

Supplementary Table 1 Characteristics of subjects (modified from Table 1 of the reference¹⁾)

No	Sex	Age at Dx	Dx events	IVST ^c at Dx	PWT ^c at Dx	Type of HCM ^d	Age at 1 st ECG	Prognosis	Genes	ECG criteria		
										RI+SV3	RV3+SV3	Conventional
1	M	11.9	Screening	20.8	11.1	ASH	6.6	Alive	not identified	fulfilled	fulfilled	
2	M	12.3	Screening	27.0	10.2	ASH	6.2	SCD (18y)	not done	fulfilled	fulfilled	
3	M	13.1	Screening	16.4	13.1	Diffuse	7.0	ACA (29y)	not done	fulfilled	fulfilled	
4	F	16.0	Screening	17.1	11.0	ASH	6.9	Alive	<i>MYH7</i>	fulfilled	fulfilled	
5 ^a	F	9.6	Screening	17.2	6.1	Apical ^c	6.3	Alive	<i>MYH7</i>	fulfilled	fulfilled	
6 ^a	M	13.0	Familial study	18.3	13.1	ASH	6.8	ACA (17y)	<i>MYH7</i>			
7	M	12.6	Screening	15.2	12.0	Diffuse	6.4	Alive	<i>MYBPC3</i>			
8	M	12.3	Screening	27.5	9.3	ASH	6.2	Alive	not identified			
9	M	12.9	Screening	18.7	8.8	ASH	6.9	ACA (20y)	<i>MYH7</i>			
10 ^b	M	15.6	Screening	11.9	11.9	Diffuse	6.7	Alive	not identified			QS pattern
11 ^b	M	16.3	OHCA	14.0	10.0	ASH	6.5	ACA (14y)	<i>TNNT2</i>			RVH
Mean±SD		13.2±2.0		18.6±4.9	10.6±2.1		6.6±0.3					

^aCases 5 and 6 were the same family members. ^bCases 10 and 11 were pathologically diagnosed.

^cMeasurements of the left ventricular wall were made at the maximum point of the interventricular septum or the posterior wall.

^dThe asymmetric septal hypertrophy type was defined as a ratio of the septum to posterior wall thickness $\geq 1.3:1$ according to the traditional definition,²⁾ and the diffuse type was defined as a ratio $<1.3:1$.

^eCase 5 showed hypertrophy of the apical region (apical hypertrophy type) that extended to the distal portion of the interventricular septum and lateral portion of the left ventricle.

Abbreviations; ACA, aborted cardiac arrest; Apical, apical hypertrophy; ASH, asymmetric septal hypertrophy; Dx, diagnosis or diagnostic; ECG, electrocardiography; IVSTh, Interventricular septum thickness (in mm); MYBP3, myosin binding protein C, MYH7, myosin heavy chain; OHCA, out-of-hospital cardiac arrest; PWT_h, posterior wall thickness (in mm); RVH, right ventricular hypertrophy; RI+SV3, R wave in lead I plus S wave in lead V3 (in mV); RV3+SV3, R wave in lead V3 plus S wave in lead V3 (in mV); SCD, sudden cardiac death; TNNT2, troponin T.

1. Yoshinaga M, et al. Electrocardiographic diagnosis of hypertrophic cardiomyopathy in the pre- and post-diagnostic phases in children and adolescents. *Circ J.* 2021; 86: 118-127.

2. Armstrong WF & Ryan TR. Hypertrophic and Other Cardiomyopathies. In, Armstrong WF & Ryan TR, editor. *Feigenbaum's Echocardiography*. 8th edn, Philadelphia: Wolters Kluwer, 2019;518-543.

Supplemental Table 2. Left ventricular thickness by sex and by grade

	IVST			PWT		
	1st graders	7th graders	10th graders	1st graders	7th graders	10th graders
Male	n=135	n=94	n=64	n=135	n=94	n=64
	5.85±0.67	7.07±0.90*	7.70±1.00*	5.70±0.72	7.00±0.97*	7.87±0.98*
Female	n=120	n=100	n=66	n=120	n=100	n=66
	5.48±0.62	6.98±0.92*	6.88±0.88	5.39±0.65	6.89±1.09*	7.01±0.97

Differences in the mean values between groups (e.g., between 1st and 7th graders) were analyzed by Tukey's test. Statistical significance (* $P<0.001$) is indicated when the group showed a significantly different mean value compared with the previous group.

No difference was found between 7th and 10th graders for both IVST and PWT in females.

Abbreviations: IVST, interventricular septal thickness; PWT, posterior wall thickness.

Supplemental Table 3. Association between left ventricular wall thickness and physical parameters

	Sex	Age	Height	Weight	Body mass index	Systolic blood pressure	Body surface areas (BSA)		
							Haycock [§]	Dubois [‡]	Fujimoto [†]
Interventricular septal thickness	-0.143	0.645	0.705	0.699	0.563	0.381	0.708	0.710	0.710
	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Posterior wall thickness	-0.124	0.663	0.711	0.724	0.607	0.410	0.727	0.727	0.727
	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

[§]Haycock et al.'s formula: $BSA = Height^{0.3964} \times Weight^{0.5378} \times 0.024265$

[‡]Dubois and Dubois' formula: $BSA = Height^{0.725} \times Weight^{0.425} \times 0.007184$

