Giugliano, R., Carneiro, E.C., 2004, Factors associated with obesity in school children. Jornal de Pediatria, 8, 17-22.

Graf, C., et al., 2004, Correlation between BMI, leisure habits and motor abilities in childhood. International Journal of Obesity, 28, 22-26.

Hardy, L.L., et al., 2010, Fundamental movement skills among Australian preschool children. Journal of Science and Medicine in Sport, 13(5), 503-508.

Lob-Corzilius, T., 2007. Overweight and obesity in childhood: A special challenge for public health. International journal of hygiene and environmental health, 210(5), 585-589.

Malina, R.M., Bouchard, C., Bar-Or, O., 2004, Growth, Maturation, and Physical Activity (2nd ed.).

Miller-Keane, O'toole, M., 2005. Miller-Keane Encyclopedia & Dictionary of Medicine, Nursing and Allied Health (7th ed.): Elsevier Science.

Mond, J., et al., 2007, Associations between obesity and developmental functioning in pre-school children: a population-based study. International Journal of Obesity, 31(7), 1068-1073.

Nader, P.R., et al., 2006. Identifying Risk for Obesity in Early Childhood. PEDIATRICS, 118(3), 594-601.

Okely, A.D., BOOTH, M.L., CHEY, T., 2004, Relationships between body composition and fundamental movement skills among children and adolescents. Research Quarterly for Exercise and Sport, 75, 238–248.

Olrich, T.W., 2002, Assessing fundamental motor skills in the elementary school setting: Issues and solutions. JOPERD--The Journal of Physical Education, Recreation & Dance, 73(7), 26-30.

Payne, V.G., Isaacs, L.D., 2005. Human Motor Development (6th ed.): William Glass

Shala, M., 2009. Assessing gross motor skills of Kosovar preschool children. Early Child Development and Care 179(7), 969-976.

Taggart, A., Keegan, L., 1997, Developing fundamental movement skills in outdoor settings: Three case studies of children playing. The ACHPER Healthy Lifestyles Journal, 44(4), 11-17.

Ulrich, D.A., 2000. Test of Gross Motor Development second edition. Austin,TX: 21. PRO-ED.

Wang, Y., Lobstein, T., 2006, Worldwide trends in childhood overweight and obesity. International Journal of Pediatric Obesity, 1(1), 11-25.

Williams, H., et al., 200,. Motor skill performance and physical activity in preschool children. Obesity journal, 16(6), 1421-1426.

Williams, H.G., et al., 2009, A field-based testing protocol for assessing gross motor skills in preschool children: The children's activity and movement in preschool study motor skills protocol. Measurement in Physical Education and Exercise Science, 13, 151-165.

Woodard, R.L., Surburg, P.R., 2001, The performance of fundamental movement skills by elementary school children with learning disabilities. Physical Educator, 58(4), 198-205.

Science, Movement and Health, Vol. XIII, ISSUE 2 supplement, 2013
September 2013, 13 (2), 661-667

MORPHOLOGY THE VERTEBRAL COLUMN FOR CHILDREN AGED 9-12

NAGLAA I GABR[1] GEVAT CECILIA[2], SABAU ELENA [3], LARION ALIN [2]

Abstract

Aim. This research aims to set up standardized norms to some anthropometric characteristics (height-weight) and postural descriptions of vertebral column (V.C) for children aged 9-12 years.

Method. The study was conducted on a sample number (n=900).

Results. The researcher could reach to setting up norms for some anthropometric characteristics (height - weight) and postural descriptions of vertebral column for children aged 9-12 years.

Conclusion. Our study conducts to other studies and researchers for detection, treating and rehabilitation of postural deviations.

Key words: Posture - Percentile norms – Children.

