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COBB'S ANGLE MEASUREMENT BY MOIRÉ TOPOGRAPHS

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The purpose of this study was an attempt to obtain information that may help medical professionals in the rehabilitation of patients with back deformities. The need for precise and detailed information is evident when one examines back deformity and considers possible therapeutic measures to correct or improve it. The technique of moiré topography consists of photographing the part of body to be studied through a specially constructed screen. Dark fringes are produced on the body because of the presence of screen. The fringes of different subjects are compared with the initially determined standards established by photographing normal children between the ages of four and seven years.

To obtain the angle of spinal curvature in the case of back deformities, measurements were performed at the points of maximum and minimum asymmetry of moiré fringes and used in the mathematical relation to calculate the angle. Let θ be the angle of spinal curvature. A reference line AB is drawn by joining the midpoint of neck to the midpoint of waist. From this line, the distances to the first visible moiré fringe on both sides is measured at different points. The position of the spine is at the midpoint of these fringes. From the position of the spine at a given point, the distance to the line AB is obtained as d. At the point of maximum asymmetry C on line AB, the distance is noted as d_1. At the point A above the point C, where the moiré fringes show minimun asymmetry, the distance is d_2. At the point B below the point C, where the moiré fringes again show minimum asymmetry, the distance is d_3. The angle of spinal curvature is then given by

$$\theta = \tan^{-1} (|d_1-d_2|/AC) + \tan^{-1} (|d_1-d_3|/BC)$$

The method and the elaboration here reported provides the necessary basis for a correct prognosis of the evaluation of back deformities. The methodology can be applied as a routine for large number of children because it takes a reasonably short time for each of them and this allows a nice screening as a part of pre-school physical examination. The moiré topography analysis will permit also the optimization of the therapeutic procedures controlling their effectiveness for each subject.

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