

Table 1: Descriptive statistics of sample characteristics (n=6,098)

Variables	Primary education (n=3,843)		Secondary education (n=2,255)		All students	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Student-level variables						
Sex						
Females	1,986	51.7	1,036	45.9	3,022	49.6
Males	1,857	48.3	1,219	54.1	3,076	50.4
Age group						
Age 5-8 years	1,592	41.5	n/a	n/a	1,592	26.1
Age 9-11 years	2,004	52.1	n/a	n/a	2,004	32.9
Age 12-14 years	247	6.4	1231	54.6	1,478	24.2
Age 15-17 years	n/a	n/a	1024	45.4	1,024	16.8
Area						
Rural	1,559	40.6	410	18.2	1,969	32.3
Urban	2,284	59.4	1,845	81.8	4,129	67.7
BMI status						
Underweight	287	7.5	160	7.1	447	7.3
Normal weight	2,395	62.3	1446	64.1	3,841	63.0
Overweight/obese	1,161	30.2	649	28.8	1,810	29.7
<u>COM-B variables</u>						
Capability						
Psychological capability						
Poor	1,785	46.4	1,369	61.2	3,164	51.9
Good	2,058	53.6	876	38.8	2,934	48.1
Physical capability						
Poor	2,092	54.4	1,636	72.5	3,728	61.1
Good	1,751	45.6	619	27.5	2,370	38.9
Opportunity						
Physical opportunity						
Poor	2,136	55.6	1,554	68.9	3,609	60.5
Good	1,707	44.4	701	31.1	2,408	39.5
Social opportunity						
Poor	2,198	57.2	1,589	70.5	3,787	62.1
Good	1,645	42.8	666	29.5	2,311	37.9
Motivation						
Reflective motivation						
Poor	2,373	61.7	1,755	77.8	4,128	67.7
Good	1,470	38.3	500	22.2	1,970	32.3
Automatic motivation						
Poor	2,695	70.1	1,837	81.5	4,532	74.3
Good	1,148	29.9	418	18.5	1,566	25.7
Classroom-level variables (n=119)						
Active classroom (No)	11	13.9	11	27.5	22	18.5
Active classroom (Yes)	68	86.1	29	72.5	97	81.5

Variables	Primary education (n=3,843)		Secondary education (n=2,255)		All students	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
School-level variables (n=119)						
Education						
No	4	5.1	5	12.5	9	7.6
Yes	75	94.9	35	87.5	110	92.4
Persuasion						
No	14	17.7	11	27.5	25	21.0
Yes	65	82.3	29	72.5	94	79.0
Incentivization						
No	12	15.2	10	25.0	22	18.5
Yes	67	84.8	30	75.0	97	81.5
Coercion						
No	35	44.3	17	42.5	52	43.7
Yes	44	55.7	23	57.5	67	56.3
Training						
No	2	2.5	5	12.5	7	5.9
Yes	77	97.5	35	87.5	112	94.1
Restrictions						
No	5	6.3	7	17.5	12	10.1
Yes	74	93.7	33	82.5	107	89.9
Environmental restructuring						
No	1	1.3	1	2.5	2	1.7
Yes	78	98.7	39	97.5	117	98.3
Modelling						
No	0	0.0	1	2.5	1	0.8
Yes	79	100.0	39	97.5	118	99.2
Enablement						
No	34	43.0	21	52.5	55	46.2
Yes	45	57.0	19	47.5	64	53.8

Table 2: Crosstabulation of sample characteristics by sufficiency of physical activity among children and adolescents.