[1]University Port Said, Faculty of Physical Education, EGYPT
[2]Ovidius University of Constanța, Faculty of Physical Education and Sport, ROMANIA
[3]Spiru Haret University, Buckarest, ROMANIA

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST, DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

Introduction

Physical exercise is an important morpho-genetical factor, especially for the components of the locomotor apparatus. The bones and the periosteum, the joints and the muscles, the tendons and the fasciae have a functional structure so obvious that come to signify a graphic representation of the mechanical forces which the static and dynamic actions have on them. The amplitude of movements depends on the stretching of articular areas, the length and the thickness of articular capsule and ligaments. Within the structure of the fibrous periarticular apparatus, the connective fibres are oriented in accordance with the mechanical factors of direct or indirect drive, exercised on the joint. During the form disorders and also during the functional disorders of joints, performing analytical exercises with the joint, actively or against some resistence, can recover motility but also the stability of the deficient joint. Any physical activity, either in the shape of static effort or movements with different degree of amplitude and intensity, represents a specific performance for muscles"(Fozza, 2003). According to Cordun 1999, „the deficiencies of the vertebral column in sagital direction are represented by kyphoses, lordoses and combinations of these two, kypho-lordoses. Kyphoses are exaggerated curves of the vertebral column in sagital direction with posterior oriented convexity. Its name comes from the Latin kyphos which means anterior bent, humpbacked. From the point of view of their gravity, the kyphoses are: functional and pathological (named also real, structural or deformation)" (Cordun, 1999). Stagnara and Charriere quoted by Cordun 1999, „classified kyphoses on the vertebral region where they are located as typical and a-typical." „In corrective gymnastics, physical exercises follow not only performing, improving and developing the normal motor functions but also re-educating and recovering the weakened or disordered ones. During the disorders nd the deficiencies of the locomotor apparatus, physical exercise, measured and graded in accordance with the functional possibilities of the deficient, re-educates and improves the basic motric qualities, especially strength, speed, resistence, flexibility and skill. These functional improvements are due to the intervention of some neuro-muscular factors which ease the transmission of the nervous impulse and the complete use of energetic substances. Physical effort, even with low intensity, creates the need for a high share of nutritive substances, quickening the respiratory and cardio-vascular functions, the absorption in the intestin, the nourishment and the excretion. In medical gymnastics, physical exercises are selected and grouped but only those which influence an important function." (Fozza, 2003) .Gabr, Halil, Arslan, Gevat, Sabau, 2010, show the next fundaments theoretical about this morphology the vertebral column for children aged 9-12**:"**the anthropometric term means measurement, building and body composition, and it is a form of measurements in physical education which includes height, weight, circumferences, widths, diameters and different lengths of body parts, and also to identify forms of objects so that we can judge on body composition and its parts. Anthropometric measurements, body composition, motor abilities and biological factors are important indicators for prediction of health state and development of sports level, added to other factors that help to predict and evaluate great numbers of samples like standardized motor tests as an effective means for evaluation in sports domain. (Agwu et al., 2004), (Meszaros et al. 2000), (Tutkuvience et al., 2005). Ideal posture is considered as a reflection to integrated state of physical, psychological, mental and social aspects for individual, and also as an indicator to functional state of the body. Childhood is the most important stage for growth, where healthy habits accompany the child and affect on behavior through all his life, also posture of children slightly are varied than noticeable perfect formation of adults. Experts attributed these differences to child who face series of growth changes from birth to maturity, in addition to his different body parts that grow in varied rates, and with the growth of bones, the body composition proportions are changed as well (Dauer & Pangrazi, 1990), (Nichols 1994).Vertebral Column (V.C) in sagital direction (anterior-posterior) consists of four vertebral curves, cervical curve and lumbar one to anterior "lordosis", and dorsal curve and sacral one to posterior "kyphosis" (Tittel 2003), (Sean et al., 2005). V.C unit allows for motion in three levels like rotation, since the motion between two vertebra allows limited range of motion, and therefor, the motion of V.C always include many sub- motions for vertebrae, where range of motion of two vertebra allows to keep the varied anatomical structure in V.C regions (cervical-thoracic-lumbar). Also, V.C plays main role in overcoming the resistance that faces individual and particularly gravity resistance during his life movements and sports activity (Susan 1999).V.C is considered the main criterion for judging the individual's posture being upright or deviated because of its impact on vital organs of the body and to its anatomical structure. Also, V.C is the most important part and basic support base for skeleton, where all parts of skeleton and back muscles, responsible for upright posture, are attached to it, in addition to its importance to provide protection to spinal cord, nerves and connected blood muscles (James, A. & Portfield 1998), (Punakallion, 2005).Collective examination is the best way to detect the deviations of V.C for primary school children and it should be executed early to avoid postural problems. Therefore, it is important to detect the V.C of children annually by observing its length, flexibility, angles and strength of working muscles around it for diagnosis (Pashman, 2000), (Randunna,

