13

ISSN 1116 - 280 - X

JOURNAL OF HEALTH AND MOVEMENT BEHAVIOUR

VOL. 5 NO. 1 2001

Published by the Department of Health and Physical Education, Nnamdi Azikiwe University, Awka, Nigeria

ISSN - 1595 - 380 - X

JOURNAL OF HEALTH AND MOVEMENT BEHAVIOUR

VOL. 5 NO. 1 2001

Published by the Department of Health and Physical Education, Nnamdi Azikiwe University, Awka, Nigeria

Published twice a year (in June and December) by the Department of Health and Physical Education, Nnamdi Azikiwe University, Awka.

All articles for publication should be addressed to:

Prof. Jerome O. Okafor
Department of Health and Physical Education
Nnamdi Azikiwe University
P.M.B. 5025
Awka.

S/NO TABLE OF CONTENT PAGE

1. Socialization Into Sports: The Reciprocal and Reverse Effects on Parents and Children in Selected University Campuses
L.O. Eboh 1-8

2. Basic Health Education of Mothers: Implication for Health Enhancement and National Development
M.C. Okhawere 9-19

3. Towards Achieving Nigeria's Sports Performance Expectations in the 21st Century: Issues and Prospects
G.O. Umeasiegbu 20-30

4. Essentials of Water Resources Development and Management
A.E. Nwachukwu 31-42

5. Self Motivation as a Determinant of Exercise Adherence Between Nigerian Men and Republic of Benin Men.
O.A. Adegbesan and A.O. Abass 43-49

6. Integrated Management Model for Sports Facilities' Utilization in Nigeria.
I.E. Uduk and I.N. Jonah 50-63

7. Evaluating the Effectiveness of Posters as Curriculum Tool for Health Education in Nigeria in the 21st Century.
E.U. Agba and M.O. Omu 64-77

8. Combating the Consequences of Iron Deficiency: A Strategy for Health.
M. Michael-Ikoro 78-89

9. Attitudes of Teenagers Towards the Death of a Parent.
C.O. Olokor 90-96

10. Physical Development Norms for Assessing Children in Southern Part of Nigeria.
E.C. Agbanusi, S.O. Ayeni,
E.O. Adeloye, N.B. Birabi,
G. Emeahara & I.O. Oladipo 97-106

11. Risk Factors Associated with Maternal Mortality in the Rural Communities of Orumba North L.G.A. Anambra State, Nigeria
A.I. Ogbalu and A.U. Ejimadu-Okoli ... 107-121

12. Carving Out a Niche For Rest and Recreation in Industry
A.E. Nwachukwu 122-130

Physical Development Norms For Assessing Children In Southern Part of Nigeria

By

E.C. Agbanusi, S.O. Ayeni, E.O. Adeloye
N.B. Birabi, G. Emeahara and I.O. Oladipo
Department of Health and Humankinetics
University of Ibadan, Ibadan.

Abstract

This study was carried out in Southern part of Nigeria, with the sole aim of developing standards or norms for boys and girls, 5 - 12 years old, with particular reference to their physical characteristics of height, weight and body mass index. Two thousand eight hundred and six (2806) school children formed the sample. There were one thousand three hundred and eighty one (1381) boys as against the one thousand four hundred and twenty five (1425) girls randomly selected from the South-South, South-East and South-West zones of Nigeria. For their heights, this study recorded mean values of 1.27 - 1.34 meters for ages 10-11 years. The values for the American children of the same age bracket falls between 1.336 - 1.419 meters. The mean weight for boys was 24.75 ± 2.41kg; while that of the girls was 24.96 ± 2.78kg. The American values for ages 10 - 11 years, fall between 27.24 to 31.78kg; while ages 11-12 years fall between 31.80 to 36.42kg. The mean for the body mass index was 9.43 ± 0.45 for the boys and 9.46 ± 0.50 for the girls. These would help to form the reference points for Nigeria as at the present.

Introduction

This study intended tc develop height, weight and body mass index norms on 5 - 12 years old boys and girls in the southern part of Nigeria. Two thousand eight hundred and six (2806) school children were used to develop norms that could be useful in evaluating the physical development of children within this age group (5 - 12 years). The mean, standard deviations and a T-scale table for the three variables studied were obtained. The results showed that the weight variable have the same value as reported on American/European children by other studies (Borms & Hebbelinck, 1974; Sprynarova, 1974).

The implication of this study is to prepare norms that are home based to replace norms from foreign populations which might not be suitable for use in evaluating Nigerian children.

Subjects

The subjects for this study were one thousand three hundred and eighty one (1381) boys and one thousand four hundred and twenty five (1425) girls (table 1) from five states in the southern part of Nigeria. The subjects were randomly chosen from a random sample of five local government areas in each state (Osun, Oyo, Lagos, Rivers, Anambra). They were mainly children in primary schools within the age of 5 to 12 years. The breakdown was as follows:

Table 1: Classification of Subjects According to Age & Sex

Age	Number of boys	Number of girls	Grand Total
5	15	24	39
6	161	180	341
7	237	253	490
8	202	215	417
9	197	219	416
10	259	265	524
11	150	125	275
12	160	144	304
Total	1381	1425	2806

Methods

Age: Age was recorded for each subject in years

Weight (WT)

The subjects weight was measured using the weight scale and was recorded to the nearest 0.005 kilograms (5 grams) with the subject in a light dressed cloth and bare-footed.

