

Supplementary table 5. Grading rules for grades 1-2

	ITEM	Measure	Measure+4 (x)	Score for each question	Score (z)
Physical knowledge	B1	-1.98	2.02	$(2.02/23.69)*24$	2.046
	B2	-1.56	2.44	$(2.44/23.69)*24$	2.472
	B3	-2.39	1.61	$(1.61/23.69)*24$	1.631
	B4	-1.35	2.65	$(2.65/23.69)*24$	2.685
	B5	-1.56	2.44	$(2.44/23.69)*24$	2.472
	B6	-1.49	2.51	$(2.51/23.69)*24$	2.543
	B7	-1.07	2.93	$(2.93/23.69)*24$	2.968
	B8	-1.13	2.87	$(2.87/23.69)*24$	2.908
	B9	-1.63	2.37	$(2.37/23.69)*24$	2.401
	B10	-2.15	1.85	$(1.85/23.69)*24$	1.874
The score for each dimension(y)			23.69	24	
Physical motivation	C1	-2.71	1.29	$(1.29/26.95)*22$	1.053
	C2	-2.08	1.92	$(1.92/26.95)*22$	1.567
	C3	-1.83	2.17	$(2.17/26.95)*22$	1.771
	C4	-1.20	2.80	$(2.80/26.95)*22$	2.286
	C5	-2.71	1.29	$(1.29/26.95)*22$	1.053
	C6	0.38	4.38	$(4.38/26.95)*22$	3.576
	C7	-0.97	3.03	$(3.03/26.95)*22$	2.473
	C8	0.50	4.50	$(4.50/26.95)*22$	3.673
	C9	-0.78	3.22	$(3.22/26.95)*22$	2.629
	C10	-1.65	2.35	$(2.35/26.95)*22$	1.918
The score for each dimension(y)			26.95	22	
Physical competency	D01B	-0.04	3.96	$(3.96/49.43)*25$	2.003
	D02B	-2.31	1.69	$(1.69/49.43)*25$	0.855
	D03B	1.24	5.24	$(5.24/49.43)*25$	2.650
	D04B	1.61	5.61	$(5.61/49.43)*25$	2.837
	D05B	-0.52	3.48	$(3.48/49.43)*25$	1.760
	D06B	2.43	6.43	$(6.43/49.43)*25$	3.252
	D07B	1.64	5.64	$(5.64/49.43)*25$	2.853
	D08B	1.70	5.70	$(5.70/49.43)*25$	2.883
	D09B	1.54	5.54	$(5.54/49.43)*25$	2.802
	D10B	2.14	6.14	$(6.14/49.43)*25$	3.105
The score for each dimension(y)			49.43	25	

					Score for exercising	1(0 time)	2(2 times)	3(5 times)	4(7 times)
					once a week				
Physical participation	D01C	1.57	5.57	$(5.57/59.92)*29$	0.385	0	0.770	1.926	2.696
	D02C	0.86	4.86	$(4.86/59.92)*29$	0.336	0	0.672	1.680	2.352
	D03C	1.92	5.92	$(5.92/59.92)*29$	0.409	0	0.819	2.047	2.865
	D04C	2.11	6.11	$(6.11/59.92)*29$	0.422	0	0.845	2.112	2.957
	D05C	1.36	5.36	$(5.36/59.92)*29$	0.371	0	0.741	1.853	2.594
	D06C	2.63	6.63	$(6.63/59.92)*29$	0.458	0	0.917	2.292	3.209
	D07C	2.29	6.29	$(6.29/59.92)*29$	0.435	0	0.870	2.174	3.044
	D08C	2.43	6.43	$(6.34/59.92)*29$	0.445	0	0.889	2.223	3.112
	D09C	2.27	6.27	$(6.27/59.92)*29$	0.434	0	0.867	2.168	3.035
	D10C	2.48	6.48	$(6.48/59.92)*29$	0.448	0	0.896	2.240	3.136
The score for each dimension(y)			59.92	29					

