Articles

The Physique and Physical Fitness tests among the Udon-Thani prefecture, Kingdom of Thailand

- Research of Continuing investigation for three-years-

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Abstract

This study was intended to improve the basic materials in terms of physical education in the kingdom of Thailand. The examinees were students from twelve- to fifteen-years-old in Udon-Thani prefecture (34 girls and 43 boys). The research was carried out with regard to height, weight, BMI (body mass index: kg/square meter), sit-up, trunk-flexion, side-step, long-jump and grip-strength. The survey investigated a state of growth and development of three years of each measurement item. The results were:

1) Height: For both girls and boys, from twelve-years-old to fourteen-years-old and boys from thirteen-years-old to fifteen-years-olds, they had annual increase for three years.
2) Weight: For both girls and boys, from twelve-years-old to fourteen-years-old, they had annual increase for three years.
3) With regard to girls, among fourteen-years-old, they made significantly higher score in terms of sit-up and grip-strength than twelve-years-old. Among fifteen-years-old, they made significantly higher score in terms of sit-up and side-step than thirteen-years-old, and they jumped evidently in long-jump than fourteen-years-old. And more, among fourteen-years-old, they made clearly better score in sit-up and side-step than thirteen-years-old. For boys, among fourteen-years-old, they made significantly higher score in all items than twelve-years-old, and they made clearly better score in trunk-flexion, side-step and grip-strength than thirteen-years-old. And more, among thirteen-years-old, they made clearly better score in sit-up, side-step and grip-strength than twelve-years-old. Additionally, among fifteen-years-old, they made significantly higher score in terms of grip-strength than thirteen-years-old.

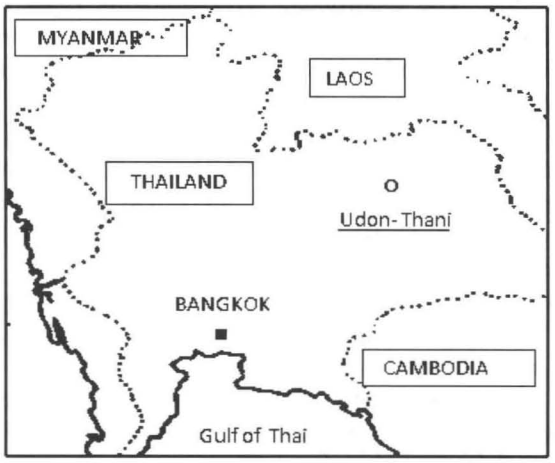
Introduction

It is very difficult to find information about the physique and physical fitness in the developing countries. Particularly in the Southeastern Asian countries, there seem to exist many countries where there is no document about the physique and physical fitness. There, enough measuring systems are not set. In the study about the physique and physical fitness among Southeast Asian countries, Chiba et al (2008)[1) 8)] made a percentile graph of the Cambodian students and reported it. Furthermore, Nabetani et al (2008)[14) 15)] compared a physique of Japanese children with Cambodian children. The writer[2)-7)] has carried out the physique and physical fitness tests in northeast-region of Thai country from 2006, and made comparison of those results by physique distinction, and with Japanese results. This study was intended to improve the basic materials in terms of physical education in the investigation object school in the Kingdom of Thailand.

Methods

The examinees were students from twelve- to fifteen-years-old in Udon-Thani prefecture,

Kingdom of Thailand, who were measured consecutively for three years to 2008 from 2006.The investigation area was shown in Figure1. Subjects-1(following: Sub-1) were students of twelve- in 2006, thirteen- in 2007 and fourteen-years-old in 2008. Subjects-2(following: Sub-2) were students of thirteen- in 2006, fourteen- in 2007 and fifteen-years-old in 2008. Characteristics of subjects by 2006, are as shown in Table1 and Table2. The research was carried out with regard to height, weight, BMI (body mass index: kg/square meter), sit-up, trunk-flexion, side-step, long-jump and grip-strength. States of measurement were shown in Figure2 and Figure3. The investigation was made in August for all three years. The survey investigated state of growth and development of three years of each measurement item. The obtained data was processed by Stat-View for Windows statistically. The analysis method was ANOVA (repeated measure analysis of variance). A p-value of <.05 was used as the significant level.



