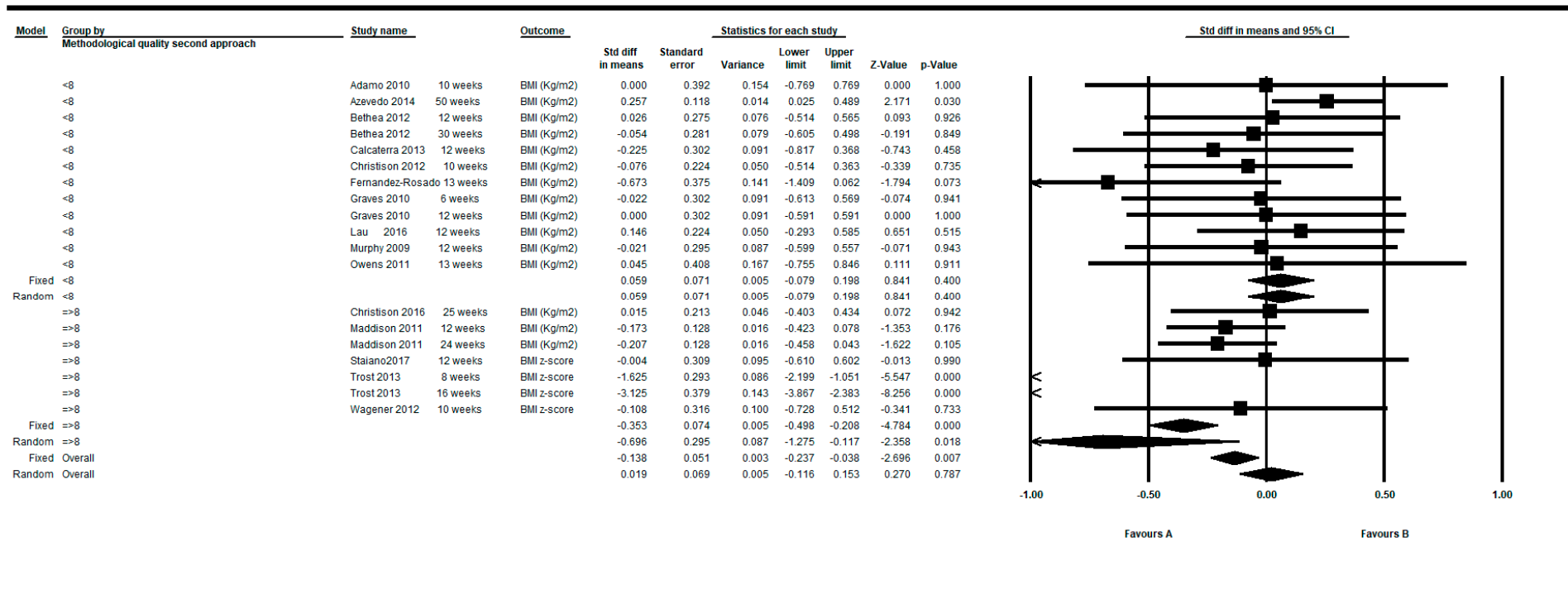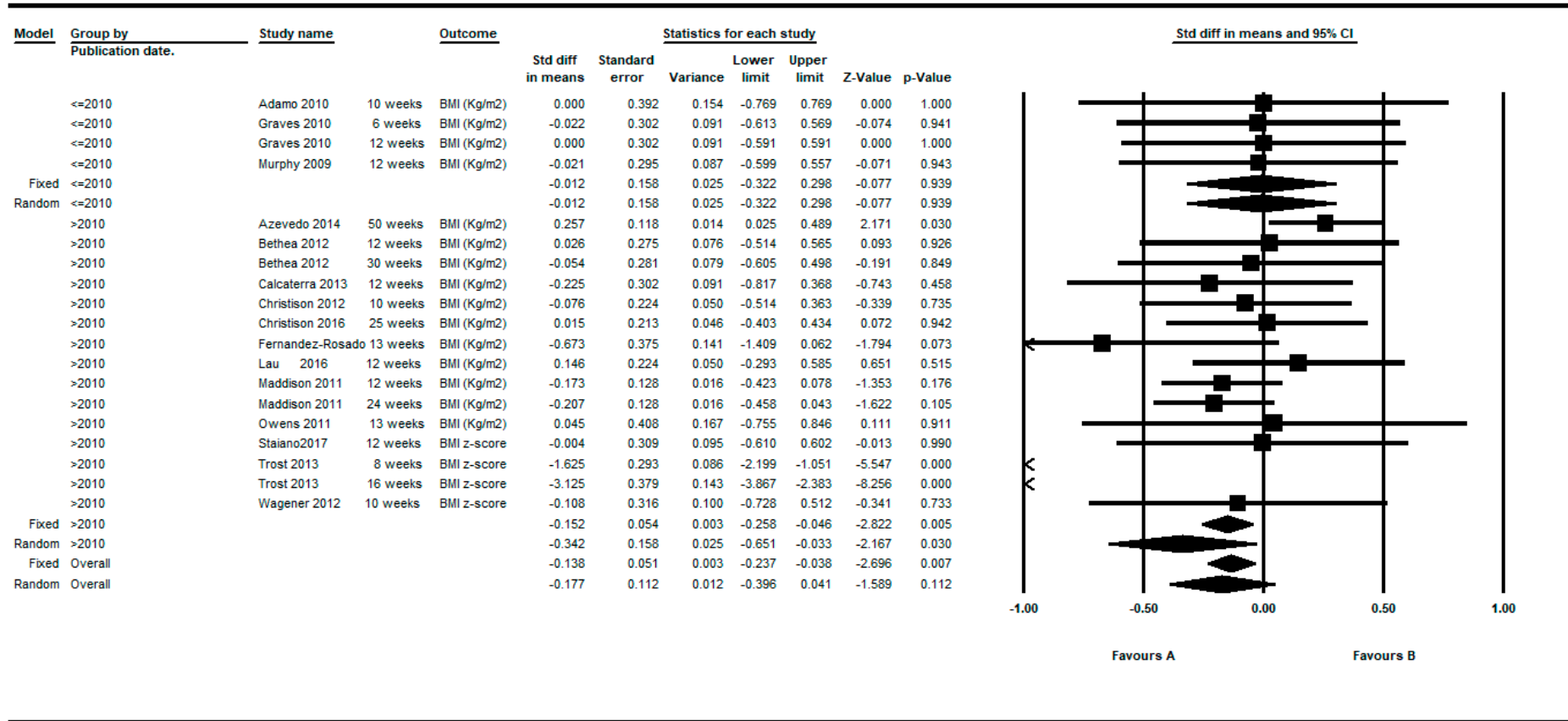