

Anthropometric perspectives in preschool children with intellectual disabilities, for Physical Education and Sport for All

Perspectivas antropométricas en preescolares con discapacidad intelectual, para la Educación Física y el Deporte para Todos

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ABSTRACT

The research aims to characterize the anthropometric profile of preschoolers with intellectual disabilities in early childhood in Santa Clara. In the research process, scientific methods of the theoretical level and the empirical level were used, as well as mathematical statistics to compare the anthropometric data obtained in the measurements made to the preschoolers used as a sample. The results offer the possibility of seeing the preliminary perspectives of preschool children with intellectual disabilities in the context of physical activity.

Keywords: Anthropometry; Preschoolers; Intellectual disability; Physical education; sport for all

RESUMEN

La investigación tiene como objetivo caracterizar el perfil antropométrico de preescolares con discapacidad intelectual de la primera infancia en Santa Clara. En el proceso de investigación se emplearon métodos científicos del nivel teórico y el nivel empírico, así como el estadístico matemático para comparar los datos antropométricos obtenidos en las mediciones realizadas a los preescolares utilizados como muestra. Los resultados ofrecen la posibilidad de advertir las perspectivas preliminares de los preescolares con discapacidad intelectual en el marco de la actividad física.

Palabras clave: Antropometría; Preescolares; Discapacidad intelectual; Educación física; Deporte para todos

INTRODUCTION

Anthropometry is related with the measurements of the dimensions and other physical characteristics of the body which are relevant for the design of the objects that human beings use. Specifically, in a study carried out by (Maldonado-Macías, 2016): "development of anthropometric data for children with motor disabilities", in Ciudad Juárez, Mexico. It was found that the objectives were aimed at developing anthropometric data in order to dimensionally adapt the design and layout of facilities, equipment, school and therapeutic furniture, among others; where the author uses the measurement of 20 anthropometric dimensions, in 39 children in a range of 5 to 9 years of age, but the information was sought for design purposes.

In Cuban educational practice, anthropometric measurements focus on the evaluation of weight and height of children, the comparison between years of life or grades, the search for possible talents in early development sports. In this sense, during this investigation, a search for background studies related to the subject was carried out and the investigations of (Gómez, I., 2009), (Fleites, 2012), (Gómez, L., 2012) and (Martínez, 2016).

The authors (Gómez, I., 2009), (Fleites, 2012), (Gómez, L., 2012), offer physical-educational proposals for the integration of children with mental retardation and Down syndrome; to improve gait in a child with Lejeune Syndrome; and for the motor stimulation of a child with West Syndrome. They agree to offer proposals for physical activities adapted to preschoolers with intellectual disabilities, aimed at indicators of physical and/or social development, all organized in the form of games, all in the Alegre Awakening Children's Circle of Santa Clara. However, no studies were found aimed at anthropometric evaluation in children with intellectual disabilities at this educational level.

Some studies about anthropometry were reviewed in the framework of this work, such as those by (Maldonado-Macías, 2016), (Cossio, et al., 2015), (Ochoa and Vela, 2015) and (Aguirre, 2016). These researchers express themselves in terms of profile, characteristics, measurements, or anthropometric evaluation, to refer to their predominant variables, and in most of them they use the data obtained based

on dependent variables such as design, nutrition, sports initiation, or simply obtain a characterization of the anthropometric profile of the subjects.

It should be noted that none of the investigations is framed in the preschool age, in only one of them the study is directed to subjects with intellectual disabilities, with physical-motor disability predominating in this selection. It is striking how the author Aguirre, (2016), states that the anthropometric characteristics evaluated in the upper limbs of the players could be related to the ability to change direction and the muscular strength for the chair, in this modality. sporty.

Taking into account that anthropometry constitutes a fundamental activity to promote the multilateral development of children with special educational needs (SEN) within the framework of Adapted Physical Activities, the author considers that it is an important tool in projective work with preschoolers who have intellectual disabilities, and that it is necessary to increase these studies in the population of preschoolers with intellectual disabilities.

Based on the above considerations, the objective of the research focuses on characterizing the anthropometric profile and its perspectives, in preschool children with intellectual disabilities in early childhood in Santa Clara, and identifying the perspectives for physical-sports development in preschool children with disabilities. early childhood intellectual in Santa Clara.

DEVELOPMENT

The research was carried out in the “Alegre Despertar” Children's Circle (CC) and “Marta Abreu” Special School, both in the Santa Clara municipality, during the period from November 2018 to May 2019. The first institution simultaneously belongs to the 1st Childhood educational level. (Children's Circle modality) and the Special Education Subsystem. In the case of the second, it belongs to the primary educational level, Special Education modality. Both serve preschool children with intellectual disabilities.