■:Capital ○: Local city

Figure 1 Investgation area in Thailand

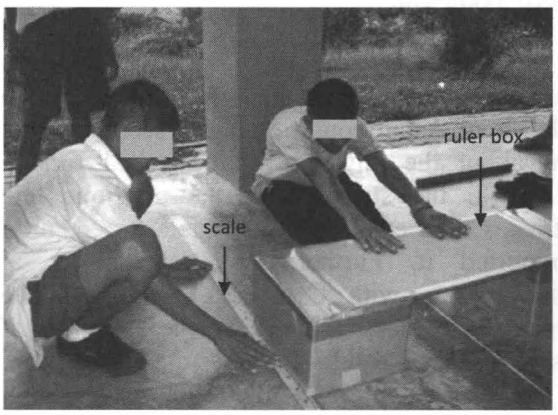


Figure 2 State of trunk-flexion measurement

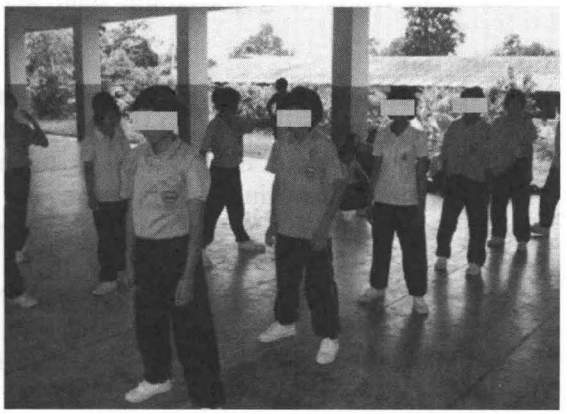


Figure 3 State of side-step measurement

Table 1 Caracteristcs of the subjects : girls

	Age (years)	Height (cm)	Weight (kg)	BMI (kg/m²)
Sub-1 (n=26)	12.0	151.9±5.9	42.0±5.2	18.2±1.7
Sub-2 (n=8)	13.0	155.0±3.0	42.6±5.0	17.7±2.0

mean±SD, BMI:body mass index

Table 2 Caracteristcs of the subjects : boys

	Age (years)	Height (cm)	Weight (kg)	BMI (kg/m²)
Sub-1 (n=32)	12.0	153.6±7.5	43.8±8.1	18.5±2.5
Sub-2 (n=11)	13.0	155.0±5.7	46.25.4	19.2±1.7

mean±SD, BMI:body mass index

Results and Discussion

1) Physical measurement

The growth aspect of Sub-1 and Sub-2 were shown in Figure7 from Figure4.

With regard to girls: Among thirteen- and fourteen-years-old, they were significantly taller than twelve-years-old in height, and fourteen-years-old, they was significantly heavier than twelve-years-old in the weight.

For boys: Among thirteen- and fourteen-years-old, they were significantly taller than twelve-years-old, and fourteen-years-old, they were significantly taller than thirteen-years-old in height. In addition, among fifteen-years-old, they were significantly taller than thirteen-years-old in height. On the other hand, among fourteen-years-old, they was significantly heavier than twelve-years-old in the weight.

Among fifteen-years-old from thirteen-years-old in girls, there were no significant differences in the all ages in the height. For both girls and boys to fifteen-years-old from