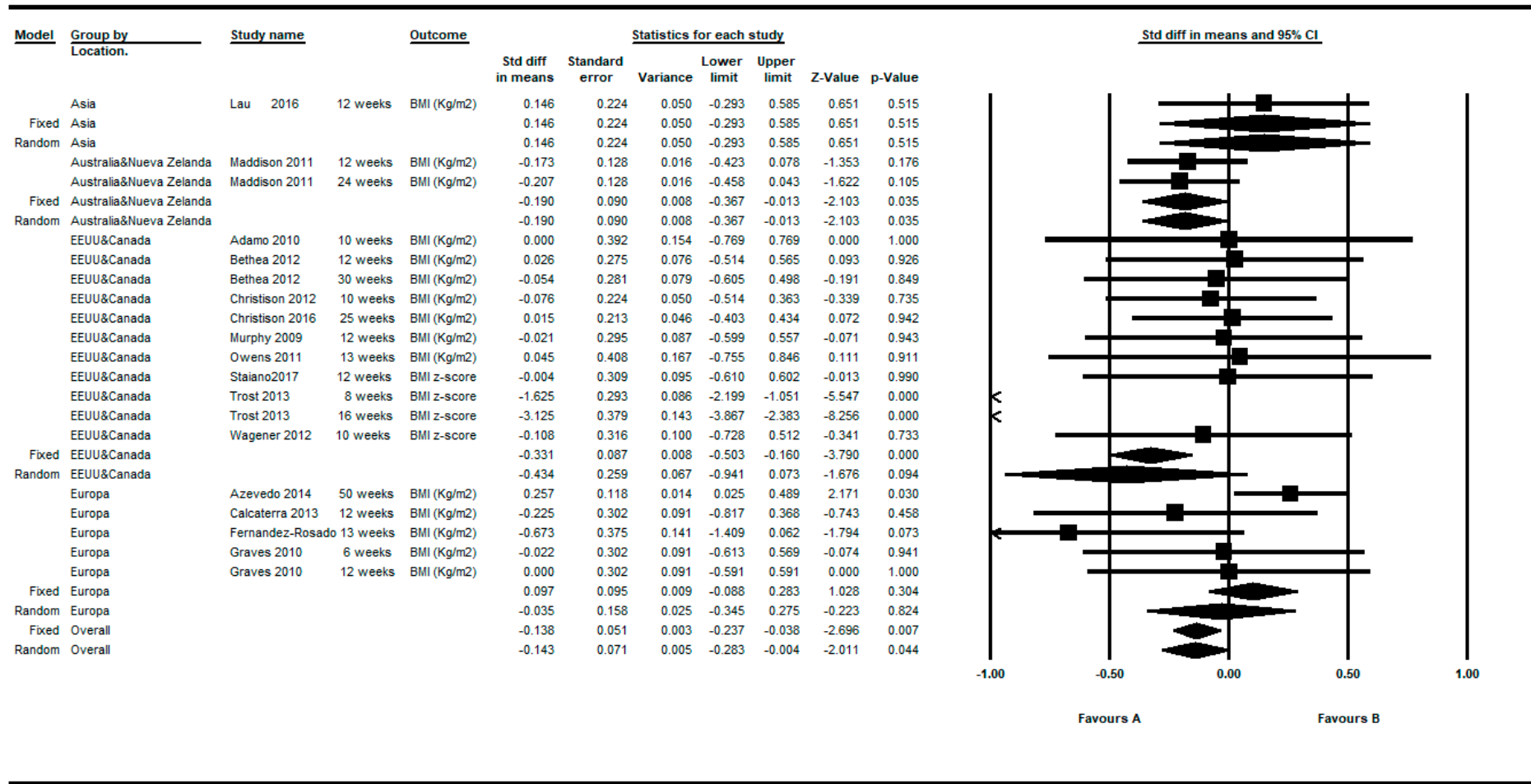# Supplementary Material