For the development of the research, we worked with a population of 8 preschoolers with intellectual disabilities. Distributed as follows, four (4) of 6th year of life belonging to the “Alegre Despertar” CC. All of the masculine gender. Their ages range between six years and three months and seven years and seven

months. In the diversity of the intellectual diagnosis, one has Down syndrome, one West syndrome, one Static Injury, epilepsy, and one with a gradient diagnosis to be defined. And four of the preparatory grade belonging to “Marta Abreu” Special School. All of the masculine gender. Their ages range between 6,6 years and 7 years. In the diversity of the intellectual diagnosis, one has Down syndrome, three with mild disability of pre and perinatal etiology.

Among the methods and techniques used, are the review and analysis of documents; the interview with the P.E. professors of both institutions; scientific observation, to Physical Education classes; In addition, the Anthropometric test to measure a group of indicators of the upper body structures.

The *methodology of the Anthropometric Test* is based on the study of proportions of the human body applied to a similar study of anthropometry for children with motor disabilities carried out by the Technological Institute of Hermosillo.

Anthropometric variables selected for the study:

Reach Up (finger), Reach Up (fist), Sitting Height, Seated Shoulder Height, Reach Down (finger), Reach Down (fist), Reach Forward (finger), Reach Forward (fist) Length Forearm-finger length, Forearm-fist length, Lateral Reach (finger), Lateral Reach (fist), Hand Length, Palm Length, Palm Width, Head Circumference.

The *mathematical statistical processing* was carried out through the empirical distribution of frequencies, to obtain arithmetic means and standard deviation in order to determine the most common characteristics in each group, based on the prospects for future performance in motor tasks of physical education.

The review and analysis of documents was applied with the objective of verifying the presence of aspects that identify the performance of anthropometric measurements at the grade and level. Among the documents reviewed are the Report of the Diagnosis and Orientation Center (CDO); preschool records; the Programs and Methodological Orientations of Physical Education.

As a result of the aspects observed, it was found that the CDO Report only refers to height and body weight, but in terms of quality: normal; and compared to age. Regarding the presence of guidelines on anthropometric measurements, no indications were perceived in this regard.

On the other hand, in the Motor skills program for the 6th year of life, the evaluation is aimed at observing the stability of the body, the amplitude of the movements, the posture, the alignment of the body structures, to demonstrate the development achieved in motor skills and to manifest the development of coordination skills. While, in the PE program of the preparatory grade, it is oriented to know the level that preschoolers are reaching in the development of motor skills and abilities.

Among the contents that are related to anthropometric potentialities, only precision and reach are appreciated (distance that manages to jump, throw, climb, hit).

The survey of the three Physical Education teachers of which: two have more than 30 years of experience in special education; two women one man; two master's degrees and one bachelor's degree. It was known that two of them considered that the current Physical Education program, in both modalities, did not respond to the comprehensive physical care of preschoolers with a diagnosis of intellectual disability, and one that did. The two teachers whose answer was negative argued that there are some contents that are below the children's possibilities, and the anthropometric information is not taken into account. The teacher who considered that yes coincides with the CC teacher, and refers to the program of the Motricity dimension, although it does not cover the anthropometric part.

In relation to whether the preschoolers they attend have an anthropometric profile, the three teachers answered no; and they argued that they only refer to height and weight in relation to age, in most cases they state that it is normal. They also consider that they are the only two indicators of anthropometric development that are mentioned. They also assert that anthropometric indicators are not measured in the degree. This may be directly related to the negative response to the question related to having or not having methodological guidelines to apply anthropometric measurements to these preschoolers.

In the same order of ideas, the three teachers considered that the evaluation of physical development, which is oriented at the educational level, does not allow obtaining the anthropometric profile of their preschoolers, arguing that, since it is not indicated, it is not carried out. They also add that the physical activities in both

programs go directly to the development of skills and abilities, they go more to the functional than to the morphological, although the latter is coupled with physical development.

And finally, the three teachers surveyed consider necessary to have an anthropometric profile of their preschoolers, and in the arguments they raised the advantages of knowing the proportions of the body of their students at certain times of the school year, as a measure of progress in their physical development, of the appropriateness of the planning and dosage of the motor tasks, as well as for the necessary comparisons between gender, grade, moments of the course, etc.

The scientific observation made to three scheduled activities of Motricity in the CC Alegre Awakening; and three classes of Physical Education of the preparatory grade in the school, it was perceived how the teachers maintain a qualitative register (B, R and M) from their appreciation, these are concentrated at the end of the contents of the units Corporal Expression, Games; in short, no anthropometric measurements were noted.

