

Department of Sports and Health Sciences

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Master of Education / Professor

Shigeru Shimada

Education

University of Tsukuba, Graduate School, Department of Physical Education Science, Physical Education Science, Doctor's course(completed with no Degree)

Professional Background

Part-time Lecture at University of Fukui School of Medical Science , Fukui University, Fukui Prefectural University

Professor at Fukui National College of Technology

Consultations, Lectures, and Collaborative Research Themes

On Spirit, Technique, and Physical Fitness and Conditioning in Sports Instruction

e-mail address

s-shimada@fukui-ut.ac.jp

Main research themes and their characteristics

[Influence of the difference of continuous exercise enforcement frequencies on physique and physical fitness of male students at a National College of Technology with an exami-nation of three-year longitudinal date]

The purposes of this study were to clarify the character-istics of growth and development of physical fitness with age, and to examine the influence of the difference of habitual exercise on physique and physical fitness of male students at a National College of Technology. A total of 132 males enrolled in 2001 were administered physique and physical fitness tests for three years. The 5 physique tests and 9 new physical fitness tests developed by the Ministry of Education, Culture, Sports Science, and Tech- nology of Japan were used. The participated students were classified into 4 groups based on the frequencies of their exercise enforcement for three years. The mean differences were examined using two-way analysis of variance of one-factor repeated measurements. Body linearity and body bulk become larger with age, but the influence of exercise enforcement frequencies on physique was low. It is considered that the continuous exercise enforcement contributes to an increase of muscular power, agility, muscle endurance, and whole-body endurance, and an effect of continuous exercise with age is marked in muscle endurance. However, the influence of the continuous exercise enforcement on improving static strength and frexibility is not high. The lack of exercise by adolescent students may produce a decline of whole-body endurance, muscle endurance, and agility in spite of the growth period.

Tab.1 Result of 2-way ANOVA and Multiple compairison Analysis in physique and physical fitness