S1 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Subgroup analysis based on the quantitative assessment of the quality of the primary studies.

Model	Group by / Methodological quality second approach	Study name		Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	<8	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000
	<8	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030
	<8	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926
	<8	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.498	-0.191	0.849
	<8	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458
	<8	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735
	<8	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073
	<8	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941
	<8	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000
	<8	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515
	<8	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943
	<8	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911
Fixed	<8				0.059	0.071	0.005	-0.079	0.198	0.841	0.400
Random	<8				0.059	0.071	0.005	-0.079	0.198	0.841	0.400
	=>8	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942
	=>8	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176
	=>8	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105
	=>8	Staiano 2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990
	=>8	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000
	=>8	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000
	=>8	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733
Fixed	=>8				-0.353	0.074	0.005	-0.498	-0.208	-4.784	0.000
Random	=>8				-0.696	0.295	0.087	-1.275	-0.117	-2.358	0.018
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007
Random	Overall				0.019	0.069	0.005	-0.116	0.153	0.270	0.787

Std diff in means and 95% CI

-1.00   -0.50   0.00   0.50   1.00
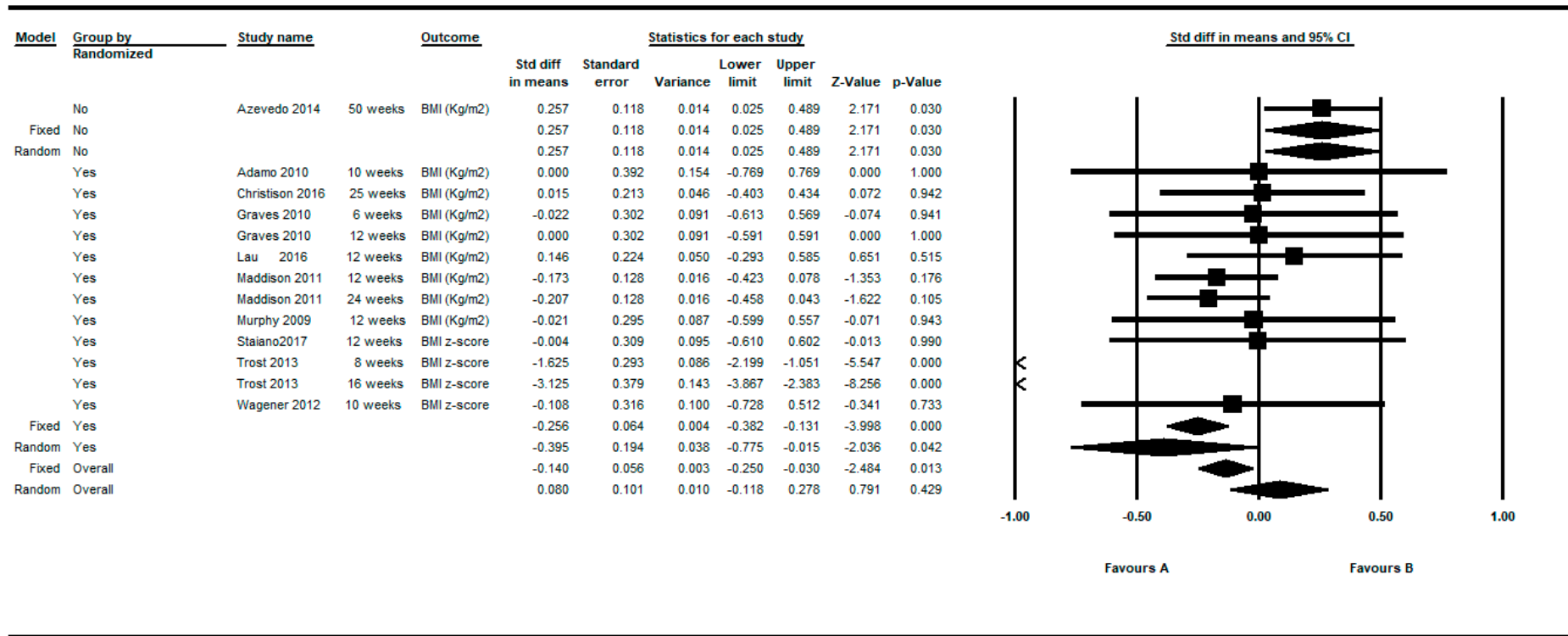
Favours A   Favours B