Height (HT)

Height was measured to the nearest 0.01m (1cm) using a tape measure to mark the height gradings on the wall.

Body Mass Index (BMI)

The body mass index is another method that was used to evaluate the ideal proportion of body weight to height. It was based on subjects weight and height using the following formulae for calculation

$$BMI = \frac{\text{Weight(Kg)}}{\text{Height(m)}^2} \quad \text{i.e.} \quad \frac{\text{wt(kg)}}{\text{Ht(m)}^2}$$

Results and Discussion

The means and standard deviation for the three variables under study are presented in table 2.

Table 2: Means (x) and Standard Devations (S.D.) for the Variables

Variable		Boys	Girls
Age (years)	$\bar{x}$	11.3	11.3
	S.D.		
Height (cm)	$\bar{x}$	1.30	1.31
	S.D	0.11	0.11
Weight (kg)	$\bar{x}$	24.75	24.96
	S.D	2.41	2.78
Body Mass index (years)	$\bar{x}$	9.43	9.46
	S.D	0.45	0.50

Heights

The mean height was 1.30 $\pm$ 0.11 metres for boys and 1.31 $\pm$ 11 metres for girls. There was no significant difference between the values recorded for boys and girls in height. Previous research on American children by Nelson and Cozen (1979) (table 3 reported 1.270 - 1.319 metres for children of age 11 - 12 years and 1.336 - 1.419 metres for 10 - 11 years. This study recorded a mean value of 1.27 - 1.34 for age 10 - 11 years and 1.28 - 1.57 for age 11 - 12 years.

Table 3: Nelson and Cozen Classification Chart for Boys and Girls

Exponent	Height in Metres	Age in Years and Months	Weight in Kilogrammes
1	1.270 to 1.319	10 to 10-11	27.24 to 29.51
2	1.320 to 1.345	10-6 to 10-11	29.56 to 31.78
3	1.336 to 1.369	11 to 11-5	31.80 to 34.05
4	1.370 to 1.395	11-6 to 11-11	34.10 to 36.32
5	1.400 to 1.419	12 to 12-5	36.36 to 38.32
6	1.420 to 1.445	12.6 to 12-11	38.60 to 40.86
7	1.446 to 1.469	13 to 13-5	40.90 to 43.13
8	1.470 to 1.495	13.6 to 13-11	43.16 to 45.40
9	1.500 to 1.515	14 to 14-5	45.46 to 47.67
10	1.520 to 1.545	14-6 to 14-11	47.70 to 49.94
11	1.546 to 1.669	15 to 15-5	50.00 to 52.21
12	1.670 to 1.695	15-6 to 15-11	52.26 to 54.48
13	1.700 to 1.719	16 to 16-5	54.50 to 56.75
14	1.720 to 1.745	16-6 to 16-11	56.80 to 59.82
15	1.750 to 1.800	17 to 17-5	59.10 to 60.30
16	1.806 to 1.820	17-6 to 17-11	60.39 to 61.74
17	1.826 and above	18 and over	62.00 and over

Adapted from Nelson E.O. and Cozen D.B. (1979).

Weight

The mean weight as shown in table 2 was 24.75 $\pm$ 2.41 for boys and 24.96 $\pm$ 2.78 for girls. This does not show any significant difference in the values recorded for both boys and girls. This could be attributed to the fact that the age range was close and it falls to a period when

growth and development are usually at per in boys and girls before entering into the teens. Using the American children norms as a reference point as stated by Nelson and Cozen (1979) as shown in table 3 indicated the values of 27.24 to 31.78kg for ages within 10.0 – 11.0 category and 31.80 to 36.42kg were reported for ages 11.0 and 12.11 years by the same authors.

Table 4: Classification Chart for Boys and Girls in Southern Nigeria

Age (Years/Months)	Height (m)	Weight (kg)
5-5.11	1.20-1.39	14.60-30.00
6-6.11	1.21-1.23	12.00-28.33
7-7.11	1.21-1.32	13.18-35.00
8-8.11	1.25-1.57	16.50-30.50
9-9.11	1.28-1.57	18.00-38.00
10-10.11	1.27-1.34	12.00-34.43
11-11.11	1.28-1.37	19.20-35.80
12-12.11	1.32-1.57	17.00-38.24

Body Mass Index (BMI)

The mean for the body mass index as shown in table 2 was 9.43±0.45 for the boys and 9.46 ± 0.50 for the girls. It was noted that the three variables indicated no significant difference in the value recorded for both sexes.