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

et al., 1990), (Rudolphf 2001). Because of importance of posture for people, many researchers, physicians and therapists focused their attention and interest on detecting posture hoping to achieve highest levels of sports. Modern studies in this domain not only focused on deformations and posture deviations, but also focused on perfect posture and how to protect it (Helene 2000), (Lindas 2001). Hence, experts of evaluation used norms as means of measurements to interpret values of raw data (Jensen & Hirst 1980)". Through surveying references and previous studies and researchers of posture deviations domain, the researcher didn't find any studies concerned with this subject, so she was motivated to handle this research to set up norms of postural description of V.C for children aged 9-12. Fozza 2003 considers that "in the physiology of physical exercises, the complex mechanisms which harmoniously guide the apparati and systems of the body are largely explained. One can say that physical exercise, methodically and gradually repeated, following well-established rules and principles, in accordance with age, sex and mostly with previous training of the person, can improve the important functions of the body. Physical exercise has, at any age but especially during the growing-up period, a very strong educational role. The nervous system is trainable especially in the neuro-motor area. Repeated and corrected movement can be improved not only by a better adjustment of muscles work, but also by a better psycho-neuro-motor control. The attitude of the body, the movements and gestures of the body and all the motric expressions represent, in fact, some continuous adjustment."**The Research Objective:** This research aims to set up norms for postural description of V.C for children aged 9-12.

Research Questions: What are postural descriptions norms of V.C for children aged 9-12.

Research Procedures:

Methodology: Descriptive survey method.

Research Subjects (Participants). It included primary stage pupils (n= 900) in Port Said Governorate of School year 2009/2010. Sample was chosen form (1- 6 grades) by stratified random method of (5.04%) of total society number (35 710) for male pupils, without pilot study sample. The researcher excluded postural deviations pupils of fractures, polio and rickets. Table (1) shows classification of research sample.

Table no.1. Research Sample Classification

Age	(9 – 10) years	(10-11) years	(11-12) years	GDP
Numbe	300	300	300	1800

Research Variables: Survey study was conducted to some references and previous studies for tests, measurements and posture domains to determine measurements of research which were:

1 –Height and weight.

2- Perpendicular and normal height of V.C, length of cervical, thoracic, lumbar regions, their angles and lengths of curvatures' columns.

Data Collection and Measurements: According to experts, researchers and scientists of measurement and evaluation in physical education (Johnson & Nelson, 1979), (Jensen & Hirst 1980), (Verducci, 1980), (Pashman, 2000), the following measurements were used:

- **Anthropomter:** to measure the total height of body (closed to 0.5cm.).

-**Medical Scale**: to measure body weight (closed to 0.5kg.).

-**Bank raft and screen posture:** to make sure that children free from postural deviations.

-**Confrometer and lead tape**: to measure anterior and posterior curvatures of V.C and its angles

-**Wheel Measurement**: to measure normal height of the V.C from first vertebrae to last one.

-**Ruler (mm.):** to measure the vertical height of V.C and, drawing a vertical line from the first paragraph cervical region to the last paragraph in the lumbar area

Curvatures' columns: by measuring length of horizontal distances (H.D) between V.C vertical length and deepest points of cervical, thoracic, and lumbar regions, expressed in H.D curvatures in tables.

Circular Protractor (360º): to measure angles of cervical, thoracic, and lumbar regions through:

-Drawing the first line, which connects between the first vertebrae of cervical region to deepest medial point of same region.

-Drawing second line from medial point of cervical region to point of upper posterior lateral curvature of thoracic region.

-Drawing the third line from previous point to upper anterior medial curvature point of lumbar region.