S2 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Analysis of subgroups according to their publication date (last 5 years versus ≤2010).

Model	Group by Publication date.	Study name		Outcome	Statistics for each study							Std diff in means and 95% CI
					Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
	<=2010	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000	
	<=2010	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941	
	<=2010	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000	
	<=2010	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943	
Fixed	<=2010				-0.012	0.158	0.025	-0.322	0.298	-0.077	0.939	
Random	<=2010				-0.012	0.158	0.025	-0.322	0.298	-0.077	0.939	
	>2010	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030	
	>2010	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926	
	>2010	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.498	-0.191	0.849	
	>2010	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458	
	>2010	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735	
	>2010	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942	
	>2010	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073	
	>2010	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515	
	>2010	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176	
	>2010	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105	
	>2010	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911	
	>2010	Staiano 2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990	
	>2010	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000	
	>2010	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000	
	>2010	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733	
Fixed	>2010				-0.152	0.054	0.003	-0.258	-0.046	-2.822	0.005	
Random	>2010				-0.342	0.158	0.025	-0.651	-0.033	-2.167	0.030	
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007	
Random	Overall				-0.177	0.112	0.012	-0.396	0.041	-1.589	0.112	

-1.00   -0.50   0.00   0.50   1.00
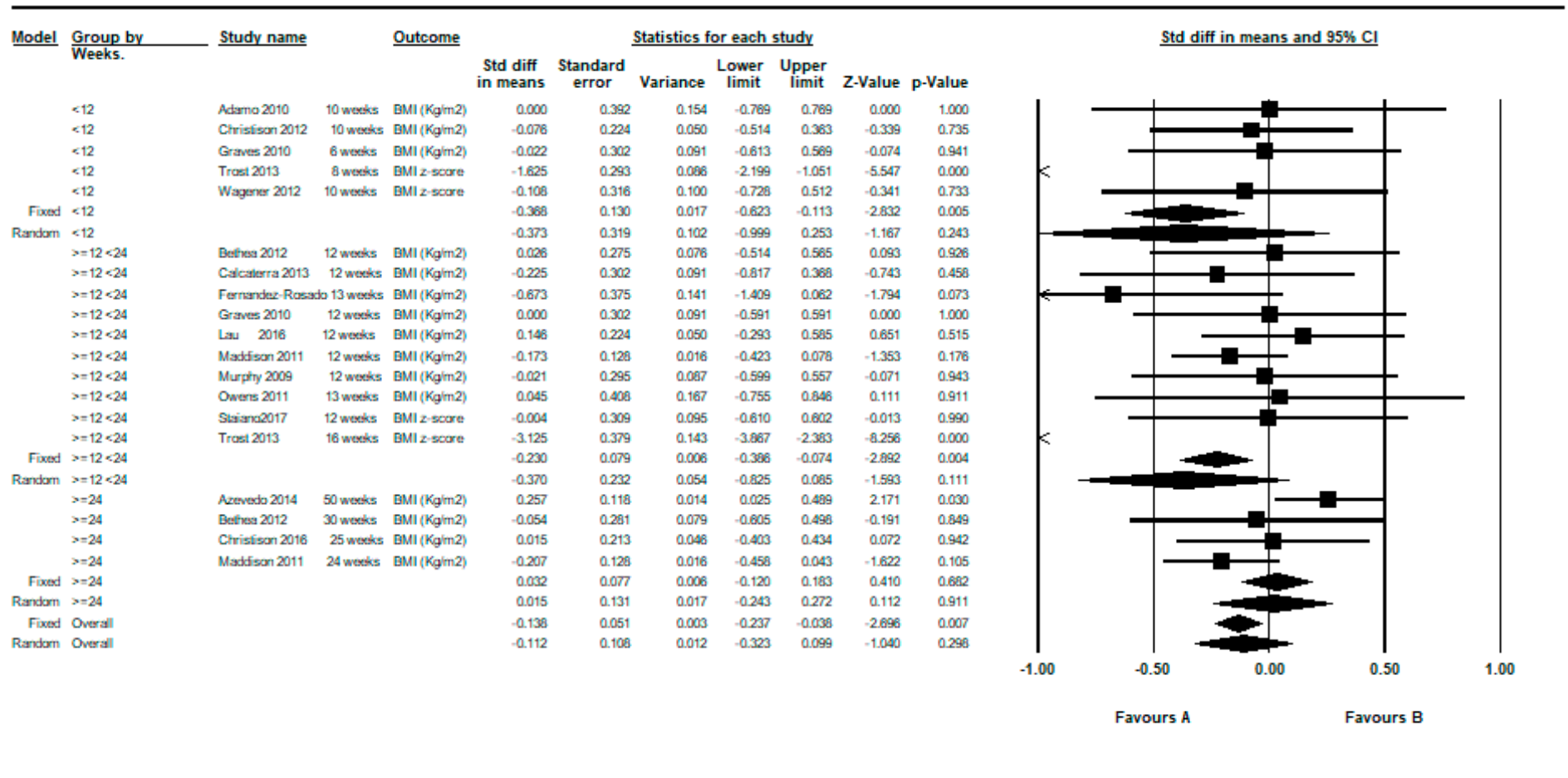
Favours A   Favours B

