

**ABSTRACT OF THE DOCTORAL THESIS**  
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**OPTIMIZATION OF THE PSYCHOMOTRICITY STRATEGIES IN**  
**PREMATURE BABIES**

**Keywords:** *premature, psychomotricity, strategies, development.*

## **INTRODUCTION**

PhD thesis titled "Optimization of the psychomotricity strategies in premature babies" is a research which is based on elements of pediatric recovery in terms of psychomotoric and neuromotor, in preterm babies.

A baby born premature alive is a baby whose birth weight is equal to or less than 2500 grams, regardless of the duration of gestation. Premature infants may be babies born before date or babies weighing less than 2500 grams (prenatal dystrophy).

Due to a high premature birth rate as infants is it is tremendously important to be considered the repercussions or consequences arising on the musculoskeletal system. A child born prematurely can develop as a child born at time will require more attention from parents and medical staff.

Prematurity sometimes has negative effects on child's development. The psychomotor development can be slowed (child goes to talk later), delay that can be recovered until the age of 3-5 years. Some of these older children will be clumsy or emotionally labile.

Psychomotor recovery are among the latest methods used in the recovery therapy and occupies an important place in system recovery methods both in psychiatry as in the special education of the child. Its importance is great for both normal child and for the deficient child, considering body under the double aspect: a tool for action on the world and instrumental in relation to another.

## **MOTIVATION OF CHOOSING THE THEME**

Babies born prematurely don't have the same neuromotor development as a baby born at term. For this reason we wish to address topics related to the optimization strategies for their recovery. It is a current approach in a society that wants to grow healthy individuals developmentcompany wishing growth and development of healthy individuals in physically and mentally terms.

Another reason is that romanian specialists have avoided the subject and the links that exist between prematurity and delayed psychomotor, being more interested in the study of the children born at term. Perhaps because of this, most parents in Romania, whose children are born prematurely, don't consider this delay important in terms of motor, psychological, physiological and ignore the benefits of improving them through specific means from physical therapy (exercise, play).

In terms of its structure, our thesis is divided into three parts, each with original questions:

Part I entitled "Theoretical approach to the issue of prematurity psychomotricity", based on 154 national and international bibliographic sources, presents the theoretical aspects of the preterm, anatomically, physiologically and psychologically. Were also highlighted psychomotricity issues in babies born at time and prematurely to make the difference. There appeared tests that were used in the study and presented a strategy for optimizing physical therapy intervention using various techniques and methods.

Part II consisted of preliminary research results from objective regarding intervention plan therapist and interpretation of results from initial and intermediate tests in order to check the effectiveness of the program applied. Evaluations have

given us the opportunity to compare the results of children tested at overall averages based on chronological age to check delay in terms of biological age.

Part III included personal research on premature motor skills after final results interpretation and application of statistical analysis, we could verify the importance of the study in statistical terms.

## **RESEARCH HYPOTHESES**

*In order to conduct this thesis we started from the following hypotheses:*

**H1:** *"Early intervention, systematic and continuous through adapted kinetotherapeutic methods lead to a premature with improved neuromotor development, reaching the normal range."*

**H2:** *"Optimization of a Strategy using kinetic assistance of a preemie can help enhance the quality of life of this children and their families."*

## **PROCEEDINGS OF THE RESEARCH**

The study included 10 children born prematurely (6 boys and 4 girls). Patients at the time of the initial tests were between 6-12 months.

The recovery program and related tests were conducted between October 2011 and August 2014. Following the initial testing results was designed and implemented a recovery program customized to the needs of each child at the time of the testings. This program was applied at the patient's home thereby taking advantage of the environment with which the child is accustomed.

After a certain time we made an intermediate testing that helped us to highlight the strengths and weaknesses of the program mentioned above. Following this assessment, were made necessary changes to acquire motor skills and improve other behaviors based on chronological age and corrected of the children included in the study.

At the end of the period we performed a final testing to compare the data and check the recovery program.

## **ANALYSIS AND INTERPRETATION OF THE RESULTS**

### **• Analysis of assessing physical development of the premature child**

We recorded the values of the 10 preterm regarding height and weight at birth and 1 month. Calculating the average batch we can emphasize that these children have gained weight as much as it would a child born at term but even in these terms they are considered disharmonic with low weight.