Table 1. Result of the evaluation of the indicators weight, height (p), head circumference. “Alegre Despertar” CC

Estatistical^a

	weight	Heigt (Unemployed)	Heigt (Sitting)	Head Circunference
Half	22,00	117,50	95,50	49,50
Dev. Typ	4,397	6,807	2,887	0,577

a. Center = “Alegre Despertar” CC

Source: Personal elaboration.

Table 2. Result of the evaluation of the indicators weight, height (p), head circumference. “Marta Abreu” Special School.

Estatistical^a

	weight	Heigt (Unemployed)	Heigt (Sitting)	Head Circunference
Half	21,75	117,00	95,00	49,50
Dev. Typ	3,304	2,708	2,160	1,000

a. Center = “Marta Abreu” Special School

Source: Personal elaboration.

As can be seen in tables 1 and 2, the indicators body weight, standing height and sitting height, reflected an increase in the students of the “Alegre Despertar” CC, in

relation to the students of the “Marta Abreu” Special School. Not so in the head circumference indicator, this may be associated with the etiological causes that predominate in the group of school children referred to pre and perinatal causes.

Table 3. Result of the evaluation of the indicators reach up (finger), reach up (fist), sitting height, shoulder height. “Alegre Despertar” CC.

Estatistical^a

	Reach up (finger)	Reach up (fist)	sitting height	shoulder height
Half	105,25	100,50	95,50	73,50
Typ Dev.	3,500	3,000	2,887	2,887

a. Center = “Alegre Despertar” CC

Source: Personal elaboration.

Table 4. Result of the evaluation of the indicators reaching up (finger), reaching up (fist) sitting height, shoulder height. “Marta Abreu” Special School.

Estatistical^a

	Reach up (finger)	Reach up (fist)	sitting height	shoulder height
Half	105,50	100,75	95,00	72,50
Typ Dev.	1,291	1,500	2,160	2,646

a. Center = “Marta Abreu” Special School

Source: Personal elaboration.

Tables 3 and 4 show the results of the anthropometric measurement of the upper limbs, in this case the reach up to the finger and up to the fist; as well as, the height sitting and at the shoulder; in which there is an increase in the dimensions in the students of the “Alegre Despertar” CC.

Specifically, the reach up to the finger stands out in the difference, which is associated with the results of the comparison in the standing height indicator, obtained in tables 1 and 2. Concluding that the children of the I.C., have greater anthropometric dimensions in the upper limbs, elements that favor them in the physical education class for the execution of basic motor tasks such as: throwing, catching and climbing.

On the other hand, for future sports motor tasks, these results would provide them with advantages in disciplines of the Olympic Movement, which require a wide reach of the arms in some of its technical elements, such as volleyball, basketball throwing, among others.

Regarding the results of the indicators: sitting height and shoulder height favors the child's performance in physical education motor tasks related to motor games in a

sitting position, games in pairs, transporting objects, among others. In addition, it facilitates the decision-making of teachers for sports disciplines such as table tennis that, although it is developed from the standing position; It is no less true that the trunk-head-arm region (of the racket) and its inclination towards the table is fundamental in effective technical action.

Table 5. Result of the evaluation of the indicators downward reach (finger), downward reach (finger), forward reach (finger), forward reach (fist), lateral reach (finger). C.I. Cheerful Awakening.

Estatistical^a

	Reach down finger	Reach down fist	Reach forward finger	Reach forward fist	Finger Side Reach
Half	37,25	32,25	46,25	41,00	51,00
Typ Dev.	1,500	1,500	1,500	1,414	2,000

a. Center = "Alegre Despertar" CC

Source: Personal elaboration.

Table 6. Result of the evaluation of the indicators downward reach (finger), downward reach (finger), forward reach (finger), forward reach (fist), lateral reach (finger). "Marta Abreu" Special School.

Estatistical^a

	Reach down finger	Reach Down fist	Reach forward finger	Reach forward fist	Finger Side Reach
Half	36,25	31,25	45,25	39,75	50,25
Typ Dev.	1,258	1,258	1,258	,957	1,258

a. Center ="Marta Abreu" Special School

Source: Personal elaboration.

As can be seen in tables 5 and 6, anthropometric indicators related to the reach of the upper limbs in different directions and even the structure of the fist and middle finger are measured. school, this allows us to assert that they are in better conditions for the strengthening of the upper limbs, for the development of flexibility, as well as the development of basic motor tasks such as driving or dribbling, lateral throws, among others.

The results obtained from a perspective point of view, place the CC students in better conditions for sports initiation in disciplines such as badminton, table tennis, artistic gymnastics of Special Olympics.

Table 7. Result of the evaluation of the indicators length forearm finger, length of the hand, length of the palm of the hand and width of the palm of the hand. “Alegre Despertar” CC.