S3 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Analysis of subgroups according to their place of study (Europe, USA, Australia & New Zealand).

Model	Group by Location.	Study name		Outcome	Statistics for each study							Std diff in means and 95% CI
					Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
	Asia	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515	
Fixed	Asia				0.146	0.224	0.050	-0.293	0.585	0.651	0.515	
Random	Asia				0.146	0.224	0.050	-0.293	0.585	0.651	0.515	
	Australia&Nueva Zelanda	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176	
	Australia&Nueva Zelanda	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105	
Fixed	Australia&Nueva Zelanda				-0.190	0.090	0.008	-0.367	-0.013	-2.103	0.035	
Random	Australia&Nueva Zelanda				-0.190	0.090	0.008	-0.367	-0.013	-2.103	0.035	
	EEUU&Canada	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000	
	EEUU&Canada	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926	
	EEUU&Canada	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.498	-0.191	0.849	
	EEUU&Canada	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735	
	EEUU&Canada	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942	
	EEUU&Canada	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943	
	EEUU&Canada	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911	
	EEUU&Canada	Staiano2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990	
	EEUU&Canada	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000	
	EEUU&Canada	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000	
	EEUU&Canada	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733	
Fixed	EEUU&Canada				-0.331	0.087	0.008	-0.503	-0.160	-3.790	0.000	
Random	EEUU&Canada				-0.434	0.259	0.067	-0.941	0.073	-1.676	0.094	
	Europa	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030	
	Europa	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458	
	Europa	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073	
	Europa	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941	
	Europa	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000	
Fixed	Europa				0.097	0.095	0.009	-0.088	0.283	1.028	0.304	
Random	Europa				-0.035	0.158	0.025	-0.345	0.275	-0.223	0.824	
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007	
Random	Overall				-0.143	0.071	0.005	-0.283	-0.004	-2.011	0.044	