[†]Fujimoto et al.'s formula: $BSA = Height^{0.663} \times Weight^{0.444} \times 0.008883$

Supplemental Table 4. Comparison of published normal references for left ventricular wall thickness adjusted by body surface area

Author	Year published	Population studied	age (range)	Number of subjects	IVST (-2SD, +2SD) ^a	PWT (-2SD, +2SD) ^a
Huwez FU, et al. ²⁸⁾	1994	British	0-19 yr	127	7.1 (5.2, 9.0)	6.4 (4.6, 8.3)
Kampmann C, et al. ²⁹⁾	2000	German	0-18 yr	2036	5.8 (4.0, 7.6)	5.9 (3.7, 8.1)
Pettersen MD, et al. ³⁰⁾	2008	US American	1-18 yr	813	5.9 (3.9, 9.0) ^c	5.4 (3.7, 7.9) ^c
Majonga ED, et al. ³¹⁾	2017	Zimbabwean	10.7 (3.0) ^b	282	7.0 (5.0, 9.1) ^c	6.8 (5.2, 8.5) ^c
Wang SS, et al. ³²⁾	2018	Chinese	0-18 yr	562	5.8 (4.5, 7.0)	4.3 (3.6, 5.0)
Gokhroo, RK, et al. ³³⁾	2022	Indian	4-15 yr	746	7.4 (5.5, 9.3) ^c	7.2 (5.4, 9.1) ^c
Present study		Japanese	6-16 yr	579	6.1 (4.7, 7.6)	6.0 (4.5, 7.5)

^aData were expressed as mean (−2 SD, +2 SD).

^bData were expressed as mean (SD).

^cThese data were also referred to (Majonga et al., *Pediatr Cardiol*, 2018; 39: 859-868).³⁴⁾

Abbreviations: IVST, interventricular septal thickness; PWT, posterior wall thickness; SD, standard deviation.

Supplemental Table 5. Comparison of published measured normal references for left ventricular wall thickness (before adjustment by BSA)

		Year Published	Population studied	Males			Females		
				1st	7th	10th	1st	7th	10th
IVST	Jinguji, et al. ^a	2004 ³⁷⁵⁾	Japanese	6.0±0.8	7.4±1.3	7.9±1.1	5.8±0.9	6.9±1.1	7.1±1.0
	Present study ^a		Japanese	5.9±0.7	7.1±0.9	7.7±1.0	5.5±0.6	7.0±0.9	6.9±0.9
	Landon, et al ^b	2021 ³⁶⁾	Russian	6 (4, 9) ^c	8 (6, 10) ^d		6 (4, 8) ^c	7 (5, 10) ^d	
PWT	Jinguji, et al. ^a	2004 ³⁵⁾	Japanese	5.4±0.9	6.9±1.4	7.6±1.2	5.3±0.9	6.4±1.2	6.5±1.2
	Present study ^a		Japanese	5.7±0.7	7.0±1.0	7.9±1.0	5.4±0.6	6.9±1.1	7.0±1.0
	Landon, et al ^b	2021 ³⁶⁾	Russian	6 (4, 8) ^c	8 (6, 10) ^d		6 (4, 8) ^c	7 (5, 10) ^d	

^aData of Jinguji et al. and the present study were expressed as mean (standard deviation).

^bData of Landon et al. were expressed as mean (2nd percentile, 98th percentile).

^cData were those of children aged 5–7 years.

^dData were those of young adolescents aged 12–15 years.

Abbreviations: 1st, first; 7th, seventh; 10th, tenth; IVST, interventricular septal thickness; PWT, posterior wall thickness.

Supplementary Fig. 1. Associations between body surface area (BSA) by DuBois' formula and measured intraventricular septal thickness (IVST) (left panel) and that between BSA by DuBois' formula and adjusted IVST (middle panel), and the distribution of adjusted IVST

The upper panels indicate data for males, and the lower panels indicate data for females.

Supplementary Fig. 2 Associations between body surface area (BSA) by DuBois' formula and measured posterior wall thickness (PWT) (left panel) and that between BSA by DuBois' formula and adjusted PWT (middle panel), and the distribution of adjusted PWT

The upper panels indicate data for males, and the lower panels indicate data for females.

Supplementary Fig. 3 Associations between body surface area (BSA) by Fujimoto's formula and measured intraventricular septal thickness (IVST) (left panel) and that between BSA by Fujimoto's formula and adjusted IVST (middle panel), and the distribution of adjusted IVST

The upper panels indicate data for males, and the lower panels indicate data for females.

Supplementary Fig. 4 Associations between body surface area (BSA) by Fujimoto's formula and measured posterior wall thickness (PWT) (left panel) and that between BSA by Fujimoto's formula and adjusted PWT (middle panel), and the distribution of adjusted PWT

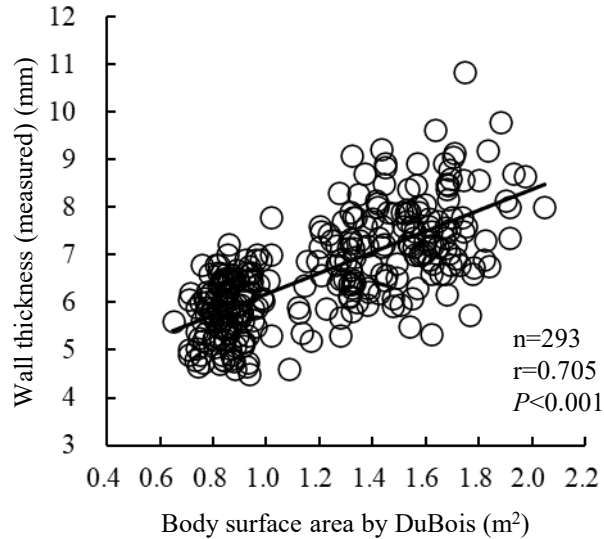
The upper panels indicate data for males, and the lower panels indicate data for females.