Estatistical^a

	Finger forearm length	hand length	Palm of the hand length	Palm of hand width
Half	26,50	11,25	6,25	5,25
Typ.Dev.	1,000	,957	,957	,500

a. Centro = “Alegre Despertar” CC

Source: Personal elaboration

Table 8. Result of the evaluation of the indicators length forearm finger, length of the hand, length of the palm of the hand and width of the palm of the hand. “Marta Abreu” Special School.

Estatistical^a

	Finger forearm length	hand length	palm of hand length	Palm of hand width
Half	26,00	11,00	6,25	5,25
Typ. Dev	,816	,816	,957	,500

a. Center = “Marta Abreu” Special School

Source: Personal elaboration.

Regarding tables 7 and 8, the anthropometric indicators measured are related to the structures forearm, hand, palm and fingers. In this case, as in the previous results, the CC children show better results than the group of school children. The values of the length of the forearm-finger are interrelated proportionally with the data obtained in the finger lateral reach indicator, in table 5.

The data from both tables (7 and 8) allow us to appreciate the perspective conditions of schoolchildren to carry out physical education motor tasks such as grasping, catching, throwing, hitting, among others.

As sports recruitment criteria, these results favor participation in disciplines of the Olympics Movement, where grips, hitting predominate, such as swimming, arm wrestling, athletics in baton grip in relay races, which need large proportions in the distal structures of the upper limbs.

Development prospects in Physical Education and Sport for All; from the anthropometric profile of the studied preschoolers.

✓ **Indicator: Reach up to finger and fist.**

For the development of the contents of Motricity in CC Alegre Awakening:

With the execution of basic motor tasks such as: throwing, catching and climbing, in the Motor skills class.

With future sports motor tasks, in disciplines of the Olympics Movement, such as volleyball, basketball throwing, among others.

For the development of the contents of Physical Education at the Marta Abreu Special School:

For the motor tasks of the Basic Gymnastics unit, formations, alignments in rows, rows, circles.

Throw and catch with one and two hands, in different ways, positions and in different directions.

Driving: driving objects with and without implements, with the hands.

Climb: on an inclined plane.

Go up and down stairs with the support of hands and feet up to 2 meters.

For the development of balance, where different arm positions are involved.

Flexibility: exercises for the upper limbs and trunk, with and without implements (active and passive).

✓ **Indicator:** sitting height and shoulder height.

For the development of the contents of Motricity in CC Alegre Awakening:

With motor games in a sitting position, games in pairs, transporting objects, among others.

With future performance in sports disciplines such as table tennis.

For the development of the contents of Physical Education at the Marta Abreu Special School:

In Rhythmic Games and Activities, which are fundamentally aimed at the development of motor skills such as: throwing, catching, pulling, pushing, transporting and climbing, among others.

Indicator: reach of the upper limbs in different directions.

For the development of the contents of Motricity in CC Alegre Awakening:

With contents of the programmed activity such as: the alternation of the movements of arms and legs, the direction, the combination of skills, heights to be

reached, sequences of actions, as well as assuming positions and displacements not exactly typical of human activity such as the crawling and quadrupedity.

For the development of the contents of Physical Education at the Marta Abreu Special School:

Toss and Catch Games: The different forms.

- Towards different directions.
- Rolled balls.
- Rebound.
- Looking for accuracy.
- Combining the pitches

✓ **Indicator:** length of the structures forearm, hand, palm and fingers.

For the development of the contents of Motricity in CC Alegre Awakening:

For accuracy and range (distance you achieve when throwing, climbing, the area you cover with your hand when hitting).

In skills related to throwing, rolling, hitting, driving with the hands, in addition to the coordination of the body segments involved, in achieving orientation towards a target and precision.

For the development of the contents of Physical Education at the Marta Abreu Special School:

Hitting: with the different parts of the body and in different ways.

Pull, push and carry: small and medium objects, (individual and in small groups).

Pull and push exercises where arm strength is worked.

Motor skill combinations: throwing and catching.

Corporal expression: imitation of animals, toys and mechanical objects.

The status of the anthropometric indicators of preschoolers with intellectual disabilities (mental retardation) of early childhood investigated, showed an absence of values related to sitting height, head circumference, reach towards different directions of the upper limbs, and the proportions of the structures involved. Only height and weight measurements were found to be traditional controls of physical efficiency.

CONCLUSIONS

From the above evidence, it can be concluded that even when the difference rates are minimal, the CC children are in better condition in their upper limb anthropometric proportions than their peers evaluated at the “Marta Abreu” Special School.

In general, the anthropometric indicators of the preschoolers of the “Alegre Despertar” CC, resulted in a slight increase, in relation to the data obtained by the preschoolers of the “Marta Abreu” Special School.

The anthropometric data obtained allow establishing relations of development of potentialities, continuity, and perspectives for the motor tasks of Physical Education and participation in Sport for all of the preschoolers investigated.

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