- Drawing the fourth line from previous point to spinal process of last vertebrae of lumbar region.

Angles were calculated as following:

- cervical angle: is the angle between first and second line.
- Thoracic angle: is the angle between second and third line.
- Lumbar angle: is the angle between third and fourth line.

Pilot Study: It was conducted on (50) of pupils, out of main sample, form1/10/2009 to 15/10/2009 , where equipments and apparatus were prepared and standardized to be valid for using.

Main Study: Measurements were applied on sample

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengace Learning, Cabell's Directories

research from 18/10/2009 to 27/12/2009.

- **Statistical treatments:** The statistical analysis included: arithmetic mean, standard deviation, skeweness and six sigma score (Lee, & Brown, 2006).

Results

Table (2)
Mean, standard deviation, minimum and maximum, range,
Torsion of children n 9-10 years **n = 300**

No	Variables		Unit of measure	Mean	Deviation	Ceiling	Minimum	Range	Sprains
1	Height		Cm.	143.98	7.06	157.0	124.0	33.0	0.97
2	Weight		Kg.	42.80	6.34	59.0	29.0	31.0	0.46
3	Vertical Height		Cm.	40.97	2.27	46.00	37.0	9.00	0.04
4	Normal Height		Cm.	42.71	2.36	48.0	38.0	9.50	0.12
5	Length of region	C	Cm.	9.20	1.00	11.0	9.0	2.0	1.04
6		T	Cm.	22:74	0.92	25.0	20.0	5.0	0.08
7		L	Cm.	10.61	1.00	12.50	9.00	3.50	0.24
8	H.D curvature	C	Cm.	2.32	0.31	3.10	1.90	1.20	0.55
9		T	Cm.	3.17	0.51	4.00	2.00	2.00	0.28
10		L	Cm.	2.31	0.68	3.90	2.60	1.30	0.34
11	Angles of regions	C	Deg.	156.10	3.32	159.0	155.0	4.0	1.06
12		T	Deg.	155.81	2.48	158.0	155.0	3.0	1.7
13		L	Deg.	158.55	1.50	160.0	156.0	4.0	0.45

Table (3)
Mean, standard deviation, minimum and maximum, range,
Torsion of children 10-11 years **n = 300**

No	Variables		Unit of measure	Mean	Deviation	Ceiling	Minimum	Range	Sprains
1	Height		Cm.	144.22	6.14	156.0	128.0	28.0	0.76
2	Weight		Kg.	41.9	6.16	56.0	28.0	28.0	0.62
3	Vertical Height		Cm.	41.41	7.07	43.00	37.0	6.00	6.79
4	Normal Height		Cm.	42.6	8.82	46.0	39.0	7.0	0.15
5	Length of region	C	Cm.	9.37	0.67	10.50	8.0	2.50	0.13
6		T	Cm.	23:23	0.79	25.0	21.0	4.0	0.79
7		L	Cm.	11.29	12.20	14.00	9.00	5.0	2.69
8	H.D curvature	C	Cm.	2.33	0.40	3.30	1.70	1.60	0.47
9		T	Cm.	3.11	0.61	4.50	2.00	2.50	0.27
10		L	Cm.	2.52	0.60	3.70	1.60	2.10	0.31
11	Angles of regions	C	Deg.	156.22	1.7	158.0	154.0	4.0	1.44
12		T	Deg.	157.10	1.9	160.0	154.0	6.0	1.94
13		L	Deg.	158.85	2.8	162.0	156.0	6.0	1.38

Table (4)
Mean, standard deviation, minimum and maximum, range,
Torsion of children 11-12 years **n = 300**