Supplemental Fig. 5 Boxplots for adjusted interventricular septal thickness in each institution for (a) 1st grade males, (b) 7th grade males, (c) 10th grade males, (d) 1st grade females, (e) 7th grade females, and (f) 10th grade females

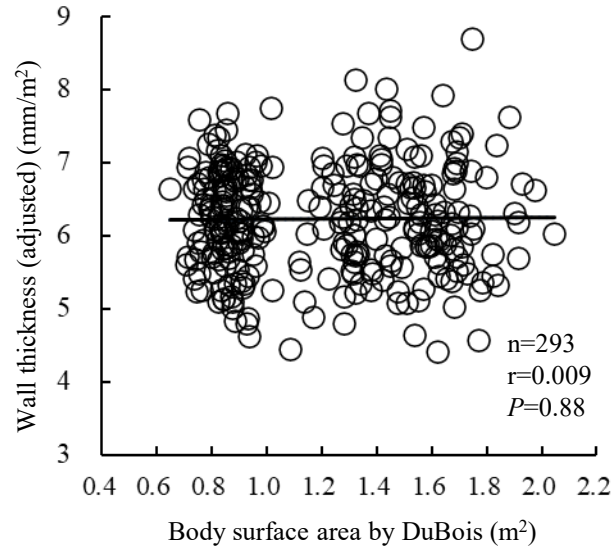
Statistical analyses were performed using the Kruskal–Wallis test and the Bonferroni correction.

Supplementary Figure 1.

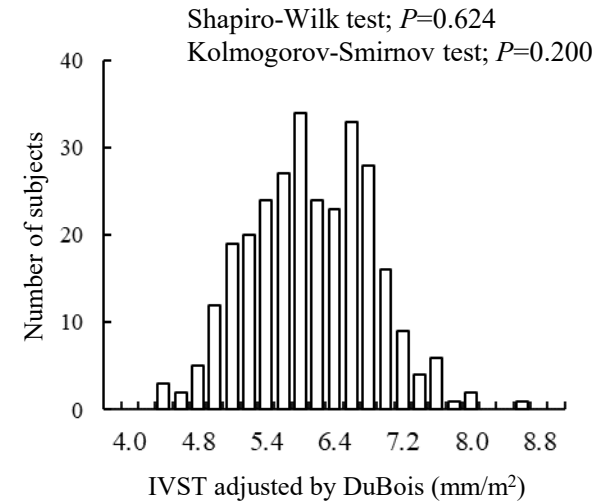
a. Measured IVST (male)



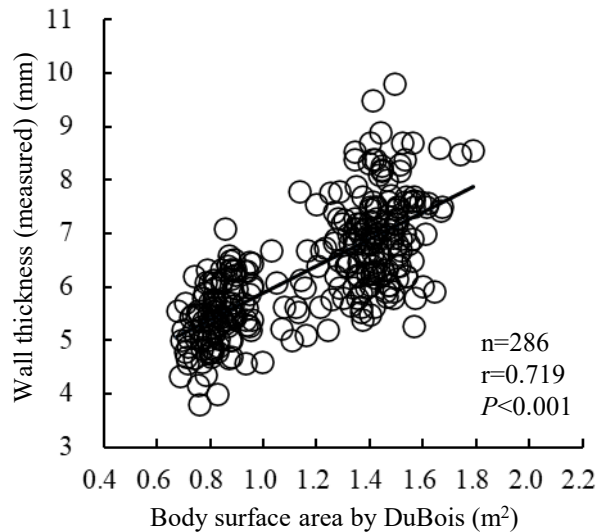
b. IVST adjusted by DuBois (male)



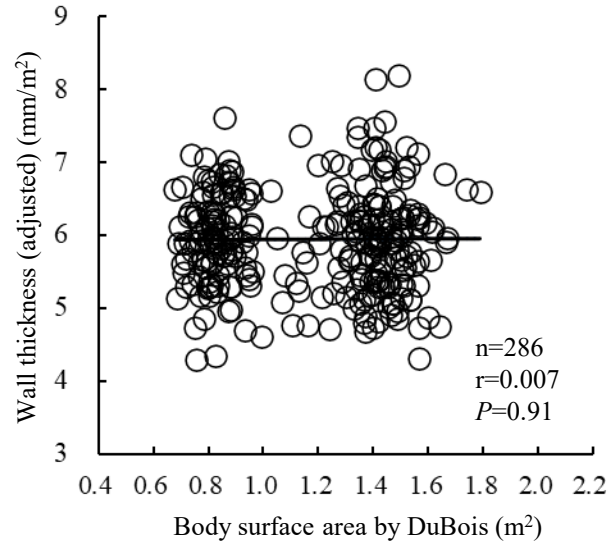
c. Distribution of IVST adjusted by DuBois (male)