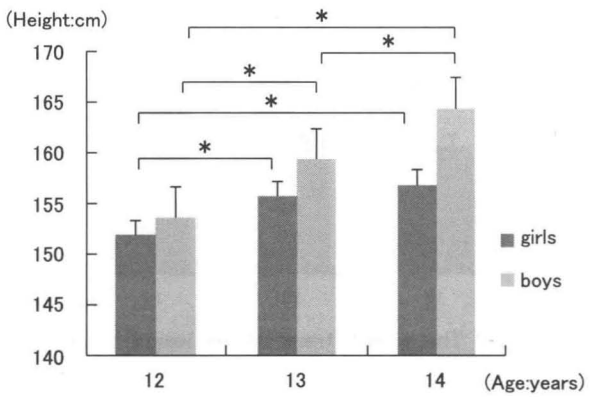


Figure 4 The growth trend of the height : sub-1

*: p<.05

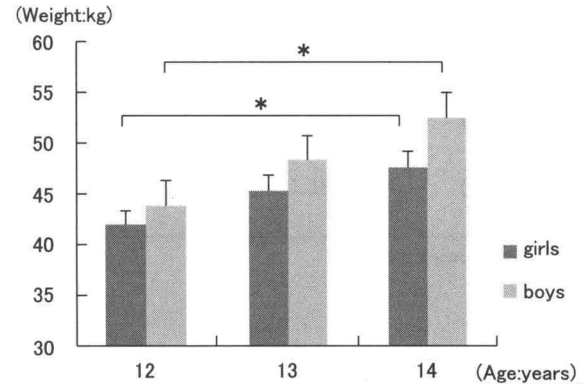


Figure 5 The growth trend of the weight : sub-1
*: p<.05

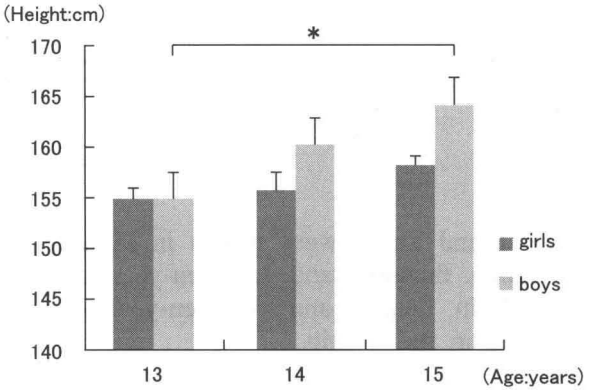


Figure 6 The growth trend of the height : sub-2
*: p<.05

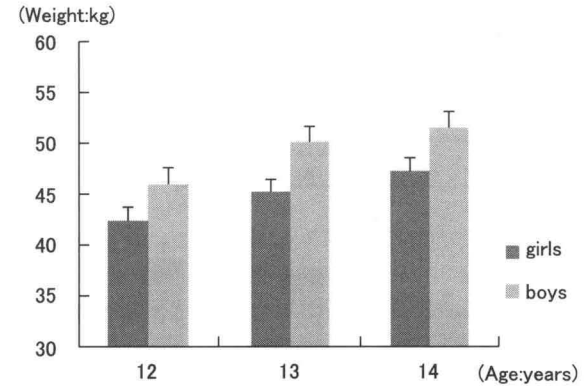


Figure 7 The growth trend of the weight : sub-2
*: p<.05

thirteen-years-old, there were no significant differences in the all ages in the weight. In the ages that significant differences were not recognized, the increase of the value had height and weight. Also, the difference of the growth aspect by the group was seen. In future, a group and personal peculiarity and investigation of the daily life are important problems.

2) Physical fitness measurement

Measurement items were sit-up (muscular endurance), trunk-flexion (flexibility), side-step (agility), long-jump (instantaneous power) and grip-strength (muscular strength). Results of the measurement were shown in table6 from table3 (trunk-flexion omitted in t-flexion, grip-strength omitted in g-strength).

With regard to girls: Among fourteen-years-old, they made significantly higher score in terms of sit-up and grip-strength than twelve-years-old. Among fifteen-years-old, they made clearly better score in sit-up and side-step than thirteen-years-old, and fifteen-years-old, they jumped evidently higher than fourteen-years-old in long-jump. And more, among fourteen-years-old, they made better score than thirteen-years-old in sit-up and side-step.

For boys: Among fourteen-years-old, they made significantly higher score in all items than twelve-years-old, and they made clearly better score in trunk-flexion, side-step and grip-strength than thirteen-years-old. And more, among thirteen-years-old, they made clearly better score in sit-up, side-step and grip-strength than twelve-years-old. Additionally, among fifteen-years-old, they made significantly higher score in terms of grip-strength than thirteen-years-old.

There were no significant differences in other items. However, increasing or improvement tendency of values was accepted over repeated measurement items. It will be an important problem in future to continue investigating more.

Table 3 Result of physical fitness tests : sub-1 of girls

	age (years)	sit-up (times)	t-flexion (cm)	side-step (times)	long-jump (cm)	g-stregth (kg)
2006-year	12.0	12.9	39.6	34.7	164.0	22.4
SD		3.5	5.9	2.7	21.6	4.3
2007-year	13.0	14.6 *	38.5	35.0	152.3	24.9 *
SD		3.5	6.3	4.2	18.5	4.4
2008-year	14.0	15.5	40.9	35.0	153.7	26.4
SD		3.4	7.5	4.4	20.4	4.5

* : $p<.05$

Table 4 Result of physical fitness tests : sub-2 of girls

	age (years)	sit-up (times)	t-flexion (cm)	side-step (times)	long-jump (cm)	g-stregth (kg)
2006-year	13.0	12.3	37.0	32.9	155.0	24.2
SD		3.3 *	6.1	1.6 *	14.3	2.8
2007-year	14.0	17.4 *	40.9	36.9 *	166.0	27.1
SD		2.1	7.8	2.5	15.8 *	2.9
2008-year	15.0	16.5	34.1	37.1	145.9	26.3
SD		1.3	6.4	2.4	15.4	2.9

* : $p<.05$

Table 5 Result of physical fitness tests : sub-1 of boys

	age (years)	sit-up (times)	t-flexion (cm)	side-step (times)	long-jump (cm)	g-stregth (kg)
2006-year	12.0	21.5	40.4	34.1	190.4	27.6
SD		3.3	6.4	4.3	26.6	6.8
2007-year	13.0	24.3	40.3	37.3	198.0	35.0
SD		3.5	7.6	4.8	27.9	7.4
2008-year	14.0	26.6	45.4	40.7	210.3	39.6
SD		4.8	9.4	4.8	22.3	7.6

* : p<.05

Table 6 Result of physical fitness tests : sub-2 of boys

	age (years)	sit-up (times)	t-flexion (cm)	side-step (times)	long-jump (cm)	g-stregth (kg)
2006-year	13.0	23.4	38.5	37.4	191.9	31.7
SD		4.5	6.3	3.7	27.2	7.9
2007-year	14.0	25.5	43.2	42.0	202.6	38.5
SD		4.4	4.7	4.9	20.6	7.5
2008-year	15.0	28.0	45.3	42.1	207.6	42.4
SD		4.4	8.1	4.5	16.4	6.8

* : p<.05

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