No	Variables		Unit of measure	Mean	Deviation	Ceiling	Minimum	Range	Sprains
1	Height		Cm.	149.95	7.13	163.0	135.0	28.0	0.43
2	Weight		Kg.	43.73	5.38	58.0	35.0	23.0	0.33
3	Vertical Height		Cm.	43.85	3.95	49.0	36.0	13.00	2.94
4	Normal Height		Cm.	45.46	2.69	52.0	40.0	12.0	0.065
5	Length of region	C	Cm.	9.92	1.17	13.0	8.0	5.0	0.43
6		T	Cm.	23:70	1.35	27.0	21.0	6.0	0.32
7		L	Cm.	11.64	1.61	15.00	12.00	2.50	3.14
8	H.D curvature	C	Cm.	2.52	0.50	3.50	2.30	1.20	1.24
9		T	Cm.	3.50	0.61	4.70	2.30	2.40	0.28
10		L	Cm.	2.47	0.50	3.80	1.90	1.90	0.12
11	Angles of regions	C	Deg.	158.02	2.73	160.0	154.0	6.0	1.50
12		T	Deg.	157.17	2.01	159.0	154.0	5.0	1.41
13		L	Deg.	158.80	2.69	160.0	156.0	5.0	1.01

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIII, ISSUE 2 supplement, 2013, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

Table (5)

Degrees centipede standard corresponding to the raw measurements of length, weight, The backbone of the children from 9-10 years. n = 300

Raw Data	Height	Weight	Vertical Height	Normal length	Length of region			H.D curvature			Angles of regions			Estimate
					C	T	L	C	T	L	C	T	L	
Percent. Norms	Cm.	Kg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Deg.	Deg.	Deg.	
100	165.17	53.81	47.78	49.79	12.18	25.51	13.61	3.24	4.72	4.62	160.70	159.47	160.92	Excellent
90	160.93	51.00	46.42	46.37	11.60	24.96	13.01	3.06	4.41	4.32	159.72	158.98	160.45	Very Goo
80	156.69	49.21	45.00	44.96	11.00	24.40	12.41	2.87	4.10	4.01	159.22	157.97	159.85	Good
70	152.46	47.41	43.70	43.94	10.40	23.85	11.81	2.69	3.79	3.51	158.62	157.50	159.47	Good
60	148.22	45.60	42.33	43.13	9.80	23.29	11.21	2.51	3.48	2.83	157.65	156.82	158.95	Average
50	143.98	42.80	40.97	42.71	9.20	22.74	10.61	2.32	3.17	2.31	156.10	155.81	158.55	Average
40	139.74	41.00	39.61	42.42	8.60	20.19	10.00	2.14	2.86	1.97	155.14	154.69	156.65	Accepted
30	135.51	37.20	38.25	40.00	8.00	21.63	9.41	1.95	2.55	1.62	154.11	153.89	155.75	Weak
20	131.27	33.40	36.88	38.59	7.40	21.08	8.81	1.77	2.24	1.20	153.42	152.72	154.85	Weak
10	127.03	29.59	35.52	37.17	6.82	20.52	8.21	1.58	1.93	0.89	152.00	151.63	153.95	Very weak
Zero	122.79	25.79	34.16	35.76	6.22	19.97	7.61	1.40	1.63	0.65	151.06	151.00	152.20	Very weak

Table (6)

Degrees centipede standard corresponding to the raw measurements of length, weight, The backbone of the children from 10-11 years. n = 300

Raw Data	Height	Weight	Vertical Height	Normal length	Length of region			H.D curvature			Angles of regions			Estimate
					C	T	L	C	T	L	C	T	L	
Percent. Norms	Cm.	Kg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Deg.	Deg.	Deg.	
100	162.64	60.33	46.61	48.00	11.89	25.11	14.39	3.53	4.94	4.33	160.35	159.92	161.69	Excellent
90	160.96	58.17	45.37	46.91	10.79	24.64	13.07	3.29	4.58	4.01	158.90	159.13	160.98	Very Goo
80	158.96	56.63	44.13	45.82	10.38	24.15	12.79	3.05	4.21	4.61	158.27	158.61	160.38	Good
70	155.27	52.94	42.89	44.73	9.89	23.85	12.34	2.81	3.84	3.24	157.64	158.22	159.93	Good
60	153.22	47.35	41.65	43.64	9.58	23.45	11.57	2.57	3.48	2.88	157.12	157.54	158.15	Average
50	149.35	43.90	41.41	42.60	9.37	22.23	11.29	2.33	3.11	2.52	156.22	157.10	158.85	Average
40	145.32	38.16	39.67	41.46	8.77	22.25	10.85	2.09	2.74	2.16	155.38	156.41	157.53	Accepted
30	140.85	34.46	38.93	40.37	8.36	21.88	10.23	1.85	2.38	1.80	154.37	155.47	156.37	Weak
20	134.17	30.76	36.29	39.28	7.96	21.30	9.49	1.61	2.01	1.43	153.93	154.17	154.21	Weak
10	129.48	27.07	37.45	38.19	7.55	20.82	8.36	1.37	1.65	1.07	153.21	152.21	152.67	Very weak
Zero	125.80	23.38	36.21	37.71	7.15	20.35	7.37	1.13	1.38	0.71	152.27	151.32	151.55	Very weak