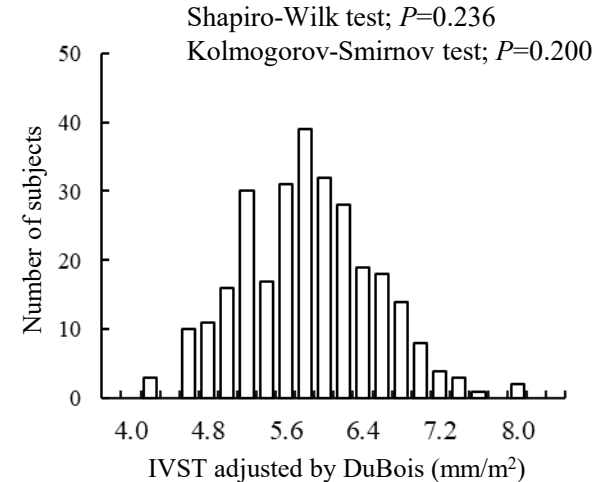
d. Measured IVST (female)



e. IVST adjusted by DuBois (female)

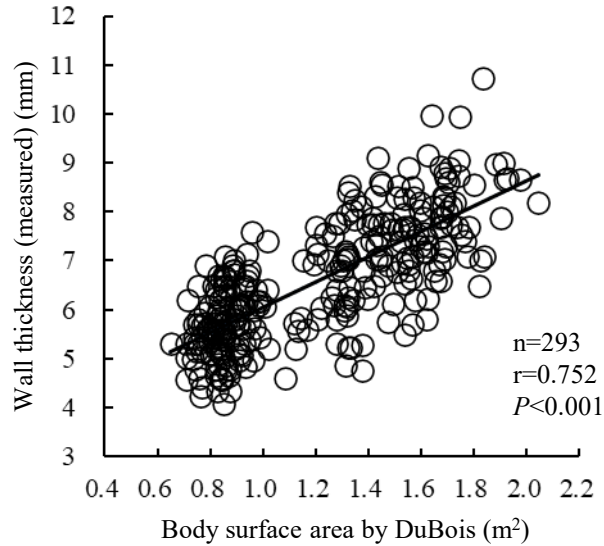


f. Distribution of IVST adjusted by DuBois (female)

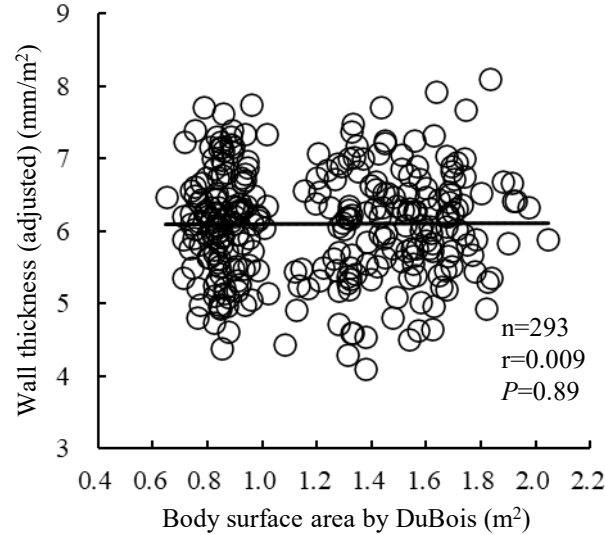


Supplementary Figure 2.

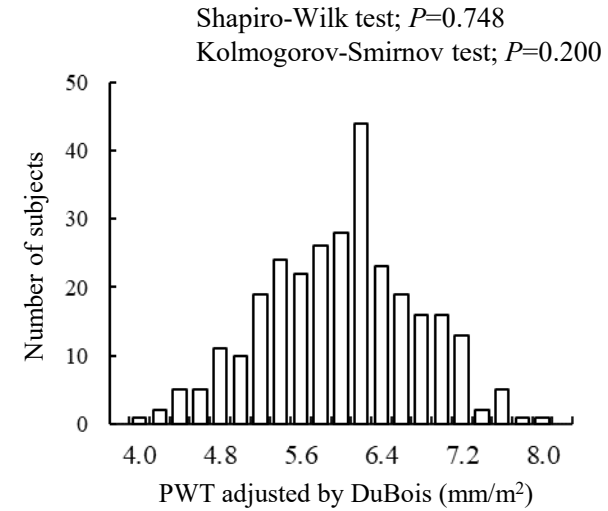
a. Measured PWT (male)



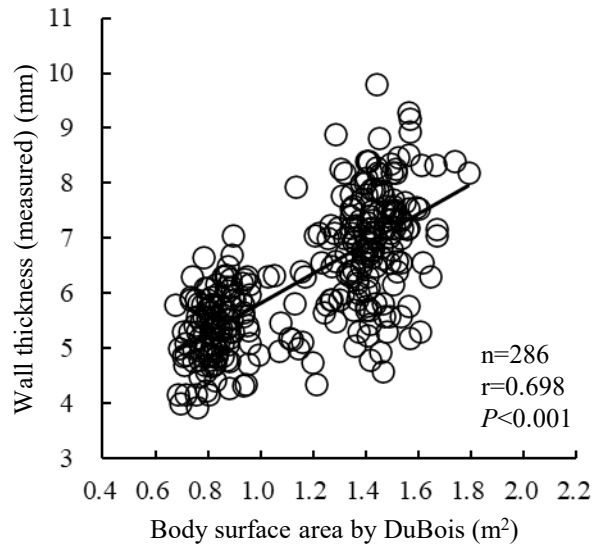
b. PWT adjusted by DuBois (male)



