



# Simultaneous Multipresence of Orthopedic Deformities in Patients with Down Syndrome



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## Abstract

This article reports a study conducted with the population of Down syndrome in the municipality of Camagüey, Cuba, in the school year 2017-2018, for the determination of the orthopedic deformities presented and the diseases that limit the practice of physical activity to apply a program for its treatment, elaborated by the authors of this work, in the therapeutic classrooms of the physical culture that exist in the special schools, the presence of multiple deformities were found, which in other types of populations appear isolated, and that in them, they appear simultaneously, before this phenomenon it was considered to designate it as a simultaneous multipresence of orthopedic deformities in the Down syndromes.

**Keywords:** Down syndromes; Orthopedic deformities

## Introduction

It is considered that a child has a special need if it shows greater difficulty in learning than the rest of the children of the same age, that is, if it has a dysfunction that prevents or hinders the use of educational facilities. of a certain level, proportionate to those of the same age in the schools of their zone and level [1]. Children with Down syndrome are important among those who have special needs, so it is necessary to have an accurate characterization of these children before carrying out any type of educational action, especially in what refers to the use of physical exercise to improve their health status.

A syndrome is defined as a set of symptoms and signs that exist at a time and clinically define a certain morbid condition [2], which in the case of Down syndrome phenotypically constitute its stigma, but also have others that require early treatment from their earliest age in order to raise their quality of life, among which are orthopedic deformities. In order to carry out this work, we studied the population of children with Down syndrome who attend the special schools of Camagüey, Cuba, consisting of 34 schoolchildren, 21 males and 13 females between the ages of 6 and 18 years, with mental retardation classified as moderate aggravated.

## Discussion

Through the analysis of documents, 100% of the medical records were reviewed, which disclosed the children did not present atlantoaxial instability, a condition that limits the

practice of physical activity [3,4]. Six children were born with cardiopathies, which represent 17.7%, a disease that is also limiting for carrying out this activity, [5] but all were operated on in the first years of life, so that currently, there are no contraindications for inclusion in physical programs. To perform the diagnosis of orthopedic deformities, a postural test [6] was carried out on 22 school children, 16 males and 6 females, representing 64.7% of the population, and the orthopaedic deformities presented by the examinees were determined.

Regarding the deformities of lower limbs, it is noted that 100% have flat feet, [7,8] and in 68.2%, the combination of pronged foot, valgus and abducted was found, which coincides with [9] in the sense that in practice it is impossible to find an isolated deformity, since they always appear combined. 31.8% presented hallux valgus, which coincides with the presence of valgus flat foot and abducted flat [8]. There is a causal relationship between these deformities, [9] and if they are not corrected, the progress of these individuals will be aggravated when they are adults. In the anterior view, 100% of the sample has valgus knees [8] and in the sagittal plane, the presence of hyperextended knees was observed, in combination with 9% kyphotic - lordotic back and the presence of semi-flexed knees, in combination with back kyphotic, also by 9%.

The orthopedic deformities of the spine in the sagittal plane show that 63.6% of the studied sample present with kyphotic back [8,9] and 36.4% with a kypholordotic back, however the

presence of flat back reported by other authors was not found [7]. A marked decrease in cervical lordosis was found in 36.3% of the sample. In the posterior view plane, it was observed that 100% presented asymmetry of shoulders or hips, but the degrees of scoliosis could not be determined since the study sample did not cooperate, which is why this deformity is not reported. It was found that 100% had a flat thorax, while 31.8% had a depression in the right or left hemithorax, which in none of the cases coincides with surgery for congenital heart disease.

When observing the characteristics of the abdomen, it coincides with that reported in the consulted bibliography [7,10] regarding the predominance of prominent abdomen, a product of the hypotonia of the abdominal muscles. It is noted that 36.3% have a prominent abdomen, and 54.5% have a flaccid abdomen; however, the remaining 9.1% present a normal abdomen with very good muscular definition, which could be a result of being athletes of the Special Olympics Movement. A coincidence was found between the types of abdomen and the increase or decrease in lumbar lordosis, which agrees with previous studies on the subject [11,12].

### Conclusion

To conclude, once the entire sample studied, the presence of multiple deformities were found, which in other types of populations appear isolated, and that in them, they occur simultaneously, before this phenomenon it was considered to designate it as simultaneous multipresence of orthopedic deformities in the Down Syndromes. 100% have flat feet and in 68.2% of them the condition of pronged foot, valgus and abducte is also observed. 100% have valgus knees, while 18.2% have sagittal plane deformities. The 100% presents the head and the shoulders advanced, to own kyphosis or kypholordosis, asymmetry of shoulders or hip and flat thorax. Depending on the development of the abdominal muscles, 9% are reported with normal abdomen, 36.3% with prominent abdomen and 54.5%

with flaccid abdomen. No diseases were found which would limit the practice of physical activity; they can receive adapted treatments aimed at correcting or compensating for these orthopedic deformities.

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