Supplementary table 6. Grading rules for grades 3-4

	ITEM	Measure	Measure+4 (x)	Score for each question	Score (z)
Physical knowledge	B1	-1.67	2.33	$(2.33/21.76)*25$	2.677
	B2	-1	3	$(3.00/21.76)*25$	3.447
	B3	-2.47	1.53	$(1.53/21.76)*25$	1.758
	B4	-1.52	2.48	$(2.48/21.76)*25$	2.849
	B5	-2.72	1.28	$(1.28/21.76)*25$	1.471
	B6	-1.81	2.19	$(2.19/21.76)*25$	2.516
	B7	-0.12	3.88	$(3.88/21.76)*25$	4.458
	B8	-1.44	2.56	$(2.56/21.76)*25$	2.941
	B9	-2.99	1.01	$(1.01/21.76)*25$	1.160
	B10	-2.5	1.5	$(1.50/21.76)*25$	1.723
The score for each dimension(y)			21.76	25	
Physical motivation	C1	-2.99	1.01	$(1.01/42.86)*22$	0.518
	C2	-1.09	2.91	$(2.91/42.86)*22$	1.494
	C3	-0.94	3.06	$(3.06/42.86)*22$	1.571
	C4	-0.40	3.60	$(3.60/42.86)*22$	1.848
	C5	-3.22	0.78	$(0.78/42.86)*22$	0.400
	C6	1.68	5.68	$(5.68/42.86)*22$	2.916
	C7	1.77	5.77	$(5.77/42.86)*22$	2.962

	C8	1.55	5.55	$(5.55/42.86)*22$	2.849				
	C9	0.13	4.13	$(4.13/42.86)*22$	2.120				
	C10	0.43	4.43	$(4.43/42.86)*22$	2.274				
	C11	-0.79	3.21	$(3.21/42.86)*22$	1.648				
	C12	-1.27	2.73	$(2.73/42.86)*22$	1.401				
The score for each dimension(y)			42.86	22					
Physical competency	D01B	-0.62	3.38	$(3.38/52.01)*28$	1.820				
	D02B	-2.41	1.59	$(1.59/52.01)*28$	0.856				
	D03B	-0.66	3.34	$(3.34/52.01)*28$	1.798				
	D04B	1.17	5.17	$(5.17/52.01)*28$	2.783				
	D05B	-0.79	3.21	$(3.21/52.01)*28$	1.728				
	D06B	1.87	5.87	$(5.87/52.01)*28$	3.160				
	D07B	0.51	4.51	$(4.51/52.01)*28$	2.428				
	D08B	0.67	4.67	$(4.67/52.01)*28$	2.514				
	D09B	-0.41	3.59	$(3.59/52.01)*28$	1.933				
	D10B	1	5	$(5.00/52.01)*28$	2.692				
	D11B	1.61	5.61	$(5.61/52.01)*28$	3.020				
	D12B	2.07	6.07	$(6.07/52.01)*28$	3.268				
The score for each dimension(y)			52.01	28					
					Score for exercising				
					once a week	1(0 time)	2(2 times)	3(5 times)	4(7 times)
Physical participation	D01C	1.1	5.1	$(5.10/67.38)*25$	0.270	0	0.541	1.352	1.892
	D02C	0.61	4.61	$(4.61/67.38)*25$	0.244	0	0.489	1.222	1.710
	D03C	0.96	4.96	$(4.96/67.38)*25$	0.263	0	0.526	1.315	1.840
	D04C	1.89	5.89	$(5.89/67.38)*25$	0.312	0	0.624	1.561	2.185
	D05C	1.21	5.21	$(5.21/67.38)*25$	0.276	0	0.552	1.381	1.933
	D06C	2.25	6.25	$(6.25/67.38)*25$	0.331	0	0.663	1.656	2.319
	D07C	1.69	5.69	$(5.69/67.38)*25$	0.302	0	0.603	1.508	2.111
	D08C	1.66	5.66	$(5.66/67.38)*25$	0.300	0	0.600	1.500	2.100
	D09C	1.29	5.29	$(5.29/67.38)*25$	0.280	0	0.561	1.402	1.963
	D10C	2.05	6.05	$(6.05/67.38)*25$	0.321	0	0.641	1.603	2.245
	D11C	2.27	6.27	$(6.27/67.38)*25$	0.332	0	0.665	1.662	2.326
	D12C	2.4	6.4	$(6.40/67.38)*25$	0.339	0	0.678	1.696	2.375
The score for each dimension(y)			67.38	25					

