

Latin American Schoolchildren Anthropometry: Study of the Anthropometric Differences of the Rural and Urban Zones in Cotopaxi, Ecuador

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Abstract: Musculoskeletal disorders have been widely studied in the adult population, with a focus on workplaces, due to the high rates of absenteeism in the last decade (Punnett & Wegman, 2004). However, there are a limited number of studies that focus on musculoskeletal disorders and child anthropometry. Studies have shown that the lack of proper fit of children to school furniture can generate anatomical and functional changes, and negatively affect the learning process (Castellucci et al, 2014). In Ecuador, as in several Latin American countries, statural growth is influenced by socioeconomic status (Castellucci et al, 2016). For this reason, the present study focuses on the creation of anthropometric tables of school children between the ages of 5 and 7 for the urban and rural zones in Cotopaxi, Ecuador. The data is based on 10 anthropometric measures of a sample size of 300 urban and 300 rural children. The anthropometric profile is then used to analyze the differences between urban and rural children, the potential causes for these differences, and to propose a design for school desks. As a result of the study, prototypes of school desks that comply with ergonomic standards and anthropometric measures of school children were created using 3D printers.

Keywords: Ergonomics, anthropometric data, Latin American children, school, furniture design, musculoskeletal disorders.