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CEPRA XIII 2019



Waist deformations in a woman of Quisapincha, and the chumbis that each one was wearing on the day of their postural evaluation.

Postural analysis in older female from an indigenous community of Ecuador that uses a chumbi as part of their traditional outfit.

Observations show that elderly women of the indigenous communities suffer severe spine deformations associated with pain and instability, that could be related to the use of the chumbi, their manual daily activities and/or their poor medical care. Forty women, that used chumbi, were photographed in the sagittal and frontal planes to perform a postural analysis to assess back musculoskeletal alterations, shoulders position and their relationship with scapulae. The musculoskeletal disorders found aim to a muscular imbalance, that could be associated to the frequency and magnitude of the carried loads, the lifting and mooring techniques and the use of the chumbi.

Ergonomic methods adaptation for risks evaluation associated to musculoskeletal disorders in elderly indigenous women of the Ecuadorian

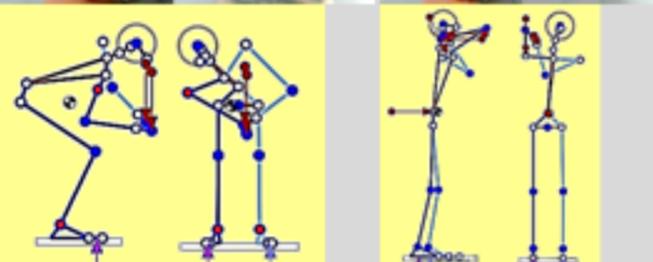
In previous studies ergonomic evaluations done to daily activities of indigenous women yielded in all cases high physical workload since ergonomic methods are aimed for industrial and administrative environments and not for unstructured labors. The aim was to adapt an ergonomics method to enable the assertively determination of risk level. The proposed method is based on REBA and calculate a unique ergonomic risk value and showing similar results when load is carried symmetrically and within the permissible weight limits; however, when these factors are not met the modified method show an increase in the risk factor.



Photo of indigenous woman performing agricultural work while they carry children fastened to their backs with a blanket.



Images and models of postures studied, (a) maximum load during OTS lifting, (b) maximum unbalance during OTS lifting.



(a)

(b)

Ergonomic Evaluation of Agriculture-Related Activities Performed by Ecuadorian Indigenous Women

Most of the elderly women from indigenous communities suffer moderate to severe spinal deformities. The aim was to calculate the low back compression force during lifting a sack by two methods in a gait laboratory. Although it is common for indigenous women to handle loads up to 45 kg, they were limited to 15 kg to reduce injuries risk. The input data included gender, mass and height, and forces acting on hands, back and one shoulder. Measured and extrapolated results show that the low back compression force is significantly higher than the NIOSH recommended limits.