		1st grade	2nd grade	3rd grade	F-value	Multiple comparison	(Difference of grade)		
		SD	SD	SD		1st grade	2nd grade	3rd grade	
Height(cm)	HG	167.8	168.7	170.5	5.17	F3= 1.78			
	LHG	170.2	171.5	172.0	4.91	F2= 208.91	†		
	LG	170.4	170.8	172.7	4.08	N= 104			
	LG	169.4	170.9	171.4	6.32				
Body mass(kg)	HG	65.1	72.6	68.1	6.90	61.2	62.7	F3= 0.67	
	LHG	61.0	60.7	62.6	9.73	64.5	97.5	F2= 99.80	†
	LG	60.0	100.6	61.8	11.17	63.3	12.12	N= 0.65	
	LG	60.1	123.7	61.0	12.39	63.0	13.52		
Sitting height(cm)	HG	90.3	90.3	92.0	2.66	F3= 0.63			
	LHG	90.1	93.3	91.8	3.34	92.7	2.68	F2= 64.87	†
	LG	90.8	92.8	92.4	3.39	89.0	3.08	N= 0.80	
	LG	89.6	92.6	92.3	3.18	92.7	3.08		
Skin fold fat(mm)	HG	18.7	18.4	19.2	7.41	17.8	3.48	F3= 1.03	
	LHG	21.4	21.10	22.3	11.52	21.9	11.60	F2= 1.81	
	LG	22.5	21.90	21.7	11.58	21.4	13.10	N= 0.87	
	LG	23.1	10.07	23.9	12.82	22.5	13.74		
Body fat(%)	HG	12.7	2.81	3.11	4.04	12.2	2.03	F3= 1.01	
	LHG	14.4	16.4	14.9	7.21	14.8	7.02	F2= 1.58	
	LG	15.1	7.33	14.6	7.02	14.5	8.02	N= 0.86	
	LG	15.4	6.09	15.9	8.7	15.1	7.5		
Grip strength(kg)	HG	41.5	48.8	43.6	8.52	44.1	7.08	F3= 0.40	
	LHG	44.6	47.8	44.9	5.34	44.7	6.38	F2= 6.55	†
	LG	43.8	43.8	44.2	5.46	44.1	5.77	N= 1.31	
	LG	42.6	40.8	43.9	7.32	44.5			
Sit-ups(times)	HG	28.3	4.38	28.8	5.94	31.7	4.55	F3= 7.76	†
	LHG	26.9	4.08	26.5	3.69	28.4	4.85	F2= 14.93	†
	LG	27.5	3.42	26.6	3.94	26.9	3.69	N= 3.14	
	LG	24.2	4.75	24.5	5.26	25.7	5.81		
Trunk ante flexion (cm)	HG	45.7	7.37	46.7	3.01	46.8	6.84	F3= 1.29	
	LHG	46.3	7.38	46.2	7.24	47.1	8.41	F2= 0.86	
	LG	46.7	5.07	44.9	7.85	45.3	8.29	N= 0.95	
	LG	44.4	10.77	43.4	9.96	44.2	10.08		
Repeated sidways jump(times)	HG	54.6	5.28	55.7	4.09	58.6	3.12	F3= 5.77	†
	LHG	53.0	5.07	53.3	4.76	55.6	4.96	F2= 28.83	†
	LG	51.9	5.10	52.8	5.04	54.3	4.62	N= 0.63	
	LG	51.4	5.88	51.4	4.05	54.1	4.45		
1500m run(sec)	HG	398.8	298.9	395.7	29.89	392.4	26.85	F3= 16.22	†
	LHG	379.7	302.7	391.0	47.97	377.8	41.81	F2= 4.01	
	LG	377.6	281.1	387.7	34.95	402.5	43.45	N= 6.98	†
	LG	415.4	353.3	428.5	53.29	433.6	48.19		
20-meter shuttle run (times)	HG	98.8	13.91	104.9	15.47	105.1	15.34	F3= 21.97	†
	LHG	88.4	10.04	85.4	17.43	89.9	18.05	F2= 1.34	
	LG	82.8	13.68	83.8	15.33	82.8	14.22	N= 2.78	
	LG	72.5	15.46	72.4	15.86	72.1	15.36		
50m dash(sec)	HG	7.6	0.36	7.7	0.61	7.4	0.34	F3= 2.95	
	LHG	7.7	0.31	7.7	0.51	7.6	0.47	F2= 9.36	†
	LG	7.7	0.47	7.8	0.42	7.7	0.45	N= 1.35	
	LG	7.9	0.44	7.9	0.38	7.8	0.37		
Standing long jump (cm)	HG	223.7	13.36	227.7	14.18	228.1	16.56	F3= 4.44	†
	LHG	227.6	22.85	228.5	19.59	231.3	20.34	F2= 11.10	†
	LG	228.6	14.41	232.7	15.30	234.8	15.78	N= 0.73	
	LG	214.2	18.87	218.7	9.31	221.5	14.90		
Handball throw(m)	HG	23.3	4.56	25.6	5.09	26.0	4.95	F3= 3.05	
	LHG	25.8	4.73	25.6	4.82	25.8	4.96	F2= 43.17	†
	LG	23.4	3.90	25.3	3.94	26.4	3.46	N= 0.47	
	LG	20.5	5.46	22.9	5.57	23.0	5.61		

Note) HG: A group in which exercise was conducted at 1-3 grade was 3-4 days per week. LHG: A group increased in exercise in the 3rd grade(ncluding exercise) but in the 1st grade. LG: A group in which exercise was reduced in the 3rd grade than in the 1st grade. LG: A group did not exercise in the 3rd grade. HG: difference of grade, F2: difference of grade, F3: difference of grade, N: interaction, 1: $P < 0.05$, 2: $P < 0.01$, 3: $P < 0.001$. HG<LG: HG group is significantly smaller than the LG group.

Note: HG: A group in which exercise was conducted at 1-3 grade was 3-4 days per week. LHG: A group increased in exercise in the 3rd grade(including equivalent) than in the 1st grade, HLG: A group in which exercise was reduced in the 3rd grade than in the 1st grade, LG: A group didn't exercise F1: difference of exercise group, F2: difference of grade, IN: interaction, †: P<0.01, ††: P<0.0056. HG<LG: HG group is significantly smaller than the LG group.

Major academic publications

Shigeru Shimada, Shinichi Demura, Yoshinori Nagasawa, Masaki Minami and Jinzaburo Matsuzawa

"Influence of the difference of continuous exercise enforcement frequencies on physique and physical fitness of male students at a national college of technology with an examination of three-year longitudinal date"

Japan Society Physical Anthropology vol.11, No.2, 15-20, 2006

"Basic Health & Sports Science", Shinichi Demura, Shigeru Shimada and Yukio Ikemoto. Kyourin Shoin 2011.

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