The average results of the batch comprising boys, in terms of height and weight, was 2345g and 44.2 cm at one month after birth, which diagnosed them as disharmonic with + weight, while the average weight of the lot represented by girls was 2528g, and the height of 45.5 cm resulting the diagnostic harmonic with small indices.

After analyzing the data values we found that both boys and girls had a significant increase in terms of height but the diagnosis of physical development is disharmonic with plus weight.

### **• Analysis of results from the Portage Test**

Portage test results help us to identify a retard or a higher IQ in children included in the study.

The program applied to the patients included in the study after the initial stage of testing, the patients won on all 5 behaviors. The program implemented offered the expected results.

Patient results calculated using the formula provided by Portage Test helps diagnose mental age and intelligence index (IQ). Comparing the results of mental and chronological age we highlight the value of the IQ and thus diagnose the mental level of these children.

The IQ average of the group had a value equal to 72 which places the group between slightly retard and medium to lower retard. The intermediate testing of the IQ values was equal to 80 and the final assessment equal to 84, thus putting them in the category of children with a medium to lower IQ. According to the results, the

value of IQ in children included in the study, increased from one assessment to the next.

- **Assessment of neuropsychological development in children between 1-36 months**

Application of the test " Assessment of neuropsychological development in children between 1-36 months" helped us to rethink the initial recovery programs of the children. In this way we can achieve what problems we face and we can give children a new program, complete, systematic and individualized to their needs.

After the final testing, we found that we were helped in developing the recovery program, by this test. Looking at the results illustrated we found that the subjects remain with tiny delays in terms of the five behaviors, these delays may until the age of 3.

## **STATISTICAL INTERPRETATION OF THE RESULTS OBTAINED**

Statistical analysis applied in the present study sought to identify and quantify the links between development indices of various behaviors of children born prematurely (mental age index of intelligence, neuro-psychological development assessment) and a variable number of potential explanatory quantitative (weight children) and / or qualitative (the 3 testings, sex children). To this end, linear regression was applied for quantitative explanatory variables, analysis of variance for qualitative explanatory variables and covariance analysis for mixed variables, quantitative and qualitative.

In the present study, we proposed applying regression analysis to identify and quantify the relationship between weight children during the 3 testings (initial, intermediate and final), on the one hand, and mental age, the relationship between this and chronological age, index of intelligence (IQ), neuro-psychological assessment development, on the other. Statistical calculations and graphs were performed using XLSTAT 2013 and Excel 2014 software trial version.

It is noted that the relationship between mental age and weight gain of children

is very tight, 93.62% of the upturn in mental age is explained by the increase in weight, with a standard error of estimate of 0.146 years. The relationship is explained by the close link between weight gain and brain development of their children at these young ages. According to the equation, a weight gain of 1 kg is equivalent to an average increase in mental age of 0.2 years.

An intelligence quotient (IQ) is also related to the weight of the children, the relationship with a moderate degree of explanation (40.14%), the standard error of estimate of 6.643. Regression equation shows that an increase in weight of 1kg is associated with an increase in IQ by 1.8 units.

In neuro-psychological tests, we proceeded to calculate averages scores for the 3 testings, which is further correlated with children's weight. Average scores range between 7 and 10 333, with an overall average of 9.371. For the 3 testing, the averages are ranging from 8,575 in the initial stage, in 9,386 in the midway point and 10,152 in the final stage.

The relationship between children's weight and the average scores obtained by children on neuro-psychological tests show that an increase in weight of 1 kg is associated with an increased average score of 0.2.

Analysis of covariance (ANCOVA). Compared to the regression model easy integration improves the prediction of the variables sex, degree of explanation increasing from 40.1% to 44.7%. The model shows that the values I.Q. are on average higher for girls than for boys, 3,622 after the influence of the weight has been removed. These differences, regression line for girls is located above the corresponding boys. However high probability that this effect is not statistically significant (14.9%), prevents us to draw a definitive conclusion in this regard. The model residues, respectively deviations between actual and estimated values of IQ. We find that the model better approximates the girls IQ, which residues are lower.

## **CONCLUSIONS AND PERSPECTIVES**

In the conclusions and perspectives we concluded that the hypotheses were confirmed. Following the conclusions to be drawn from the results of the study data were fit certain driving directions on premature babies and desirable for this research to those concerned (doctors, therapists, parents, teachers, students) and education programs for evaluating the optimal psychomotricity in children born prematurely, and more.