

# **Assessment of child's mobility between 6 – 15 weeks of ages with the use of Multimedia Movement Analysis**

## **(Summary)**

The undertaken research in the field of computerized objective methods may lead to a breakthrough in the field of objective assessments of infant movements used to determine possible developmental abnormalities. Computerized assessment of spontaneous physical activity based on video image analysis has the potential to significantly assist a diagnostician in the future in verifying the developmental potential of infants, as well as in assessing and comparing the effects of the therapy.

In the conducted study, numerical values were assigned to the original parameters defining the child's spontaneous motor activity. The repeatability of reading the parameters by the multimodal mobility analysis system was verified, the expert's assessment was compared with the computer analysis of movement, and the relationships between mobility and age, sex and type of delivery were verified.

Eventually, 49 infants, 25 females and 24 males, were included in the study. The condition for inclusion was the fulfillment of the pre-qualification conditions and a successful attempt to record the spontaneous physical activity 3 times during a minimum of 10 minutes. The videos were analyzed independently by an expert and by a multimodal traffic analysis system. The obtained numerical data were subjected to statistical evaluation analysis.

In the study, it was possible to determine the values of direction, range, speed and acceleration of spontaneous mobility of upper and lower limbs. On the basis of the determined parameters, the results obtained in the multimodal image analysis and obtained using the diagnostic method of Prechtl were indicated for the majority of the assessed parameters.

There was no correlation between age and the results obtained in the computer analysis of spontaneous movements, but in the case of sex and type of delivery, the values of the analyzed parameters were different.

Assessment of infant mobility using a multimodal tool on the basis of three different videos revealed reproducible results. This is the basis for further research on the analysis of parameters determining infant mobility.