-1.00   -0.50   0.00   0.50   1.00
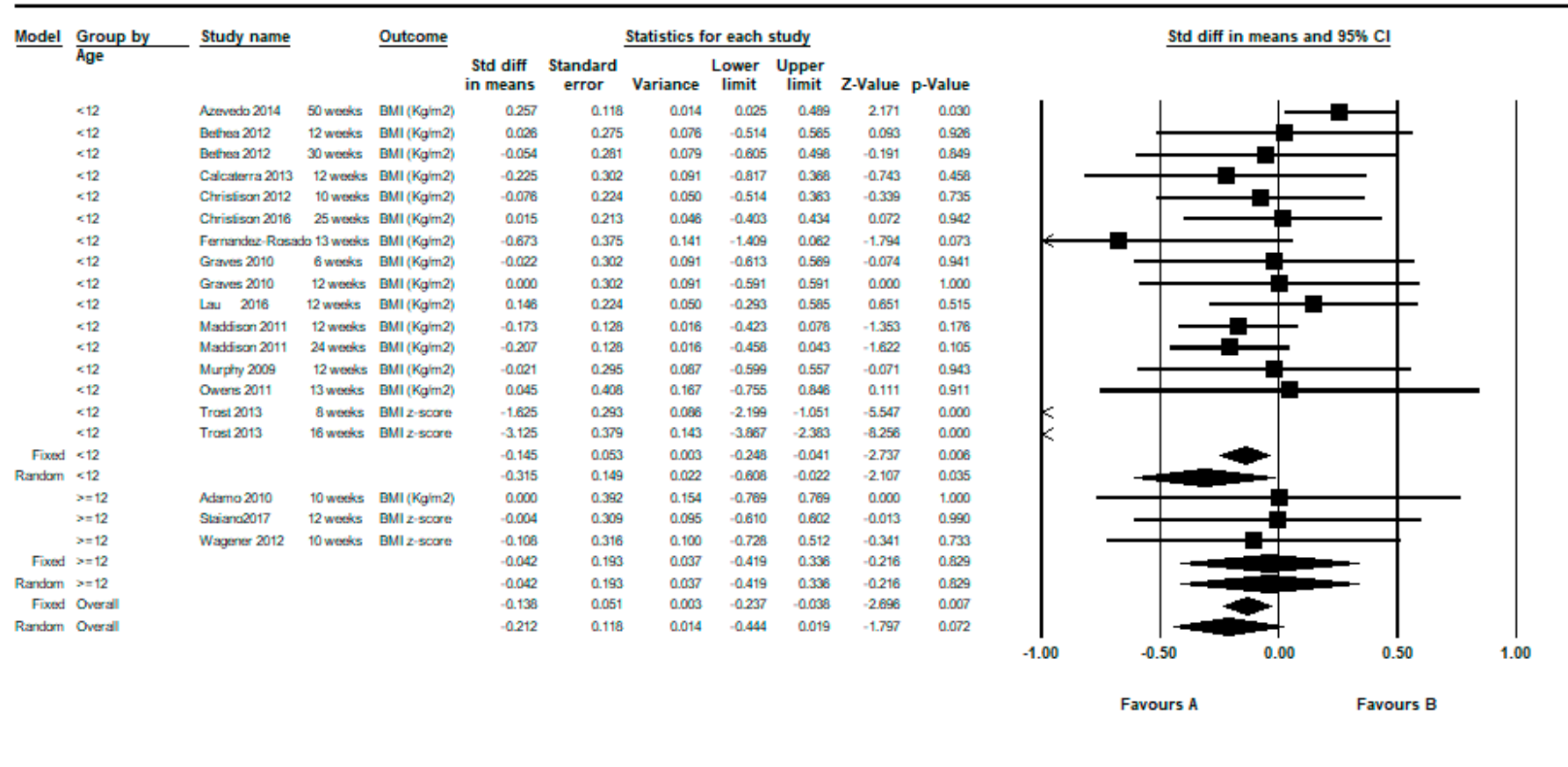
Favours A   Favours B

