REPORT

Validation of InBody720

InBody

1. Validation of “InBody” Bioelectrical Impedance Analysis by DEXA(Dual Energy X-ray Absorptiometry)

Research about human body Composition began during the 1940s in the laboratory of AR Behnke.

Body composition criterion methods are upon the model in which the body consists of two-component – Fat Free Mass, Fat Mass such as hydrodensitometry

The gold standard method of body composition is hydrodensitometry.

But this is not incongruent for using on fields (Hospital, Home and so on) because that needs space, equipments, trained observer and expensive.

Otherwise after 1980s BIA method fast widely spread using for Body composition measurement.

This method is based on four-component model like DEXA.

DEXA has been used to be measuring not only for body composition but also for bone density these days.

We tested validation of InBody by DEXA.

We conclude InBody is very accuracy, reliable, reproducible and useful device as body composition analysis.

Because Technologies (Segmental BIA, Multifrequency, 8-point Tactile electrodes) applied in InBody are the more advanced rather than traditional BIA.

2. Validation of InBody720

Date : 2000 ~ 2002

Where : Sanggye Paik Hospital, YongDong Severance Hospital,
Yongin Severance Hospital

Methods

Subjects : n=731 (M = 343 F = 388)

Instruments : BIA(InBody720), DEXA(LUNAR DPX-L,Lunar Radiation, Wisconsin, USA)

Procedure

1.Before any measurement were made, subjects were in a 12-h fasting, no consumption of alcohol for 12h before measurement, no meal for 2h before measurement, no exercise and no shower in the day of the test and after void

2.Measurement of Height

Height was measured to the nearest 0.5cm by using a liner height scale.

3.Measurement of BIA.

a. Subjects were measured wearing with t-shirt, short pants

b. Measurer Input data (Age, Height, Sex)

c. The Subject Stands upright steeping onto the foot electrodes.

d. The Subject Grips the hand electrodes with his (her) arms held vertically.

e. Measurer should be Check if the measurement is all right before the subject leave.

4.Measurement of DEXA

a. All subjects were measured wearing with gown

b. Whole body Scan take about 15min.

c. The subject lay supine on a comfortable table.

d. DEXA result sheet : See last page.

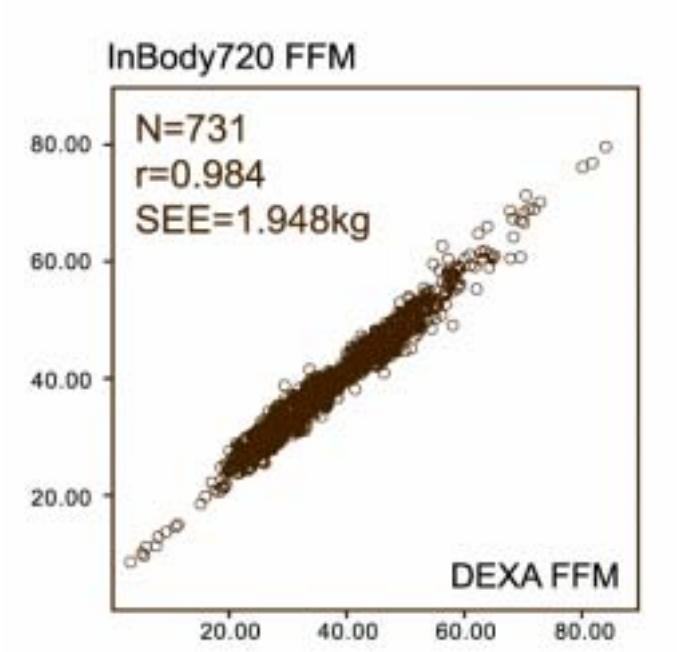
Result

Table 1. Characteristics of the subjects (total n=731)

	Male(Mean±SD)	Female(Mean±SD)
N	343	388
Age	39.8±17.5(5 ~ 88)	40.5±17.2(6 ~ 82)
Height	169.3±9.2(106.5 ~ 193)	156.4±7.7(113.6 ~ 176.5)
Weight	68.3±17.3(17.3 ~ 119.7)	54.7±10.0(20.1 ~ 90.9)
BMI	23.7±4.0(14.3 ~ 43.0)	22.3±3.8(14.0 ~ 35.4)

