

**S4 Table. Studies reporting beneficial, non-significant and detrimental associations of activity patterns with blood lipids.**

<i>Moderate-to-Vigorous Physical Activity patterns</i>						
<u>Time spent in bouts</u>	<b>Beneficial (B)</b>	<b>Non-significant (NS)</b>	<b>Detrimental (D)</b>	<b>B</b>	<b>NS</b>	<b>D</b>
1-4 min		Non-HDL-C [44] <sup>A</sup>		0	1	0
1-9 min		Non-HDL-C [44] <sup>A</sup>		0	1	0
≥5 min		Non-HDL-C [44] <sup>A</sup>		0	1	0
≥10 min		Non-HDL-C [44] <sup>A</sup>		0	1	0
<b>Pattern types</b>		HDL-C ‘Most vs. Sporadic’, ‘Most’ vs. ‘Medium’, ‘Medium’ vs. ‘Sporadic’ [58] <sup>B</sup> ; Total cholesterol ‘Most vs. Sporadic’, ‘Most’ vs. ‘Medium’, ‘Medium’ vs. ‘Sporadic’ [58] <sup>B</sup> , Triglycerides ‘Most vs. Sporadic’, ‘Most’ vs. ‘Medium’, ‘Medium’ vs. ‘Sporadic’ [58] <sup>B</sup>		<b>0</b>	<b>9</b>	<b>0</b>
<i>Sedentary patterns</i>						
<u>Frequency of bouts/breaks</u>	<b>Beneficial (B)</b>	<b>Non-significant (NS)</b>	<b>Detrimental (D)</b>	<b>B</b>	<b>NS</b>	<b>D</b>
1-4 min		HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> ; Triglycerides [59] <sup>C</sup> , [59] <sup>D</sup>		<b>0</b>	<b>4</b>	<b>0</b>
5-9 min		HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> ; Triglycerides [59] <sup>C</sup> , [59] <sup>D</sup>		<b>0</b>	<b>4</b>	<b>0</b>
10-14 min		HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> ; Triglycerides [59] <sup>C</sup> , [59] <sup>D</sup>		<b>0</b>	<b>4</b>	<b>0</b>
15-29 min	Triglycerides [59] <sup>C</sup>	HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> ; Triglycerides [59] <sup>D</sup>		<b>1</b>	<b>3</b>	<b>0</b>

$\geq 20$ min		HDL- C [34]; Total cholesterol [34]	Triglycerides [34]	0	2	1
$\geq 30$ min		HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> ; Triglycerides [59] <sup>C</sup> , [59] <sup>D</sup>		0	4	0
<b>Breaks</b>		HDL-C [59] <sup>C</sup> , [59] <sup>D</sup> , [34]; Non- LDL- C [38] <sup>18/18</sup> ; Triglycerides [59] <sup>C</sup> , [59] <sup>D</sup> , [34]; Total cholesterol [34]		0	25	0
<b><u>Time spent in bouts/breaks</u></b>	<b>Beneficial (B)</b>	<b>Non-significant (NS)</b>	<b>Detrimental (D)</b>	<b>B</b>	<b>NS</b>	<b>D</b>
$\geq 5$ min		HDL- C [33]; LDL- C [33]; Total cholesterol [33]; Triglycerides [33]		0	4	0
$\geq 10$ min		HDL- C [33]; LDL- C [33]; Total cholesterol [33]; Triglycerides [33]		0	4	0
$\geq 20$ min		HDL- C [33]; LDL- C [33]; Non- LDL- C [38] <sup>18/18</sup> ; Total cholesterol [33]; Triglycerides [33]		0	22	0
$\geq 30$ min		HDL- C [33]; LDL- C [33]; Non- LDL- C [36]; Total cholesterol [33]; Triglycerides [33]		0	5	0
$\geq 40$ min		Non- LDL- C [38] <sup>18/18</sup>		0	18	0
$\geq 60$ min		Non- LDL- C [38] <sup>18/18</sup>		0	18	0
$\geq 80$ min		Non- LDL- C [38] <sup>18/18</sup>		0	18	0
$\geq 100$ min		Non- LDL- C [38] <sup>18/18</sup>		0	18	0
$\geq 120$ min		Non- LDL- C [38] <sup>18/18</sup>		0	18	0
<b>Breaks</b>		Non- LDL- C [36] <sup>E</sup>		0	1	0

<u>Duration of bouts/breaks</u>	Beneficial (B)	Non-significant (NS)	Detrimental (D)	B	NS	D
≥20 min		HDL- C [34] Total cholesterol [34] Triglycerides [34]		0	3	0
<b>Breaks</b>		HDL- C [34] Total cholesterol [34] Triglycerides [34]		0	3	0
<i>Combined patterns</i>						
<u>Activity Fragmentation</u>	Beneficial (B)	Non-significant (NS)	Detrimental (D)	B	NS	D
<b>Intradaily Variability (indication of changes between high and low activity)</b>		LDL- C [43] Total cholesterol [43] Triglycerides [43]	HDL-C [43]	<b>0</b>	<b>3</b>	<b>1</b>

Abbreviations; *B* Beneficial, *D* Detrimental, *NS* Non significant, *min* Minutes, *s* Seconds, *LDL-C* Low Density Lipoprotein Cholesterol, *HDL-C* High Density Lipoprotein Cholesterol, *Non HDL-C* High Non Density Lipoprotein Cholesterol.

<sup>A</sup> The sample was divided in four quartiles and the odds ratio of beneficial health factors were presented. When the odds consistently increased/decreased in all quartiles, we assumed that the associations were significantly beneficial/detrimental; <sup>B</sup> Latent profile analyses divided sample in 'Sporadic', 'Medium', and 'Most bouts' pattern types. The percentage of MVPA accumulated in sporadic bouts (<5 min) was progressively lower, while the percentage MVPA in both short (5<10min) and medium-to-long bouts (≥10 min) was progressively higher moving from 'Sporadic', to 'Medium', and 'Most bouts'; <sup>C</sup> Boys; <sup>D</sup> Girls; <sup>E</sup> Percentage of time spent in intensity/percentage of sedentary time spent in breaks.

<sup>X/18</sup> Colley and colleagues reported associations between activity patterns and cardio-metabolic risk factors from 6 different subgroups (i.e. boys vs. girls in three different age groups; 6-10, 11-14, and 15-19 years) for 3 different time periods (e.g., after-school) [38]. X represents the number of associations categorised as beneficial, non-significant, or detrimental out of the total 18 associations tested.

The bold numbers in the right hand columns tables represent that specific activity patterns which were examined at least four times.

## References (*reference numbers correspond with manuscript*)

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