Table 5 and 6 show the developed T-scale for the three variables (height, weight and body mass index) under study from ages 5-12 years for both boys and girls using the raw scores. The T-scale was used to standardise the raw scores by transforming them directly into equivalent points in a normal distribution. The T-scale ranges from 1-100 with a mean of 50 and a standard deviation of 10. This will enable T-

scores from different norm tables to be comparable and have the same meaning, since reference is always to standard scale of 100 units based on the normal probability curve (Zuti & Corbin 1977; Pillips & Horner, 1979). They reported that the T-scale is very popular as a tool to present norms for physical education traits; such as the one for the 10WA-Brace test for motor ability, the Harrison basketball test for boys and the Fox swimming power test.

Table 5: T-Scale for the Variables (Boys)

T-score		5	6	7	8	9	10	11	12
70	H	-	-	1.30	-	1.40	1.27	1.28	1.39
	W	-	-	35.00	-	38.00	34.43	35.80	38.24
	BMI	-	-	13.46	-	13.57	13.55	14.00	12.73
60	H	1.20	1.23	1.23	1.25	1.28	1.32	1.34	1.38
	W	30.00	28.33	29.75	30.50	30.23	31.13	32.12	33.50
	BMI	12.50	11.52	12.16	12.16	11.79	11.82	12.01	12.15
50	H	1.39	1.23	1.24	1.25	1.29	1.31	1.37	1.44
	W	30.00	24.36	24.81	25.32	26.74	26.74	28.23	29.70
	BMI	10.79	9.88	10.01	10.12	10.21	10.20	10.28	10.35
40	H	1.20	1.21	1.21	1.25	1.26	1.32	1.35	1.40
	W	21.00	20.56	21.03	21.90	21.69	22.68	2.49	24.91
	BMI	8.75	8.50	8.66	8.74	8.63	8.58	8.67	8.88
30	H	1.22	1.22	1.23	1.26	1.36	1.34	1.30	1.32
	W	18.00	17.12	17.06	17.57	18.33	18.40	19.20	18.71
	BMI	7.38	7.01	6.95	7.00	6.76	6.93	7.37	7.07
20	H	1.35	1.22	1.32	1.57	1.57	1.32	-	1.57
	W	14.60	12.00	13.18	16.50	18.00	12.00	-	17.00
	BMI	5.40	4.94	5.02	5.26	5.73	4.55	-	5.41

Key

H = Height W = Weight BMI = Body Mas Index

Table 5: T-Scale for the Variables (Boys)

T-score		5	6	7	8	9	10	11	12
70	H	-	-	-	1.32	1.20	1.24	1.41	1.40
	W	-	-	-	37.00	32.00	33.40	38.00	38.96
	BMI	-	-	-	13.96	13.33	13.47	13.49	13.90
60	H	1.20	1.20	1.23	1.32	1.31	1.31	1.35	1.42
	W	27.00	29.50	28.50	32.52	31.34	31.24	32.28	34.84
	BMI	11.50	12.29	11.64	12.10	11.90	11.96	11.98	12.30
50	H	1.20	1.24	1.23	1.24	1.29	1.31	1.37	1.43
	W	25.50	24.67	24.79	25.00	26.16	26.74	28.19	29.80
	BMI	10.63	9.97	10.04	10.04	10.11	10.19	0.33	.45
40	H	1.26	1.20	1.22	1.24	1.28	1.32	1.37	1.41
	W	20.43	19.93	21.16	21.52	22.17	23.21	23.53	24.36
	BMI	8.12	8.27	8.69	8.70	8.66	8.78	8.57	8.61
30	H	1.24	1.21	1.22	1.26	1.41	1.37	1.41	1.27
	W	16.91	16.91	17.00	17.65	19.00	19.46	20.20	17.67
	BMI	6.82	7.00	6.98	7.03	6.78	7.09	7.17	7.00
20	H	1.42	1.25	1.35	1.39	1.57	-	-	1.57
	W	14.67	12.50	13.67	15.50	18.00	-	-	18.00
	BMI	5.15	9.97	5.10	5.58	5.73	-	-	5.73

Key

H = Height

W = Weight

BMI = Body Mas Index

Conclusion

There is dearth information and general norms for children with ages 15-12 years with particular reference to Nigeria. This study therefore, is to serve as a reference point for children norms. This study covers

children within the southern part of Nigeria and 2806 children age range 5-12 years were used as sample. It was noted that children within this age range had almost been neglected due to the fact that their growth and development have always been within the same range with similar features, which makes reference and comparison of this study with other studies difficult. There is need to study children within this same age range from other parts of the country.

References

Borms, J. & Hebbelinck, M. (1974). Children and exercise V. acta Paediatrics. Belguium *28.*

Nelson E. O. & Cozen D.B. (1979). Physical fitness and evaluation of young boys and girls. U.S.A.: John wiley & sons INc.

Phillips, D.A. & Horner, J.E. (1979). ***Measurement & Evaluation in Physical Education***. U.S.A.: John wiley & Sons Inc.

Sprynarova, S. (1974). Longitudinal study of the influence of different physical activity programme on functional capacity of boys from 11-18 years. ***British Journal of Nutrition 21*** 280 - 282

Zuti, W.B. & Corbin C.B. (1977). Physical fitness norms for college freshment. ***The research quarterly 48*** (2) 499 - 503.