Supplementary table 7. Grading rules for grades 5-6

	ITEM	Measure	Measure+4 (x)	Score for each question	Score (z)					
Physical knowledge	B1	-1.87	2.13	(2.13/38.38)*25	1.387					
	B2	-2.88	1.12	(1.12/38.38)*25	0.730					
	B3	-3.48	0.52	(0.52/38.38)*25	0.339					
	B4	0.67	4.67	(4.67/38.38)*25	3.042					
	B5	-2.65	1.35	(1.35/38.38)*25	0.879					
	B6	-2.48	1.52	(1.52/38.38)*25	0.990					
	B7	-2.81	1.19	(1.19/38.38)*25	0.775					
	B8	0.65	4.65	(4.65/38.38)*25	3.029					
	B9	1.02	5.02	(5.02/38.38)*25	3.270					
	B10	-2.50	1.50	(1.50/38.38)*25	0.977					
	B11	-1.85	2.15	(2.15/38.38)*25	1.400					
	B12	-2.06	1.94	(1.94/38.38)*25	1.264					
	B13	0.84	4.84	(4.84/38.38)*25	3.153					
	B14	0.66	4.66	(4.66/38.38)*25	3.035					
	B15	-2.88	1.12	(1.12/38.38)*25	0.730					
The score for each dimension(y)			38.38	25						
						Scores for each level on a five-point Likert scale				
						5	4	3	2	1
Physical motivation	D1	-0.54	3.46	(3.46/51.74)*23	1.538	1.538	1.025	0.513	0	0
	D2	-0.80	3.20	(3.20/51.74)*23	1.422	1.422	0.948	0.474	0	0
	D3	-1.08	2.92	(2.92/51.74)*23	1.298	1.298	0.865	0.433	0	0
	D4	-0.76	3.24	(3.24/51.74)*23	1.440	1.440	0.960	0.480	0	0
	D5	-0.66	3.34	(3.34/51.74)*23	1.485	1.485	0.990	0.495	0	0
	D6	-1.11	2.89	(2.89/51.74)*23	1.285	1.285	0.856	0.428	0	0
	D7	-0.25	3.75	(3.75/51.74)*23	1.667	1.667	1.111	0.556	0	0
	D8	-0.35	3.65	(3.65/51.74)*23	1.623	1.623	1.082	0.541	0	0
	D9	-0.75	3.25	(3.25/51.74)*23	1.445	1.445	0.963	0.482	0	0
	D10	-0.03	3.97	(3.97/51.74)*23	1.765	1.765	1.177	0.588	0	0
	D11	0.29	4.29	(4.29/51.74)*23	1.907	1.907	1.271	0.636	0	0
	D12	-0.25	3.75	(3.75/51.74)*23	1.667	1.667	1.111	0.556	0	0
	D13	-0.70	3.30	(3.30/51.74)*23	1.467	1.467	0.978	0.489	0	0
	D14	-0.69	3.31	(3.31/51.74)*23	1.471	1.471	0.981	0.490	0	0
	D15	-0.58	3.42	(3.42/51.74)*23	1.520	1.520	1.014	0.507	0	0
The score for each dimension(y)			51.74	23						