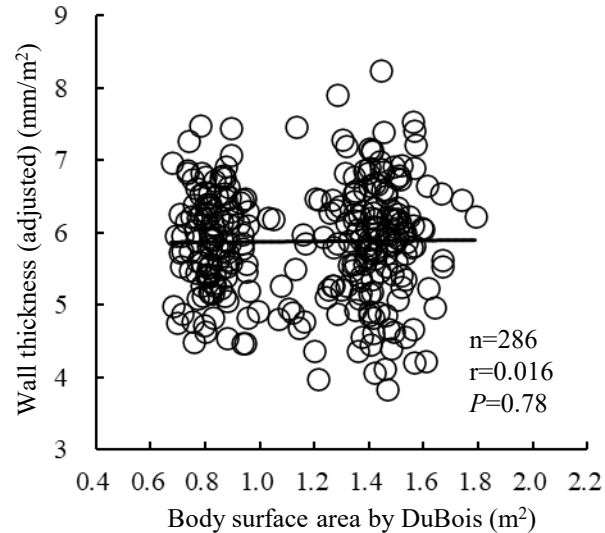
c. Distribution of PWT adjusted by DuBois (male)



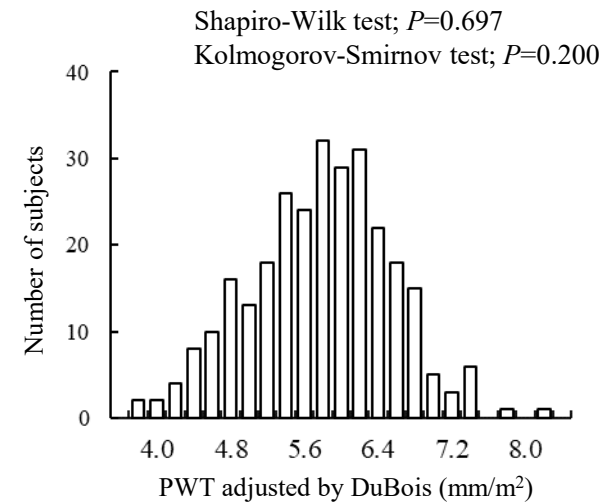
d. Measured PWT (female)



e. PWT adjusted by DuBois (female)

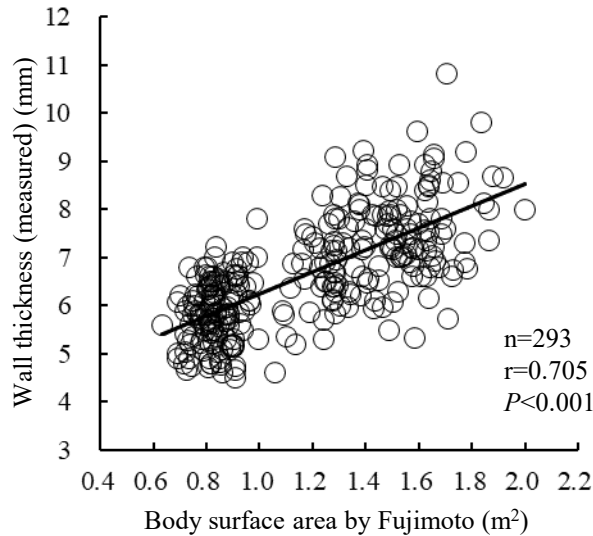


f. Distribution of PWT adjusted by DuBois (female)

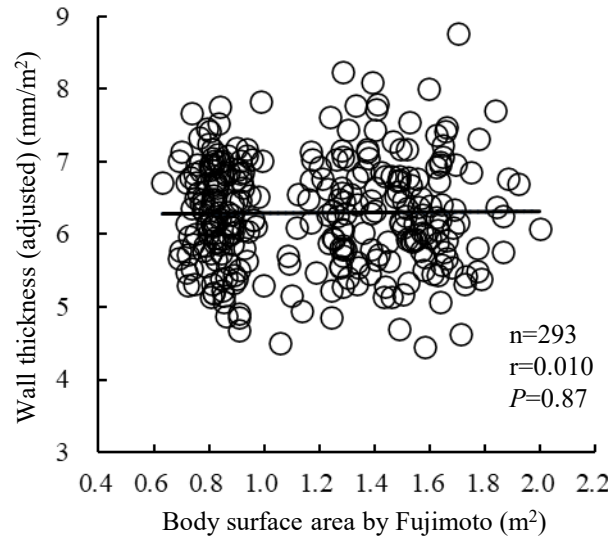


Supplementary Figure 3.

