Supplementary Material

For the main article:

The role of leisure-time physical activity in youth for lifelong activity – A latent profile analysis with retrospective life course data

Lars Lenze[a,b], Claudia Klostermann[b], Julia Schmid[a], Markus Lamprecht[c], Siegfried Nagel[a]

[a]Institute of Sport Science, University of Bern, Bern CH, 3012, Switzerland

[b]University of Teacher Education, University of Applied Sciences and Arts Northwestern Switzerland, Windisch CH, 5210, Switzerland

[c]Lamprecht und Stamm Sozialforschung und Beratung, Zurich CH, 8032, Switzerland

Corresponding author

Lars Lenze

Bremgartenstrasse 145, CH-3012 Bern

email: lars.lenze@unibe.ch

ORCID: 0000-0001-7610-8913

Supplementary Table 1: Test-retest reliability values from *n* = 29 persons, the two questionnaires were conducted 3 months apart.

Variable	Scale	Krippendorff's alpha	
		Point estimate	*Bootstrap 95%–CI*[a]
Regularly active years over the life course[b]			
First time taking up LTPA in life course (age)	ratio	.81	.72 – .89
Interruption(s) of LTPA in life course (yes/no)	nominal	.90	.70 – 1.00
Number of interruptions of LTPA in life course	ratio	.88	.67 – 1.00
Timing of interruptions of LTPA in life course (age)	ratio	.98	.94 – 1.00
LTPAs practiced in youth			
Taking up current LTPAs (specific activities; if entered in first 20 years of life)[c]	ratio	.92	.86 – .97
Number of activities practiced in youth (and not currently practiced)[c]	ratio	.91	.84 – .96
Specific type of LTPAs practiced in youth	nominal	.95	.89 – .99
Organisational setting of LTPA in youth			
Organisational forms practiced in youth[d]	nominal	.93	.87 – .99

Note: Krippendorff's alpha is for a nominal scale similar to Scott's Pi and for an interval scale similar to Pearson et al.'s intraclass–correlation coefficient (see Hayes & Krippendorff, 2007 for further information).

[a]As suggested (Hayes & Krippendorff, 2007), 10'000 bootstrap sampling distributions were done (CI = confidence interval).

[b]From this block of questions, it was determined for each person for each year of life whether they were physically active or inactive. The variables *Number of regularly active years* and *Index of lifelong LTPA* were built out of these questions.

[c]From these two questions, the variable *Number of different activities practiced* was built.

[d]Different organisational settings could be selected (multiple selection possible), thus for calculate Krippendorff's alpha they were taken together which led to the two variables *Self-organised activities* and *Organised activities*.

Supplementary Table 2: Sample characteristics (*n* = 1519).

Variable	*n* (%)	Mean	*SD*
Sociodemographic information			
Sex			
Male	572 (37.7)		
Female	947 (62.3)		
Age at time of the survey (Range 25-76)		59.20	11.75
For more information about the age distribution: 5 categories			
25–34	63 (4.1)		
35–44	120 (7.9)		
45–54	278 (18.3)		
55–64	476 (31.3)		
65-76	582 (38.3)		
Level of education (5 categories)		3	1.22
1 compulsory school	74 (4.9)		
2 Secondary school/ lower professional education	646 (42.5)		
3 Higher professional education leaving certificate	263 (17.3)		
4 Technical college	274 (18)		
5 University	262 (17.2)		
Additional information about the sample			
At the time of the survey regularly active (LTPA)	1419 (93.4)		
Over the whole life course inactive (LTPA)	44 (2.9)		
Until 20 years of age inactive (LTPA)	235 (15.5)		
From 21 years until the current age inactive (LTPA)	52 (3.4)		

Note: *SD* = Standard Deviation.

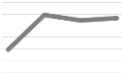
Supplementary Table 1: Descriptive data for the four indicators for the latent profile analysis and the related outcome variable (*n* = 1519).

Variables	Mean	*SD*	*Min*	*Max*
Indicators for the latent profile analysis				
Number of regularly active years	8.50	5.95	0	18
Number of different activities practiced	2.55	1.71	0	5
Self-organised activities[a]	0.53	0.50	0	1
Organised activities[a]	0.61	0.49	0	1
Auxiliary respective outcome variable				
Index of lifelong LTPA	0.86	0.26	0	1

Note: SD = Standard Deviation.

[a]These variables are dummy coded and only contain values of 0 or 1. Thus, the Mean can interpreted as probability to be active in this organisational form, as Mplus uses it.

Supplementary Table 4: Types of LTPAs for the total sample (*n* = 1519) and per profiles, separated by category. Percentage value indicates the ratio of people in the respective (sub-)group practiced these types of LTPA in youth.