Variables	Primary education				χ^2 test <i>p</i> -value	Secondary education				χ^2 test <i>p</i> -value	All students				χ^2 test <i>p</i> -value
	Sufficient PA		Total			Sufficient PA		Total			Sufficient PA		Total		
	n	%	n	%		n	%	n	%		n	%	n	%	
Overall	1,231	32.0	3,843	100.0		493	21.9	2,255	100.0		1,724	28.3	6,098	100.0	
Student-level variables															
Sex					113.272***					162.029***					265.778***
Females	441	23.7	1,857	48.3		142	11.6	1,219	54.1		583	19.0	3,076	50.4	
Males	790	39.8	1,986	51.7		351	33.9	1,036	45.9		1,141	37.8	3,022	49.6	
Age group					21.464***					1.021					82.380***
Age 5-8 years	444	27.9	1,592	41.4		n/a	n/a	n/a	n/a		444	27.9	1,592	26.1	
Age 9-11 years	702	35.0	2,004	52.2		n/a	n/a	n/a	n/a		702	35.0	2,004	32.9	
Age 12-14 years	85	34.4	247	6.4		279	22.7	1,231	54.6		364	24.6	1,478	24.2	
Age 15-17 years	n/a	n/a	n/a	n/a		214	20.9	1,024	45.4		214	20.9	1,024	16.8	
Residential area					29.100***					0.707					49.200***
Rural	576	36.9	1,559	40.6		96	23.4	410	18.2		672	34.1	1,969	32.3	
Urban	655	28.7	2,284	59.4		397	21.5	1,845	81.8		1,052	25.5	4,129	67.7	
BMI status					6.172*					1.063					4.867
Underweight	94	32.8	287	7.5		40	25.0	160	7.1		134	30.0	447	7.3	
Normal weight	798	33.3	2,395	62.3		315	21.8	1,446	64.1		1,113	29.0	3,841	63.0	
Overweight/obese	339	29.2	1,161	30.2		138	21.3	649	29.8		477	26.4	1,810	29.7	
COM-B variables															
Capability															
Psychological capability					2.493					57.412***					43.974***
Poor	549	30.8	1,785	46.4		229	16.6	1,379	61.2		778	24.6	3,164	51.9	
Good	682	33.1	2,058	53.6		264	30.1	876	38.8		946	32.2	2,934	48.1	
Physical capability					0.960					57.941***					38.940***
Poor	656	31.4	2,092	54.4		291	17.8	1,636	72.5		947	25.4	3,728	61.1	
Good	575	32.8	1,751	45.6		202	32.6	619	27.5		777	32.8	2,370	38.9	
Opportunity															
Physical opportunity					2.178					138.071***					73.350***
Poor	663	31.0	2,136	55.6		233	15.0	1,554	68.9		896	24.3	3,690	60.5	
Good	568	33.3	1,707	44.4		260	37.1	701	31.1		828	34.4	2,408	39.5	
Social opportunity					20.039***					174.848***					139.708***
Poor	640	29.1	2,198	57.2		229	14.4	1,589	70.5		869	22.9	3,787	62.1	
Good	591	35.9	1,645	42.8		264	39.6	666	29.5		855	37.0	2,311	37.9	
Motivation															
Reflective motivation					9.411**					146.508***					100.733***
Poor	717	30.2	2,373	61.7		285	16.2	1,755	77.8		1,002	24.3	4,128	67.7	
Good	514	35.0	1,470	38.3		208	41.6	500	22.2		722	36.6	1,970	32.3	
Automatic motivation					32.323***					144.288***					142.310***
Poor	788	29.2	2,685	70.1		310	16.9	1,837	81.5		1,098	24.2	4,532	74.3	

Variables	Primary education					Secondary education					All students				
	Sufficient PA		Total		χ^2 test <i>p</i> -value	Sufficient PA		Total		χ^2 test <i>p</i> -value	Sufficient PA		Total		χ^2 test <i>p</i> -value
	n	%	n	%		n	%	n	%		n	%	n	%	
Good	443	38.6	1,148	29.9	1.824	183	43.8	418	18.5	4.313*	626	40.0	1,566	25.7	14.568***
Classroom-level variables															
Active classroom (No)	143	29.4	487	12.7		114	18.9	604	26.8		257	23.6	1,091	17.9	
Active classroom (Yes)	1,088	32.4	3,356	87.3		379	23.0	1,651	73.2		1,467	29.3	5,007	82.1	
School-level variables															
Education					0.147					1.598					2.356
No	60	33.3	180	4.7		44	18.6	236	10.5		104	25.0	416	6.8	
Yes	1,171	32.0	3,663	95.3		449	22.2	2,019	89.5		1,620	28.5	5,682	93.2	
Persuasion					5.234*					0.000					7.684**
No	177	28.1	629	16.4		130	21.8	595	26.4		307	25.1	1,224	20.1	
Yes	1,054	32.8	3,214	83.6		363	21.9	1,660	73.6		1,417	29.1	4,874	79.9	
Incentivization					0.774					5.584*					3.044
No	172	33.7	510	13.3		88	18.0	490	21.7		260	26.0	1,000	16.4	
Yes	1,059	31.8	3,333	86.7		405	22.9	1,765	78.3		1,464	28.7	5,098	83.6	
Coercion					0.562					2.031					1.274
No	560	31.4	1,782	46.4		198	20.4	969	43.0		758	27.6	2,751	45.1	
Yes	671	32.6	2,061	53.6		295	22.9	1,286	57.0		966	28.9	3,347	54.9	
Training					14.099***					1.504					19.939***
No	9	12.0	75	2.0		43	18.7	230	10.2		52	17.0	305	5.0	
Yes	1,222	32.4	3,768	98.0		450	22.2	2,025	89.8		1,672	28.9	5,793	95.0	
Restrictions					11.203***					0.204					16.453***
No	54	22.3	242	6.3		86	21.0	409	18.1		140	21.5	651	10.7	
Yes	1,177	32.7	3,601	93.7		407	22.0	1,846	81.9		1,584	29.1	5,447	89.3	
Environmental restructuring					19.985***					5.172*					1.531
No	23	67.6	34	0.9		3	7.3	41	1.8		26	34.7	75	1.2	
Yes	1,208	31.7	3,809	99.1		490	22.1	2,214	98.2		1,698	28.2	6,023	98.8	
Modelling					n/a					5.172*					8.938**
No	0	0.0	0	0.0		3	7.3	41	1.8		3	7.3	41	0.7	
Yes	1,231	32.0	3,843	100.0		490	22.1	2,214	98.2		1,721	28.4	6,057	99.3	
Enablement					14.542***					0.119					18.290***
No	449	28.6	1,571	40.9		257	21.6	1,191	52.8		706	25.6	2,762	45.3	
Yes	782	34.4	2,272	59.1		828	22.2	1,064	47.2		1,018	30.5	3,336	54.7	

Notes: χ^2 = Chi-square test for independence; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3: Multilevel mixed-effects logistic regression of factors related to sufficient physical activity among children and adolescents.