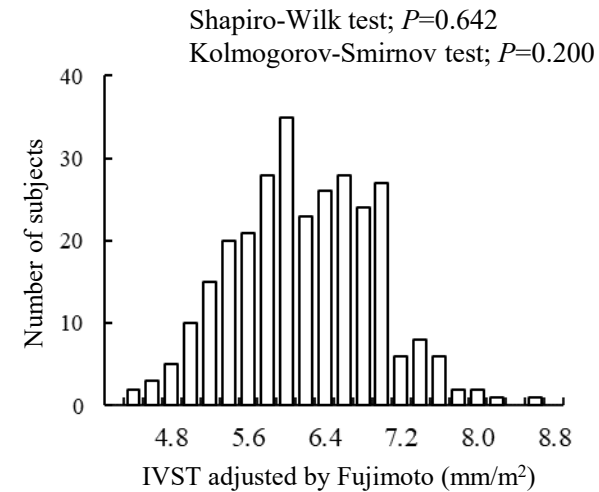
a. Measured IVST (male)



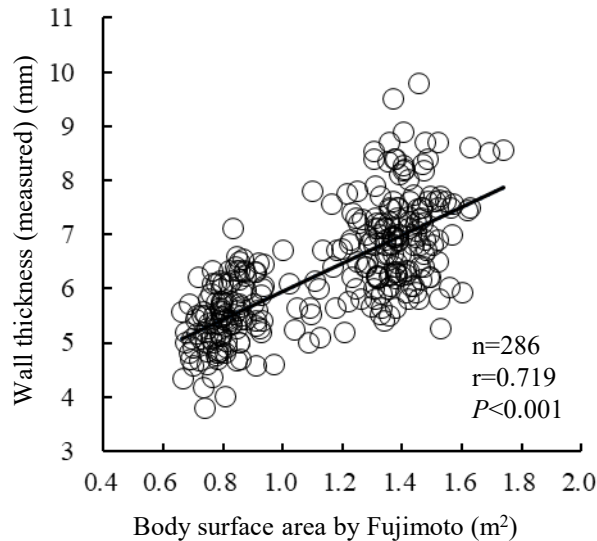
b. IVST adjusted by Fujimoto (male)



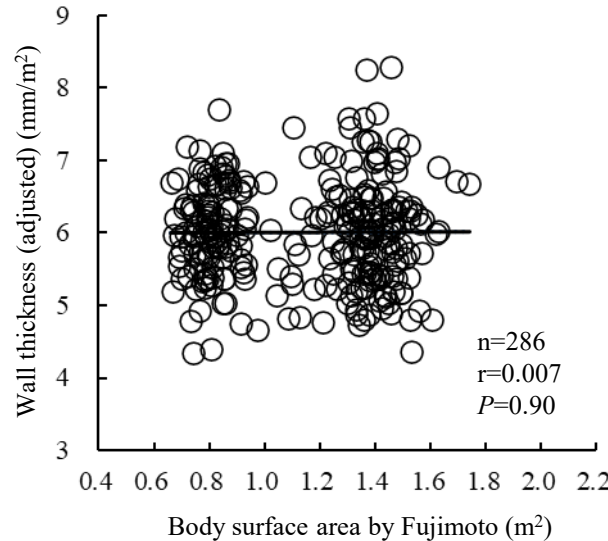
c. Distribution of IVST adjusted by Fujimoto (male)



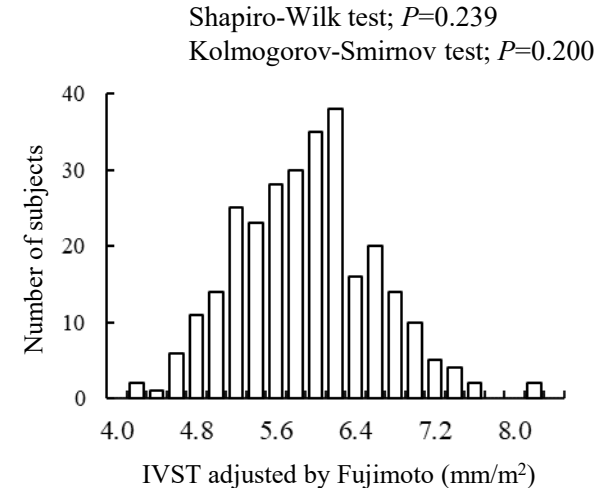
d. Measured IVST (female)



e. IVST adjusted by Fujimoto (female)

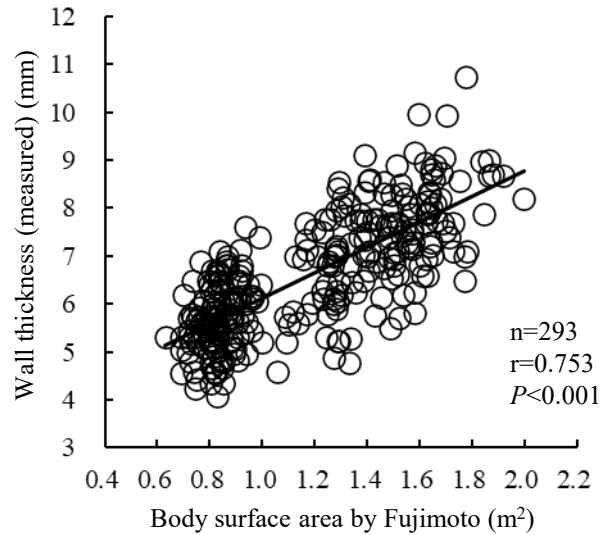


f. Distribution of IVST adjusted by Fujimoto (female)

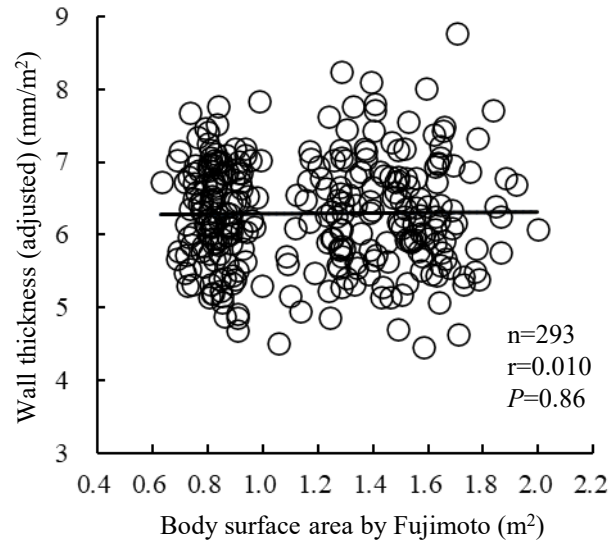


Supplementary Figure 4.