S4 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Subgroup analysis based on the design of the controlled studies (randomized vs. non-randomized).
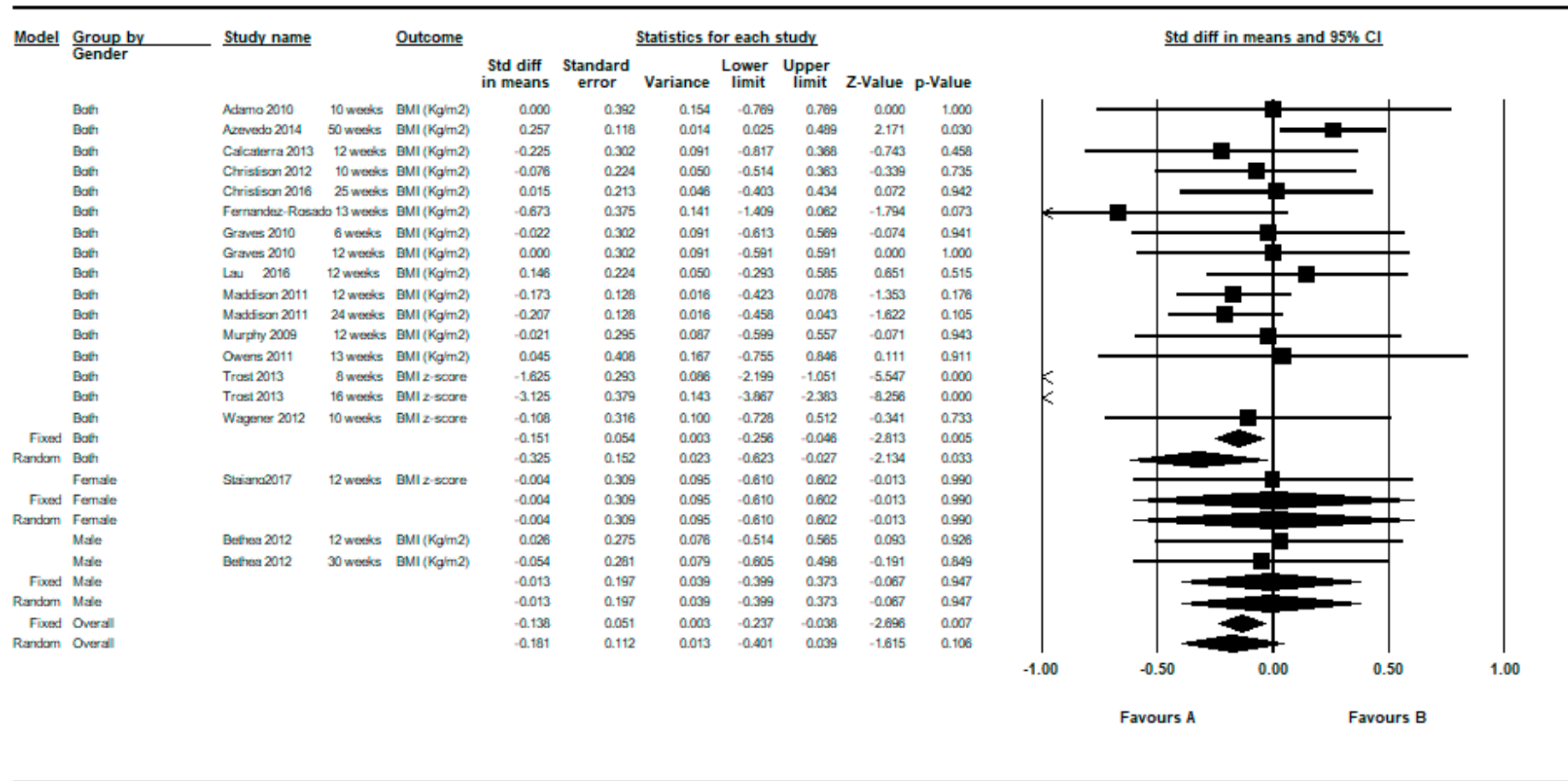
S5 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Analysis of subgroups according to the weeks of follow-up: '(<12 weeks) (≥12- <24 weeks) (≥24 weeks)'.

Model	Group by Weeks.	Study name		Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	<12	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000
	<12	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735
	<12	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941
	<12	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000
	<12	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733
Fixed	<12				-0.368	0.130	0.017	-0.623	-0.113	-2.832	0.005
Random	<12				-0.373	0.319	0.102	-0.999	0.253	-1.167	0.243
	>=12 <24	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926
	>=12 <24	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458
	>=12 <24	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073
	>=12 <24	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000
	>=12 <24	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515
	>=12 <24	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176
	>=12 <24	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943
	>=12 <24	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911
	>=12 <24	Staiano2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990
	>=12 <24	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000
Fixed	>=12 <24				-0.230	0.079	0.006	-0.386	-0.074	-2.892	0.004
Random	>=12 <24				-0.370	0.232	0.054	-0.825	0.085	-1.593	0.111
	>=24	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030
	>=24	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.496	-0.191	0.849
	>=24	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942
	>=24	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105
Fixed	>=24				0.032	0.077	0.006	-0.120	0.183	0.410	0.682
Random	>=24				0.015	0.131	0.017	-0.243	0.272	0.112	0.911
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007
Random	Overall				-0.112	0.108	0.012	-0.323	0.099	-1.040	0.298

Std diff in means and 95% CI

-1.00 -0.50 0.00 0.50 1.00

Favours A   Favours B

S6 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Analysis of subgroups according to the minimum age of children or adolescents (<12 years vs ≥12).

Model	Group by Age	Study name		Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
	<12	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030	
	<12	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926	
	<12	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.498	-0.191	0.849	
	<12	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458	
	<12	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735	
	<12	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942	
	<12	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073	
	<12	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941	
	<12	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000	
	<12	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515	
	<12	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176	
	<12	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105	
	<12	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943	
	<12	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911	
	<12	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000	
	<12	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000	
Fixed	<12				-0.145	0.053	0.003	-0.248	-0.041	-2.737	0.006	
Random	<12				-0.315	0.149	0.022	-0.608	-0.022	-2.107	0.035	
	>=12	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000	
	>=12	Staiano 2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990	
	>=12	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733	
Fixed	>=12				-0.042	0.193	0.037	-0.419	0.336	-0.216	0.829	
Random	>=12				-0.042	0.193	0.037	-0.419	0.336	-0.216	0.829	
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007	
Random	Overall				-0.212	0.118	0.014	-0.444	0.019	-1.797	0.072	

Std diff in means and 95% CI

-1.00   -0.50   0.00   0.50   1.00

Favours A   Favours B

S7 Figure. Pre-post intra-group difference in BMI in the group intervened with active video games. Analysis of subgroups according to gender (male versus female versus ´both sexes or sex not specified´).