Variables	Primary education				Secondary education				All students			
	OR	95% CI		P	OR	95% CI		P	OR	95% CI		P
		Lower	Upper			Lower	Upper			Lower	Upper	
Student-level variables												
Sex (Ref: Females)												
Males	2.22	1.92	2.58	<0.001	3.08	2.42	3.92	<0.001	2.54	2.24	2.87	<0.001
Age group (Ref: Age 5-8 years)												
Age 9-11 years	1.45	1.24	1.70	<0.001					1.52	1.29	1.79	<0.001
Age 12-14 years	1.27	0.93	1.72	0.131	Ref.	Ref.	Ref.	Ref.	1.16	0.92	1.46	0.202
Age 15-17 years					0.98	0.76	1.27	0.901	1.07	0.82	1.40	0.627
Residential area (Ref: Rural)												
Urban	0.74	0.56	0.98	0.033	1.05	0.67	1.64	0.830	0.75	0.60	0.95	0.015
BMI status (Ref: Overweight/obese)												
Underweight	1.15	0.86	1.55	0.346	1.13	0.71	1.80	0.603	1.16	0.91	1.49	0.237
Normal weight	1.06	1.02	1.48	0.008	1.13	0.87	1.47	0.347	1.20	1.05	1.38	0.010
COM-B variables												
Capability												
Psychological capability (Ref: Poor)	1.00	0.85	1.17	0.978	0.95	0.72	1.25	0.700	1.01	0.88	1.16	0.900
Physical capability (Ref: Poor)	0.94	0.80	1.11	0.457	0.92	0.69	1.24	0.598	0.95	0.82	1.10	0.478
Opportunity												
Physical opportunity (Ref: Poor)	0.91	0.78	1.08	0.284	1.72	1.31	2.25	<0.001	1.11	0.97	1.28	0.132
Social opportunity (Ref: Poor)	1.26	1.07	1.48	0.005	2.24	1.71	2.95	<0.001	1.51	1.31	1.74	<0.001
Motivation												
Reflective motivation (Ref: Poor)	1.09	0.92	1.29	0.309	1.68	1.25	2.25	<0.001	1.23	1.07	1.42	0.005
Automatic motivation (Ref: Poor)	1.39	1.17	1.64	<0.001	1.52	1.12	2.07	0.007	1.48	1.28	1.72	<0.001
Classroom-level variables												
Active classroom (Ref: No)	0.94	0.61	1.44	0.763	1.37	0.85	2.20	0.196	1.11	0.81	1.52	0.527
School-level variables												

Variables	Primary education				Secondary education				All students			
	OR	95% CI		P	OR	95% CI		P	OR	95% CI		P
		Lower	Upper			Lower	Upper			Lower	Upper	
Education (Ref: No)	0.68	0.35	1.30	0.240	1.35	0.72	2.53	0.355	0.95	0.60	1.51	0.828
Persuasion (Ref: No)	1.10	0.76	1.58	0.630	0.82	0.53	1.25	0.352	1.03	0.78	1.36	0.837
Incentivization (Ref: No)	0.86	0.57	1.30	0.483	1.47	0.89	2.43	0.135	1.02	0.75	1.39	0.878
Coercion (Ref: No)	1.12	0.86	1.46	0.406	1.17	0.82	1.67	0.391	1.11	0.89	1.39	0.335
Training (Ref: No)	4.12	1.42	11.95	0.009	0.82	0.40	1.71	0.603	1.97	1.12	3.46	0.019
Restrictions (Ref: No)	2.07	1.13	3.82	0.019	1.09	0.70	1.70	0.691	1.27	0.88	1.84	0.198
Enablement (Ref: No)	1.22	0.92	1.64	0.170	1.04	0.72	1.49	0.838	1.21	0.96	1.51	0.102
Mixed effects												
Log-likelihood		-2244.574				-998.071				-3294.385		
LR test vs. logistic model: chi2(2)		73.14***				17.29***				106.25***		
ICC School		0.063 (0.039, 0.098)				0.029 (0.009, 0.095)				0.061 (0.041, 0.090)		
ICC Class within School		0.064 (0.036, 0.112)				0.088 (0.044, 0.167)				0.077 (0.051, 0.115)		
Model fit												
AIC		4535.148				2040.143				6636.770		
BIC		4678.990				2166.002				6797.947		

Abbreviations: OR = odds ratio; Ref = reference group; AIC = Akaike information criterion; BIC = Bayesian information criterion