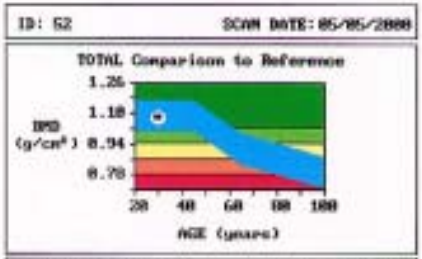
Table 2. Age

Age	*Male*	*Female*	*Total*
~ 17	20	27	47
18 ~ 29	90	104	194
30 ~ 39	63	67	130
40 ~ 49	61	63	124
50 ~ 59	52	64	116
60 ~ 69	35	43	78
70 ~	22	20	42
Total	343	388	731



TOTAL BODY RESULTS
IN JR UNIV. SANG GYE PAIK HOSP.
BMD ROOM TEL : 950-1204

PATIENT ID: 52 SCAN: 1.35 05/05/2000
NAME: JANG, EUN KYUNG ANALYSIS: 1.35 05/05/2000



TOTAL BMD (g/cm²)[1]	1.079 ± 0.01
TOTAL % Young Adult[2]	98 ± 3
TOTAL % Age Matched[3]	100 ± 3
TOTAL Osteoporotic Centile	1

LUNAR®

Age (years).....	38	Large Standard.....	279.03	Scan Mode.....	Fast
Sex.....	Female	Medium Standard.....	207.39	Scan Type.....	DPX-L
Weight (Kg).....	44.8	Small Standard.....	148.18	Collimation (mm).....	1.00
Height (cm).....	160	Low Ref Air (cps)...	886770	Sample Size (mm).....	0.8x 9.6
Ethnic.....	Asian	High Ref Air (cps)..	902547		
System.....	7353	Ruler (Fat).....	1.355(19.2)		
Current (uA).....	150				

REGION	BMD[1] g/cm²	Young Adult[2] %	T	Age Matched[3] %	Z
HEAD	2.287	-	-	-	-
ARMS	0.764	94	-0.58	97	-0.32
LEGS	1.017	90	-1.35	92	-1.09
TRUNK	0.843	97	-0.34	99	-0.08
RIBS	0.644	-	-	-	-
PELVIS	0.978	-	-	-	-
SPINE	1.058	-	-	-	-
TOTAL	1.079	98	-0.26	100	0.00

1 - See appendix E on precision and accuracy. Statistically 68% of repeat scans will fall within 1 SD.
2 - Korea Total Body Reference Population. Ages 20-85. See Appendices.
3 - Matched for Age. Weightmales 25-100kg; females 25-100kg). Ethnic.
- Standard Analysis.

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BODY COMPOSITION**

Region of Interest	R Value	Tissue % Fat	Region % Fat	Tissue (g)	Fat (g)	Lean (g)	BMC (g)
LEFT ARM	1.320	37.0	35.0	2078	769	1309	120
LEFT LEG	1.353	20.3	19.3	6943	1409	5535	343
LEFT TRUNK	1.361	16.1	15.6	8764	1414	7349	300
LEFT TOTAL	1.355	19.5	18.4	20130	3916	16214	1108
RIGHT ARM	1.317	38.5	36.4	2095	806	1289	119
RIGHT LEG	1.356	19.1	18.2	6882	1315	5567	352
RIGHT TRUNK	1.362	15.6	15.1	8369	1309	7060	279
RIGHT TOTAL	1.356	19.0	18.1	18940	3605	15334	980
ARMS	1.318	37.8	35.7	4173	1576	2596	240
LEGS	1.354	19.7	18.8	13825	2725	11100	695
TRUNK	1.362	15.9	15.4	17133	2724	14409	579
TOTAL	1.355	19.2	18.3	39069	7519	31550	2089

ANCILLARY TOTAL BODY RESULTS**

Total Bone Calcium (g)..	794
Air Points.....	13589
Tissue Points.....	8480
Bone Points.....	4200
Total Points.....	22080
R-Value Points.....	3044
Averaged Points.....	154

Cut Locations Name	Actual	Relative
Neck	27	27
Left Arm	32	-28
Left Rib	54	-6
Right Rib	65	5
Right Arm	87	27
Spine	56	56
Pelvis	69	69
Top of Head	0	
Center	60	

**Ancillary results for research purposes, not clinical use.
Standard Analysis.