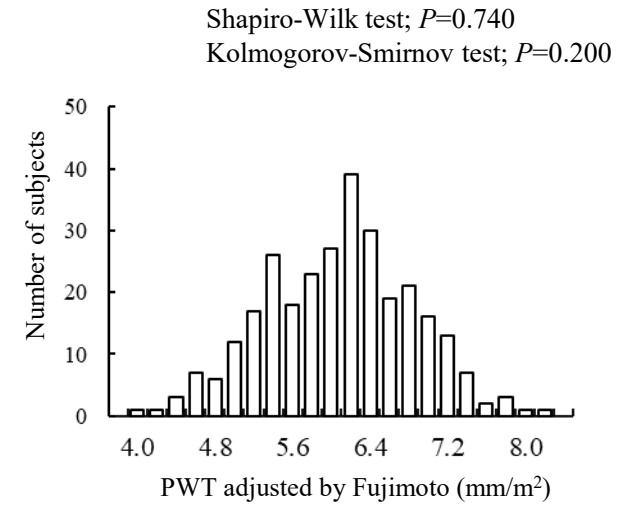
a. Measured PWT (male)



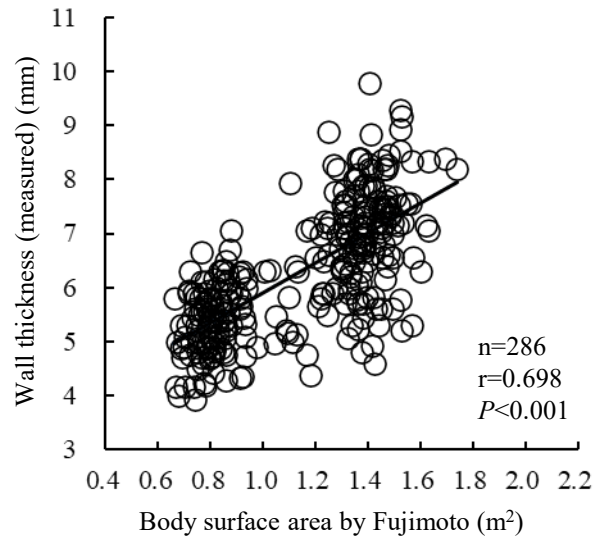
b. PWT adjusted by Fujimoto (male)



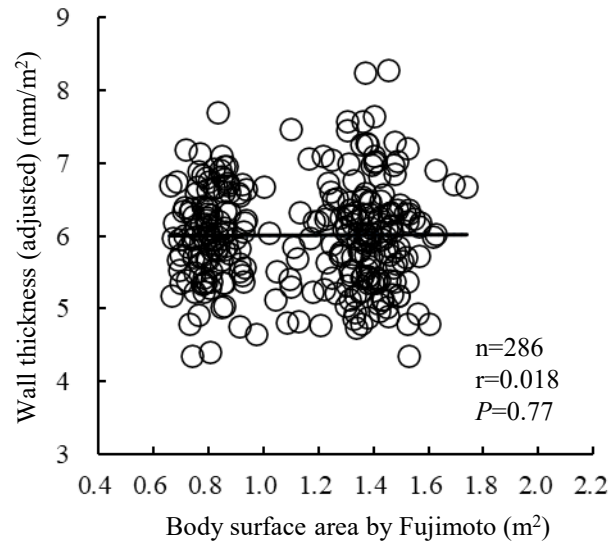
c. Distribution of PWT adjusted by Fujimoto (male)



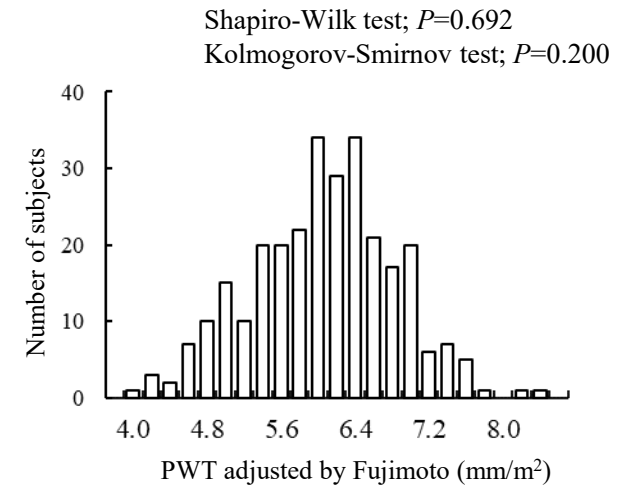
d. Measured PWT (female)



e. PWT adjusted by Fujimoto (female)

