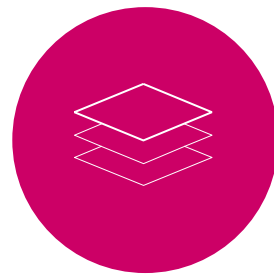


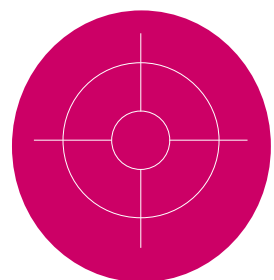
Evolution of a physical fitness assessment campaign towards other domains of physical literacy

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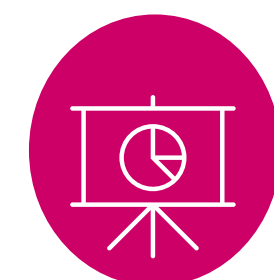
BACKGROUND

- ✓ From 1991 to 2022, in the Province of Luxembourg, a physical fitness assessment was organized for children aged 10 to 12.
- ✓ Each year, in October and November, more than 5,000 students completed 8 fitness tests.
- ✓ Assessing physical fitness alone was a limitation. Multiple factors influence children's engagement and participation in physical activities.
- ✓ The concept of physical literacy is more appropriate for taking responsibility for engaging in physical activities for life. (1)

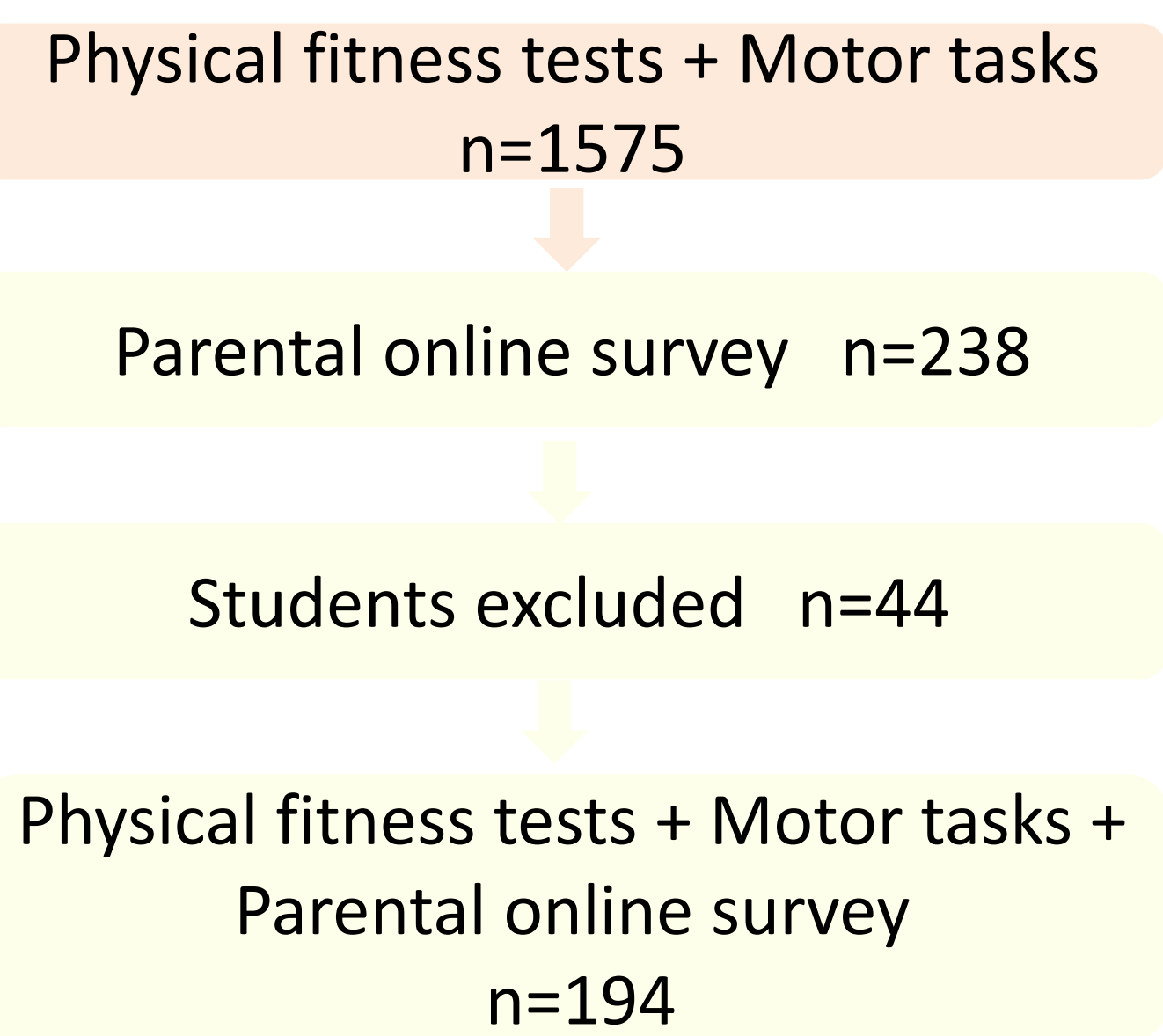


OBJECTIVES

- ✓ The purpose of this study was to develop a more comprehensive tool for assessing certain domains of physical literacy, based on a campaign focusing on physical fitness assessment.



