

Fetal Movement Study Using Biomimics of the Maternal March

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Abstract : In premature births most babies have complications at birth, these complications can be reduced, if an atmosphere of relaxation is provided and is also similar to intrauterine life, for this, there are programs where their mothers lull and sway them; however, the conditions in which they do so and the way in they do it may not be the indicated. Here we describe an investigation based on the biomimics of the kinematics of human fetal movement, which consists of determining the movements that the fetus experiences and the deformations of the components that surround the fetus during a gentle walk at week 32 of the gestation stage. This research is based on a 3D model that has the anatomical structure of the pelvis, fetus, muscles, uterus and its most important supporting elements (ligaments). Normal load conditions are applied to this model according to the stage of gestation and the kinematics of a gentle walk of a pregnant mother, which focuses on the pelvic bone, this allows to receive a response from the other elements of the model. To accomplish this modeling and subsequent simulation Solidworks software was used. From this analysis, the curves that describe the movement of the fetus at three different points were obtained. Additionally, we could found the deformation of the uterus and the ligaments that support it, showing the characteristics that these tissues can have in the face of the support of the fetus. These data can be used for the construction of artifacts that help the normal development of premature infants.

Keywords : simulation, biomimic, uterine model, fetal movement study

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