Table (7)

Degrees centipede standard corresponding to the raw measurements of length, weight, The backbone of the children from 11-12 years. n = 300

Raw Data	Height	Weight	Vertical Height	Normal length	Length of region			H.D curvature			Angles of regions			Estimate
					C	T	L	C	T	L	C	T	L	
Percent. Norms	Cm.	Kg.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Cm.	Deg.	Deg.	Deg.	
100	171.33	59.87	53.70	55.70	13.42	27.74	15.02	4.00	5.32	4.36	161.22	159.90	161.65	Excellent
90	167.06	56.64	51.33	53.33	12.72	26.93	14.54	3.71	4.96	4.06	160.58	159.23	160.74	Very Goo
80	162.78	53.41	49.96	51.30	12.02	26.12	13.98	3.41	4.59	3.77	160.04	158.94	160.23	Good
70	158.50	50.19	47.59	49.30	11.32	25.32	13.09	3.12	4.23	3.47	159.74	158.50	159.81	Good
60	154.23	46.96	45.22	47.88	10.62	24.50	12.61	2.82	3.86	3.17	158.84	158.00	158.29	Average
50	149.95	43.73	43.85	45.46	9.92	23.70	11.64	2.52	3.50	2.47	158.02	157.17	158.80	Average
40	145.67	40.50	41.48	43.85	9.22	22.89	10.67	2.22	3.14	2.17	157.41	156.48	158.27	Accepted
30	141.40	37.27	39.11	42.23	8.52	22.09	9.71	1.93	2.77	1.98	156.26	155.62	156.82	Weak
20	137.12	34.05	37.74	40.62	7.82	21.28	8.74	1.63	2.41	1.73	155.33	154.37	155.97	Weak
10	132.85	30.08	35.37	38.00	7.12	20.47	7.78	1.33	2.04	1.53	154.50	153.21	154.32	Very weak
Zero	128.57	27.59	32.00	36.11	6.43	19.66	6.81	1.03	1.50	1.23	152.30	151.30	153.40	Very weak

Discuss: the results of tables (2-4) show that there are gradual increasing during the aged stages of research measurements, which are consistent with results of (Kromeyer et al., 2001) concerning with rates of anthropometric measurements, where (Butte, et al., 2007) indicated that it is necessary to follow up the international norms of growth for children and adolescence stages and set new norms and standard for different aged stages. Also tables (5-7) indicate results of percentile norms to raw data of anthropometric measurements and postural descriptions of children aged 9 – 12 , where these norms confirm that there are relationship between anthropometric characteristics and body composition and selection of physical talent children (Meszaros, et al., 2000). Anthropometric measurements are considered indicators for public health and as a reflection of growth and development state (Tutkuviene, 2005).

The results of these norms confirm the increase of growth for both height and weight, in addition to morphology growth of both vertical and normal height of V.C with variance of H.D curvature and angles of cervical, thoracic and lumbar regions of V.C for children aged 9-12 years. So, these norms should be taken into account when classification of children into homogeneous groups or when guiding them to sports activities owing to their physical and morphological abilities. Also, these norms should be used as criteria to detect postural deviations of V.C for children aged 9 – 12 years comparing with results of this research.

-Necessity of conducting measurements of research for other aged stages to be used for promotion of children health level.