RESULTS



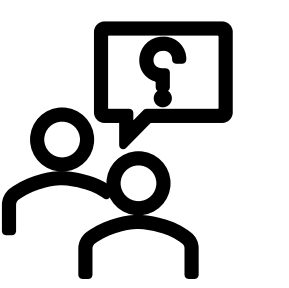
Physical fitness tests

	Girls (N=789)	Boys (N=786)
Modified sit-up test		
Mean (SD)	38.6 (10.7)	42.7 (11.4)
Missing	1 (0.1%)	0 (0%)
Vertical jump		
Mean (SD)	30.6 (5.68)	31.9 (5.87)
Missing	1 (0.1%)	0 (0%)
Seated Medicine ball throw test		
Mean (SD)	3.69 (0.538)	3.46 (0.502)
Sit and reach test		
Mean (SD)	22.0 (6.85)	15.8 (6.01)
Missing	2 (0.3%)	5 (0.6%)
Sprint test		
Median [Min, Max]	4.32 [3.33, 6.50]	4.19 [3.09, 6.44]
Missing	2 (0.3%)	1 (0.1%)
20-m shuttle run test		
Median [Min, Max]	620 [40.0, 1540]	840 [120, 1920]
Missing	5 (0.6%)	1 (0.1%)

Motor tasks

	Overall (N=1575)	Overall (N=1575)	
Trial 1		Trial 2	
Score 0	38 (2.4%)	Score 0	22 (1.4%)
Score 1	162 (10.3%)	Score 1	101 (6.4%)
Score 2	436 (27.7%)	Score 2	351 (22.3%)
Score 3	620 (39.4%)	Score 3	618 (39.2%)
Score 4	319 (20.3%)	Score 4	482 (30.6%)
Mean time = 28,47s		Missing	1 (0.1%)
		Mean time = 26,50s	

Physical activity and sedentary lifestyle were measured by a parental online survey. Parents answered questions about children's participation in physical activities, transportation, screen time and sedentary activities (CAPAS-Q) (3)



Parental online survey

All participants (n=194), Girls (n=106) Boys (n=88)
Socio-economic index of schools (/20) 11.80 ±3.64

Differences between Trial 1 and Trial 2 for the 4 motor tasks

	Failed	Trial 1	Trial 2
Wobble spot	FAILED	41.8%	31.4%
Core agility	FAILED	18.6%	13.9%
Overarm throw and catch	FAILED	43.8%	29.9%
Jumping patterns	FAILED	9.8%	3.6%

BMI all participants (kg/m²) 18.05 ±3.32, Girls 18.19 ±, Boys 17.84 ±3.16

Relationship between BMI & physical tests

	Modified sit-up test	Vertical jump test	Seated Medicine ball throw test	Sit and reach test	Sprint test	20-m shuttle run test
BMI Spearman Rho	-0.150 *	-0.230 **	0.393***	-0.100	0.330 ***	-0.488 ***
p-value	0.043	0.002	<.001	0.177	<.001	<.001
Pearson Rho			0.274**			
p-value			0.0012			

**** 0.001 *** 0.01 ** 0.05

Relationship between physical tests & motor tasks

	Motor task Failed Trial 2	Motor task Passed Trial 2	P-value
Sprint test & 1	4.40 ±0.41s	4.22 ±0.40s	0.007*
Sit and reach test & 2	17.07 ±7.38cm	20.81 ±7.15cm	0.013*
20-m shuttle run test & 2	981 ±439m	833 ±343m	0.048*
Seated Medicine ball throw test & 1	2.98 ±0.57m	3.22 ±0.56m	0.006*
Seated Medicine ball throw test & 3	3.01 ±0.45m	3.20 ±0.61m	0.019**

* Two Sample t-test ** Welch Two Sample t-test

- 1 Wobble spot
- 2 Core Stability
- 3 Overarm throw and catch



CONCLUSION & PERSPECTIVES

- ✓ A third of the participants failed the balance task and the ball-throwing and catching task on the second trial. The relevance of these two tasks is debated.
- ✓ The motor skills evaluated in this study were assessed only on the outcome of task completion, and not on the process of motor skill acquisition. This could be a limitation in the assessment of motor parameters and in the analysis of the relationship with physical parameters.
- ✓ Motor tasks revealed some significant relationships with physical tests.
- ✓ Upper limb strength in girls, cardiovascular endurance and speed in all participants were weakly correlated with BMI in 11-year-old children.
- ✓ Other measurable and non-measurable factors should be exploited to show their impact on physical and motor skills and guide future testing campaigns.

(1) Whitehead, M. (2019). *Physical literacy across the world* (pp. 74-95). London, UK : Routledge.

(2) Tyler, R., Fowweather, L., Mackintosh, K. A., & Stratton, G. (2018). A Dynamic Assessment of Children's Physical Competence : The Dragon Challenge. *Medicine And Science In Sports And Exercise*, 50(12), 2474-2487. <https://doi.org/10.1249/mss.0000000000001739>

(3) Fillon, A., Pereira, B., Vanhelst, J., Baran, J., Masurier, J., Guirado, T., Boirie, Y., Duclos, M., Julian, V., & Torgerson, D. (2022). Development of the Children and Adolescents Physical Activity and Sedentary Questionnaire (CAPAS-Q): Psychometric Validity and Clinical Interpretation. *International Journal of Environmental Research and Public Health*, 19(21), 13782. <https://doi.org/10.3390/ijerph192113782>