Physical competency	C01B	-1.55	2.45	(2.45/54.18)*27	1.221				
	C02B	-0.68	3.32	(3.32/54.18)*27	1.654				
	C03B	-0.31	3.69	(3.69/54.18)*27	1.839				
	C04B	0.35	4.35	(4.35/54.18)*27	2.168				
	C05B	-0.34	3.66	(3.66/54.18)*27	1.824				
	C06B	-0.73	3.27	(3.27/54.18)*27	1.630				
	C07B	-0.92	3.08	(3.08/54.18)*27	1.535				
	C08B	-0.57	3.43	(3.43/54.18)*27	1.709				
	C09B	0.55	4.55	(4.55/54.18)*27	2.267				
	C10B	0.88	4.88	(4.88/54.18)*27	2.432				
	C11B	0.84	4.84	(4.84/54.18)*27	2.412				
	C12B	-0.35	3.65	(3.65/54.18)*27	1.819				
	C13B	0.35	4.35	(4.35/54.18)*27	2.168				
	C14B	0.66	4.66	(4.66/54.18)*27	2.322				
The score for each dimension(y)			54.18	27					
					Score for exercising once a week	1(0 time)	2(2 times)	3(5 times)	4(7 times)
Physical participation	C01C	-0.12	3.88	(3.88/143.71)*25	0.096424347	0	0.193	0.482	0.675
	C02C	0.39	4.39	(4.39/143.71)*25	0.109098681	0	0.218	0.545	0.764
	C03C	0.48	4.48	(4.48/143.71)*25	0.111335328	0	0.223	0.557	0.779
	C04C	1.35	5.35	(5.35/143.71)*25	0.132956251	0	0.266	0.665	0.931
	C05C	0.53	4.53	(4.53/143.71)*25	0.11257791	0	0.225	0.563	0.788
	C06C	0.54	4.54	(4.54/143.71)*25	0.112826426	0	0.226	0.564	0.790
	C07C	0.62	4.62	(4.62/143.71)*25	0.114814557	0	0.230	0.574	0.804
	C08C	0.81	4.81	(4.81/143.71)*25	0.119536368	0	0.239	0.598	0.837
	C09C	1.88	5.88	(5.88/143.71)*25	0.146127618	0	0.292	0.731	1.023
	C10C	2.28	6.28	(6.28/143.71)*25	0.156068272	0	0.312	0.780	1.092
	C11C	2.04	6.04	(6.04/143.71)*25	0.15010388	0	0.300	0.751	1.051
	C12C	1.34	5.34	(5.34/143.71)*25	0.132707735	0	0.265	0.664	0.929
	C13C	1.86	5.86	(5.86/143.71)*25	0.145630585	0	0.291	0.728	1.019
	C14C	2.31	6.31	(6.31/143.71)*25	0.156813821	0	0.314	0.784	1.098
					Score for each hour of physical activity performed	1(0.5h)	2(0.75h)	3(1.5h)	4(2h)
	C01D	0.90	4.90	(4.90/143.71)*25	0.426	0.213	0.320	0.639	0.852
	C02D	0.67	4.67	(4.67/143.71)*25	0.406	0.203	0.305	0.609	0.812
	C03D	1.64	5.64	(5.64/143.71)*25	0.491	0.245	0.368	0.736	0.981

C04D	1.13	5.13	$(5.13/143.71)*25$	0.446	0.223	0.335	0.669	0.892
C05D	0.77	4.77	$(4.77/143.71)*25$	0.415	0.207	0.311	0.622	0.830
C06D	0.89	4.89	$(4.89/143.71)*25$	0.425	0.213	0.319	0.638	0.851
C07D	1.44	5.44	$(5.44/143.71)*25$	0.473	0.237	0.355	0.710	0.946
C08D	1.66	5.66	$(5.66/143.71)*25$	0.492	0.246	0.369	0.738	0.985
C09D	1.19	5.19	$(5.19/143.71)*25$	0.451	0.226	0.339	0.677	0.903
C10D	1.13	5.13	$(5.13/143.71)*25$	0.446	0.223	0.335	0.669	0.892
C11D	1.22	5.22	$(5.22/143.71)*25$	0.454	0.227	0.341	0.681	0.908
C12D	0.77	4.77	$(4.77/143.71)*25$	0.415	0.207	0.311	0.622	0.830
C13D	0.91	4.91	$(4.91/143.71)*25$	0.427	0.214	0.320	0.641	0.854
C14D	1.08	5.08	$(5.08/143.71)*25$	0.442	0.221	0.331	0.663	0.884
The score for each dimension(y)		143.71	25					25