Types of LTPAs	Entire sample	Profile 1	Profile 2	 Profile 3	 Profile 4	 Profile 5	 Profile 6
Walking and endurance activities (e.g., running, swimming, cycling)	60.1 %	15.7 %	88.6 %	90.6 %	65.2 %	61.8 %	36.7 %
Fitness (e.g., weight training)	4.4 %	0.7 %	7 %	10.3 %	1.6 %	5.5 %	2.2 %
Gymnastics and multi-sport activities	19.3 %	4.1 %	29.2 %	25.6 %	9.1 %	14.1 %	28.4 %
Athletics	6.6 %	0 %	12.9 %	12 %	1.1 %	3.2 %	7.4 %
Compositional-creative activities (e.g., dancing)	17 %	2.7 %	29.6 %	29.1 %	9.1 %	9.5 %	16.6 %
Release-oriented activities (e.g., yoga)	0.7 %	0 %	1.3 %	2.6 %	0 %	0.5 %	0.4 %
Outdoor- and mountain activities (e.g., skiing)	50 %	11.9 %	77 %	82.9 %	50.8 %	43.6 %	31.9 %
Sports games (e.g., football)	32.1 %	1.7 %	49.7 %	42.7 %	18.2 %	28.6 %	44.1 %
Martial arts (e.g., taekwondo)	6.1 %	0 %	9.9 %	13.7 %	2.7 %	5.5 %	5.7 %
Equestrian	4.1 %	0.7 %	8.7 %	3.4 %	3.7 %	1.4 %	2.2 %

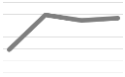
Note: Profiles with a higher value in "number of different activities" (2nd indicator) have thus higher percentage rates of activity categories in general (e.g., profile 2 & 3) than profiles with a lower value in the indicator mentioned (e.g., profile 1 or 6), considering that up to five activities per person can be indicated. *Walking and endurance activities* and *outdoor- und mountain activities* are practiced most often, which is not surprising for Switzerland (Lamprecht et al., 2020).

Supplementary Table 5: Fit-indices for the 1 to 8 profile of latent profile analyses (class-invariant, diagonal Σ; *n* = 1519).

Model	LL	npar	AIC	CAIC	BIC	SABIC	BLRT	VLMRT	Entropy
1	-9898.819	6	19809.64	19847.59	19842	19822.53			1
2	-9065.433	11	18152.87	18222.45	18211	18176.51	< .001	< .001	0.89
3	-8787.108	16	17606.22	17707.43	17691	17640.6	< .001	< .001	0.902
4	-8631.701	21	17305.4	17438.24	17417	17350.53	< .001	< .001	0.919
5	-8537.834	26	17078.23	17292.14	17217	17134.11	< .001	< .001	0.928
6	-8449.304	31	16960.61	17156.71	17126	17027.23	< .001	.001	0.862
7	-8406.532	36	16809.14	17112.79	17001	16886.51	< .001	< .001	0.94
8*									

Note: LL: Log likelihood value; AIC: Aikake information criterion; CAIC: consistent AIC; BIC: Bayesian information criterion; SABIC: sample-sized adjusted BIC: BLRT: bootstrap likelihood ratio test: VLMRT: Vuong-Lo-Mendell-Rubin likelihood ratio test.
Significant BLRT and VLMR values mean a better-fitting solution than with one profile less. For the other fit-indices (LL, AIC, CAIC, BIC, SABIC), a lower value reflect a better fit, but with a large sample size, they tend to never reach a minimum and thus suggest always adding one profile (cf. Marsh et al., 2009). In this case, the fit-indices can be plotted to find the optimal solution by considering the elbow criterion (Wang & Morin, 2016). Additionally, the entropy value gives information on the precision of the classification of cases to profiles, whereby zero means a random classification and one a perfect classification (Masyn, 2013).
*convergence problems and thus not possible to calculate.

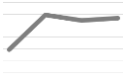
Supplementary Table 6: Sex differences between the profiles indicated by Cohen's *d* as the effect size and the Wald test for significant differences.

Profiles (means[a])	Profile 1	Profile 2	 Profile 3	 Profile 4	 Profile 5	 Profile 6
Profile 1 (0.775)	-	0.363** [0.216; 0.51]	0.517** [0.299; 0.734]	0.034 [-0.15; 0.217]	0.427** [0.25; 0.604]	0.478** [0.303; 0.654]
Profile 2 (0.582)		-	0.116 [-0.087; 0.318]	0.309** [0.139; 0.479]	0.059 [-0.099; 0.217]	0.066 [-0.092; 0.224]
Profile 3 (0.512)			-	0.419* [0.185; 0.652]	0.052 [-0.171; 0.274]	0.054 [-0.169; 0.277]
Profile 4 (0.759)				-	0.354** [0.159; 0.548]	0.398** [0.203; 0.593]
Profile 5 (0.546)					-	0.003 [-0.18;0.186]
Profile 6 (0.544)						-

Note: *$p < .01$, **$p < .001$; 95% confidence interval of the effect size in brackets.