Model	Group by Gender	Study name		Outcome	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
	Both	Adamo 2010	10 weeks	BMI (Kg/m2)	0.000	0.392	0.154	-0.769	0.769	0.000	1.000
	Both	Azevedo 2014	50 weeks	BMI (Kg/m2)	0.257	0.118	0.014	0.025	0.489	2.171	0.030
	Both	Calcaterra 2013	12 weeks	BMI (Kg/m2)	-0.225	0.302	0.091	-0.817	0.368	-0.743	0.458
	Both	Christison 2012	10 weeks	BMI (Kg/m2)	-0.076	0.224	0.050	-0.514	0.363	-0.339	0.735
	Both	Christison 2016	25 weeks	BMI (Kg/m2)	0.015	0.213	0.046	-0.403	0.434	0.072	0.942
	Both	Fernandez-Rosado	13 weeks	BMI (Kg/m2)	-0.673	0.375	0.141	-1.409	0.062	-1.794	0.073
	Both	Graves 2010	6 weeks	BMI (Kg/m2)	-0.022	0.302	0.091	-0.613	0.569	-0.074	0.941
	Both	Graves 2010	12 weeks	BMI (Kg/m2)	0.000	0.302	0.091	-0.591	0.591	0.000	1.000
	Both	Lau 2016	12 weeks	BMI (Kg/m2)	0.146	0.224	0.050	-0.293	0.585	0.651	0.515
	Both	Maddison 2011	12 weeks	BMI (Kg/m2)	-0.173	0.128	0.016	-0.423	0.078	-1.353	0.176
	Both	Maddison 2011	24 weeks	BMI (Kg/m2)	-0.207	0.128	0.016	-0.458	0.043	-1.622	0.105
	Both	Murphy 2009	12 weeks	BMI (Kg/m2)	-0.021	0.295	0.087	-0.599	0.557	-0.071	0.943
	Both	Owens 2011	13 weeks	BMI (Kg/m2)	0.045	0.408	0.167	-0.755	0.846	0.111	0.911
	Both	Trost 2013	8 weeks	BMI z-score	-1.625	0.293	0.086	-2.199	-1.051	-5.547	0.000
	Both	Trost 2013	16 weeks	BMI z-score	-3.125	0.379	0.143	-3.867	-2.383	-8.256	0.000
	Both	Wagener 2012	10 weeks	BMI z-score	-0.108	0.316	0.100	-0.728	0.512	-0.341	0.733
Fixed	Both				-0.151	0.054	0.003	-0.256	-0.046	-2.813	0.005
Random	Both				-0.325	0.152	0.023	-0.623	-0.027	-2.134	0.033
	Female	Staiano2017	12 weeks	BMI z-score	-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990
Fixed	Female				-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990
Random	Female				-0.004	0.309	0.095	-0.610	0.602	-0.013	0.990
	Male	Bethea 2012	12 weeks	BMI (Kg/m2)	0.026	0.275	0.076	-0.514	0.565	0.093	0.926
	Male	Bethea 2012	30 weeks	BMI (Kg/m2)	-0.054	0.281	0.079	-0.605	0.498	-0.191	0.849
Fixed	Male				-0.013	0.197	0.039	-0.399	0.373	-0.067	0.947
Random	Male				-0.013	0.197	0.039	-0.399	0.373	-0.067	0.947
Fixed	Overall				-0.138	0.051	0.003	-0.237	-0.038	-2.696	0.007
Random	Overall				-0.181	0.112	0.013	-0.401	0.039	-1.615	0.106

Std diff in means and 95% CI

-1.00   -0.50   0.00   0.50   1.00

Favours A   Favours B

Author Contributions

CHJ and MS were responsible for the study conception and design, managed data collection and performed analysis. CHJ, RS, MPZ, PPB, and MS were responsible for manuscript preparation. All authors interpreted analyses and made critical revisions to the paper for important intellectual content. All authors read and approved the final version of manuscript.

Conflict of interest

All authors declare that they have no conflict of interest.

Funding

The authors received no specific funding for this work.

Data Availability

Datasets used and/or analysed during the current study available from the corresponding author on reasonable request.