

**Supplementary File 4: Compositional Isotemporal Substitution at Weight Status Subgroups**

Table 1. Boys: Estimated difference in body fat% associated with the pair-wise reallocation of 30 minutes between behaviours.

<b>Normal Weight <i>n</i> = 520</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.21	-0.46, 0.05	-0.53	-0.87, -0.18	2.00	1.30, 2.71
<b>SED</b>	0.21	-0.05, 0.46			-0.33	-0.64, -0.02	2.20	1.55, 2.85
<b>LPA</b>	0.49	0.16, 0.83	0.28	-0.01, 0.57			2.49	1.70, 3.28
<b>MVPA</b>	-1.28	-1.77, -0.79	-1.49	-1.93, -1.06	-1.81	-2.40, -1.22		
<b>Overweight <i>n</i> = 158</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.20	-0.46, 0.05	-0.53	-0.88, -0.18	2.22	1.45, 2.99
<b>SED</b>	0.20	-0.05, 0.46			-0.33	-0.64, -0.02	2.42	1.70, 3.14
<b>LPA</b>	0.49	0.16, 0.83	0.28	-0.01, 0.57			2.71	1.85, 3.56
<b>MVPA</b>	-1.37	-1.89, -0.85	-1.58	-2.04, -1.12	-1.90	-2.52, -1.29		
<b>Obese <i>n</i> = 79</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.20	-0.46, 0.05	-0.52	-0.87, -0.18	2.71	1.78, 3.64
<b>SED</b>	0.20	-0.05, 0.46			-0.32	-0.62, -0.02	2.91	2.03, 3.78
<b>LPA</b>	0.49	0.16, 0.82	0.28	-0.01, 0.56			3.19	2.19, 4.19
<b>MVPA</b>	-1.55	-2.13, -0.98	-1.76	-2.28, -1.24	-2.08	-2.74, -1.41		

Abbreviations:  $\Delta'$ , estimated change in body fat%; CI, confidence interval; SED, sedentary time; LPA, light physical activity; MVPA, moderate-to-vigorous physical activity. Severe thinness and thinness weight status categories ( $n=3$ ) not presented. Note: Difference in body fat% is estimated for the reallocation of time from the behaviour in the column to the behaviour in the row, i.e., the first value of -0.21 in Row 1 is the estimated difference in body fat% for the reallocation of 30 minutes from sedentary time to sleep. Analysis adjusted for parental education level and number of parents and siblings.

Table 2. Girls: Estimated difference in body fat% associated with the pair-wise reallocation of 30 minutes between behaviours.

<b>Normal Weight <i>n</i> = 672</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.52	-0.80, -0.24	-0.49	-0.85, -0.12	2.33	1.27, 3.38
<b>SED</b>	0.52	0.24, 0.80			0.02	-0.30, 0.34	2.83	1.82, 3.84
<b>LPA</b>	0.47	0.13, 0.82	-0.06	-0.37, 0.24			2.79	1.63, 3.94
<b>MVPA</b>	-1.21	-1.83, -0.59	-1.74	-2.32, -1.17	-1.71	-2.45, -0.97		
<b>Overweight <i>n</i> = 207</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.52	-0.80, -0.24	-0.49	-0.86, -0.12	2.54	1.40, 3.67
<b>SED</b>	0.51	0.23, 0.79			0.01	-0.31, 0.33	3.04	1.94, 4.13
<b>LPA</b>	0.48	0.13, 0.83	-0.05	-0.36, 0.25			3.00	1.76, 4.24
<b>MVPA</b>	-1.27	-1.92, -0.62	-1.80	-2.40, -1.20	-1.77	-2.54, -1.01		
<b>Obese <i>n</i> = 78</b>								
	<b>Sleep</b>		<b>SED</b>		<b>LPA</b>		<b>MVPA</b>	
	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>	$\Delta'$	<b>95% CI</b>
<b>Sleep</b>			-0.51	-0.79, -0.24	-0.50	-0.85, -0.13	3.48	1.96, 5.00
<b>SED</b>	0.51	0.23, 0.79			0.01	-0.30, 0.32	3.98	2.51, 5.45
<b>LPA</b>	0.48	0.13, 0.83	-0.05	-0.34, 0.25			3.95	2.33, 5.56
<b>MVPA</b>	-1.49	-2.23, -0.75	-2.02	-2.71, -1.33	-1.20	-2.85, -1.14		

Abbreviations:  $\Delta'$ , estimated change in body fat%; CI, confidence interval; SED, sedentary time; LPA, light physical activity; MVPA, moderate-to-vigorous physical activity. Severe thinness and thinness weight status categories ( $n=11$ ) not presented. Note: Difference in body fat% is estimated for the reallocation of time from the behaviour in the column to the behaviour in the row, i.e., the first value of -0.52 in Row 1 is the estimated difference in body fat% for the reallocation of 30 minutes from sedentary time to sleep.

Analysis adjusted for parental education level and number of parents and siblings.