-Conducting regular medical collective examination for children annually to detect and identify changes that might occur to avoid future problems.

-Conducting more similar studies that handle postural deviations for different aged stages and other variables

.

Conclusions

The researcher could reach to setting up norms for some anthropometric characteristics. (height - weight) and postural descriptions of vertebral column for children aged 9-12 years.

Recommendations

-Using these norms as a guide for researchers in posture domain and to detect postural deviations so as to treat them and as indicator to select juniors for sports activities.

References

Agwu, J., Leishenring. A.& Darnley, I, 2004, Community growth monitoring in practice. Arch and Child, 89(4)394.

Butte, N. F. Garza, C. & Deonis, M., 2007, Evaluation of the feasibility of international growth standards for school aged children and adolescents, American Society for Nutrition. (137), 153-157.

Dauer, V. P.& Pangrazi, R. P., 1990, Dynamic Physical Education For Elementary School Children. , 9th ed New York, Macmillan Publishing co. 194.

Cordun, M., 1999. Postura corporală normală şi patologică, Edit. ANEFS, Bucureşti, 93-94.

Corriveau, H., 2000, Evaluation of Postural control, biomechanic, University of Sherbrooke, Kanada. 327.

Fozza, C., 2003. Indrumar pentru corectarea deficienţelor fizice, edit. Fundaţiei de mâine, 2003, 10,12.

James, A., Porterfield, C.D., 1998, Mechanical low back pain, perspectives in functional anatomy, second ed; saunder co. U.S.A. 24.

Jensen, C. & Hirst, C. 1980, Measurement in physical education, MacMillan Publish Co., New York, London.264.

Johnson, B. & Nelson, J.K. 1979, Practical measurements for education in physical educa - ons, 3rd. ed., Burgess Publishing Co., Minneapolis, Mannester. 212-227.

Kromeyer, K., Wabitsch, M., Kunze, D. U. A. 2001, Perzentile fur den bodymab-index fur das kindesund jugendalter unter heranziehung verschien-dener deutscher stichproben. Monatsschrift Kinderheilkunde, Germany(8).149.

Lee, F. & Brown, V., 2006, Training for Sport Agility and Quickness, Journal of Strength and Conditioning Research ,8(3) 88 .

Lindas., G., 2001. Development changes in postural stability in children, University of Nebraska medical center.81

Meszaros, Mohacs, Szab & Szmodis., 2000, Anthropometry and Competitive sport in Hungary, Acta Biol Szeged 44 (1-4), Hungary. 1.

Nagla, Gabr, .I, Taskin, H., Arslan, F., Gevat, C, Sabau, E, 2010, Norms for Postural Descriptions of Vertebral Column for children 6-9 years old, in Studia University Babes Bolyai, Educatio artis gymnasticae, vol LV, 2010, 47-55.

Nichols, B., 1994, Moving and learning the Elementary School Physical Education Experience.3rd ed., Stlouis. Mosby.268.

Pashman.R. S. 2000, Back to basics -Flat back http://www.espine.com /Flat back.htm.

Punakallion, A., 2005, Balance abilities of workers in physically denonding jobs, journal of sport science, (4) 47- 204.

Randunna Corea et al. 1990, Scoliosis in Eastern Province, Saudi Medical journal.45.

Rudolphf. Taddonio, M.D, 2001, Scoliosis and spinal surgery. http://www. spinaldoctor.com, scoli.htm./20 Jan 2012.

Sean, Hanrahan, et. al., 2005, The short term effects of joint mobilization on acute mechanical low back pain in collegiate athletes, journal of athletic training (Dallas) 40 (2), Apr/june 36.

Hall, J. S., 1999, Basic Biomechanics, the growth Hill Book Comp. Printed in bound in India. 11.

Tittel, K., 2003, Beschreibende und funktionelle anatomie das menschen , auf. 14, verl. Urban & fischer, munchen.88.

Tutkuviene, J., 2005, Body size indices for growth monitoring of Lithuanian, Acta Medica Lituanica,12(1).9-14

Verducci, F.M., 1980, Measurement conception in physical education, The C.V. Mosby Co., U.S.A.234-237.