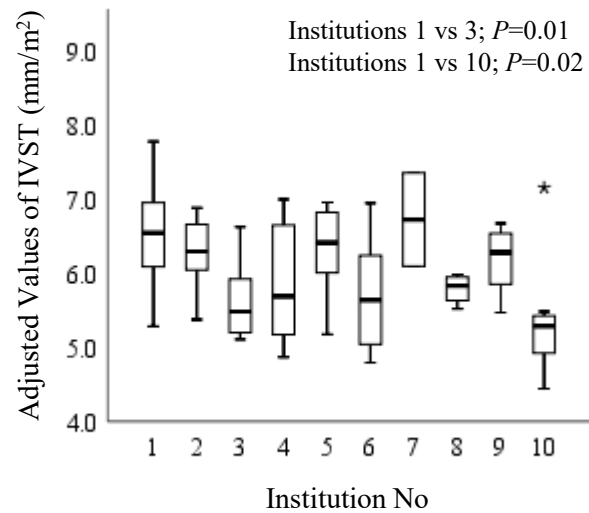


f. Distribution of PWT adjusted by Fujimoto (female)

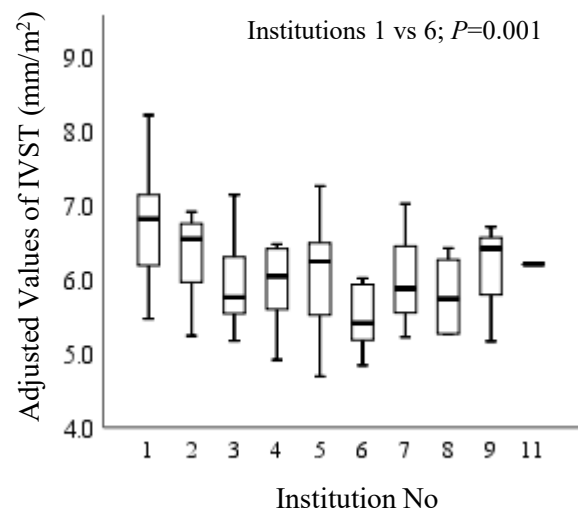


Supplemental Figure 5.

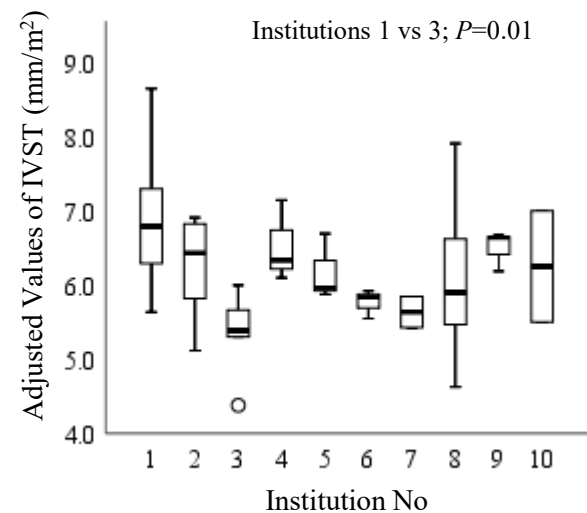
a. 1st grader's males



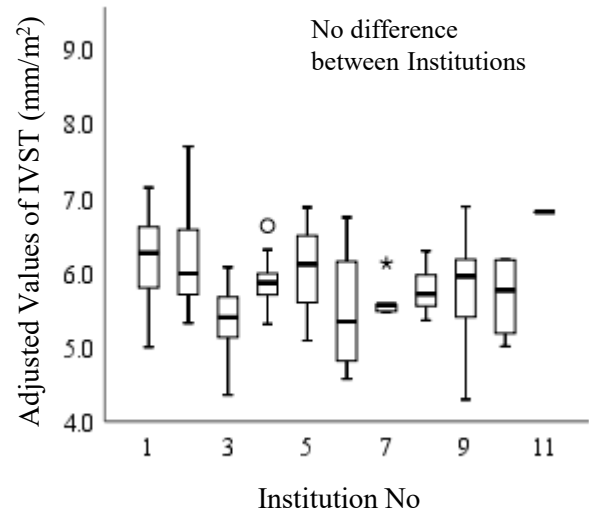
b. 7th grader's males



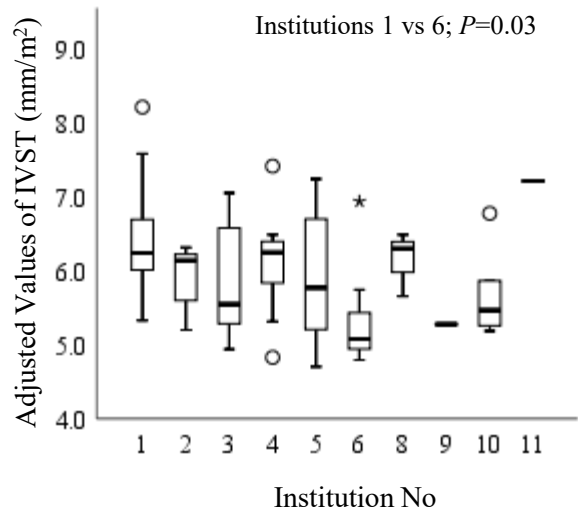
c. 10th grader's males



d. 1st grader's females



e. 7th grader's females



f. 10th grader's females