[a]Regarding sex, the mean indicates the proportion of women in the respective profile (coding: men = 0; women = 1).

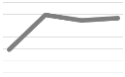
Supplementary Table 7: Age differences between the profiles indicated by Cohen's *d* as the effect size and the Wald test for significant differences.

Profiles (means[a])	Profile 1	Profile 2	 Profile 3	 Profile 4	 Profile 5	 Profile 6
Profile 1 (63.37)	-	0.616** [0.467;0.765]	0.328* [0.113;0.544]	0.346** [0.161;0.53]	0.224 [0.049; 0.399]	0.386** [0.211; 0.56]
Profile 2 (55.78)		-	0.314* [0.111; 0.517]	0.298** [0.128; 0.468]	0.385** [0.224; 0.547]	0.242* [0.084; 0.4]
Profile 3 (59.86)			-	0.022 [-0.209; 0.253]	0.076 [-0.301; 0.148]	0.074 [-0.297; 0.148]
Profile 4 (59.59)				-	0.098 [-0.293; 0.097]	0.055 [-0.248; 0.139]
Profile 5 (60.84)					-	0.148 [-0.333; 0.038]
Profile 6 (58.88)						-

Note: *$p < .01$, **$p < .001$; 95% confidence interval of the effect size in brackets.

[a]Regarding age, the mean reflects the mean age of the respective profile at the time of the survey.

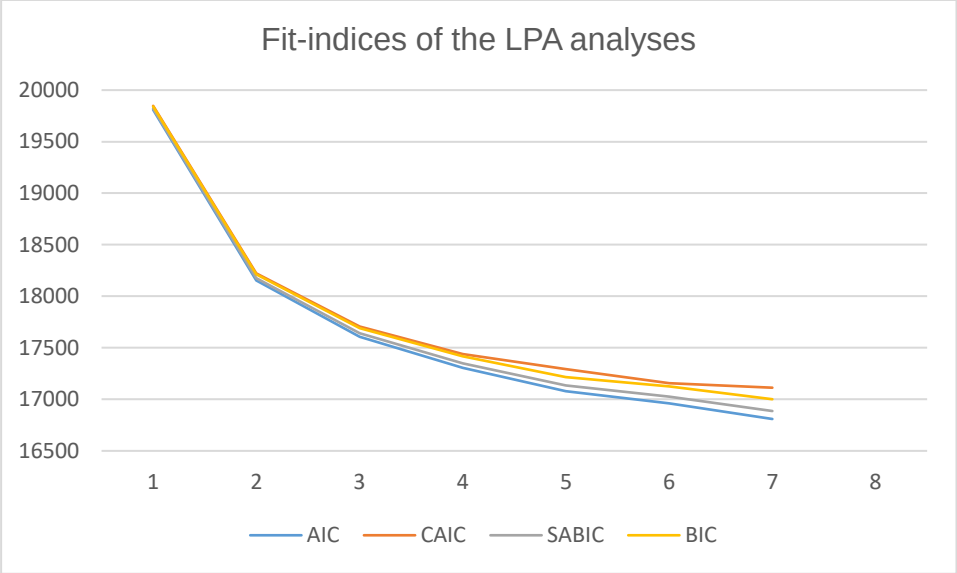
Supplementary Table 8: Differences in educational level between the profiles indicated by Cohen's *d* as the effect size and the Wald test for significant differences.

Profiles (means[a])	Profile 1	Profile 2	 Profile 3	 Profile 4	 Profile 5	 Profile 6
Profile 1 (2.54)	-	0.554** [0.406; 0.703]	0.458** [0.241; 0.674]	0.29* [0.096; 0.465]	0.299* [0.123; 0.476]	0.475** [0.3; 0.65]
Profile 2 (3.27)		-	0.11 [-0.093; 0.312]	0.27* [0.1; 0.44]	0.243* [0.082; 0.403]	0.078 [-0.08; 0.236]
Profile 3 (3.11)			-	0.163 [-0.68; 0.394]	0.135 [-0.09; 0.359]	0.03 [-0.192; 0.253]
Profile 4 (2.9)				-	0.24 [-0.219; 0.171]	0.19 [-0.004; 0.383]
Profile 5 (2.93)					-	0.162 [-0.23; 0.348]
Profile 6 (3.16)						-

Note: *$p < .01$, **$p < .001$; 95% confidence interval of the effect size in brackets.

[a]Regarding age, the mean reflects the mean educational level of the respective profile at the time of the survey.

Supplementary Figure 1: Plotted fit-indices for 1 to 7 profiles.



Note: As suggested from Morin & Wang (2016), these four fit-indices are plotted and the best-fitting solution is provided by the profile after which the slope flattens out ("elbow criterion").

AIC: Aikake information criterion; CAIC: consistent AIC; BIC: Bayesian information criterion; SABIC: sample-sized adjusted BIC.