

## STUDY ON THE INFLUENCE OF PRIMARY KINETOPROPHYLAXY ON BODY WEIGHT OF PREGNANT WOMEN

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**ABSTRACT.** Woman, even if is well informed and documented, she cannot imagine the multiple changes her body will pass through in a relatively short time, that of the pregnancy. Interdisciplinarity of physical therapy allows new guidelines aiming towards a dynamic psychological-body approach of the pregnant woman. The study objectives were: development and implementation a comprehensive program of prenatal training, analysis and interpretation of results, establishing and drawing conclusions. The methods and means were: implementation of kinetoprophylactic program of pregnant woman included theoretically, physically and mentally training, measuring and evaluating the weight gain during pregnancy. Results: to increase in weight between 0-9 kilograms, at this level ascertaining the frequency of 17 subjects in the experimental group 8.5% and 7 subjects in the control group representing 3.5% in increase in weight between 9-15 kilograms; at this category it was found a frequency of 173 subjects, ie 84.5% of the experimental group and 161 subjects, ie 80.5% of the control group and the increase in weight over 15 kg, it was found a frequency of 10 subjects, ie 5% of the experimental group and 32 subjects, meaning 16% of the control group, of all subjects of the study group. Conclusion: even if weight gain frequency analysis seems to refute working hypothesis, we consider this positively as we reveal a trend in society regarding the principles of care of the mother during pregnancy and weight gain control.

**Keywords:** *woman, pregnancy, prophylaxis*

**REZUMAT.** *Influența kinetoprofilaxiei primare asupra greutății corporale a gravidelor.* Femeia, chiar dacă este bine informată și documentată, nu își poate imagina multiplele schimbări prin care urmează să treacă corpul ei într-o perioadă de timp relativ scurtă, cea a sarcinii. Interdisciplinaritatea kinetoterapiei permite

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noi orientări ce tind spre o abordare psiho - corporală dinamică a femeii gravide. Obiectivele studiului au fost: elaborarea și implementarea unui program complet de pregătire prenatală, analiza și interpretarea rezultatelor și stabilirea și formularea concluziilor. Metodele și mijloacele au fost: implementarea programului kinetoprofilactic a gravidei a cuprins pregătirea din punct de vedere teoretic, fizic și psihic și măsurarea și evaluarea creșterii în greutate pe perioada sarcinii. Rezultate: la creștere în greutate între 0-9 kilograme, la acest nivel constatându-se o frecvență de 17 subiecți din grupul experiment reprezentând 8,5% iar 7 subiecți din grupul control reprezentând 3,5% la creștere în greutate între 9-15 kilograme; la această categorie, s-a constatat o frecvență de 173 subiecți, adică 84,5% din grupul experiment, și 161 subiecți, adică 80,5% din grupul control iar la creștere în greutate de peste 15 kilograme, s-a constatat o frecvență de 10 subiecți, adică 5% din grupul experiment și 32 subiecți, adică 16% din grupul control, din totalul de subiecți ai lotului studiului. Concluzii: chiar dacă analiza frecvenței de creștere a greutății pare să infirme ipoteza de lucru, acest aspect îl considerăm pozitiv deoarece ne relevă existența unui trend în societate privind principiile de îngrijire a mamei pe timpul sarcinii și de control al greutății corporale.

**Cuvinte cheie:** *femeia, graviditate, profilaxie*

## **Introduction**

Researches, current demonstrations obliges us to a new vision, a new awareness with new practical applications, to be prepared for the requirements of the new millennium, in order to increase more healthier, autonomous and humanitarian generations. Pregnancy with her peculiarities brings major changes throughout a woman's body. The body tries to adapt to the child's development and is preparing for birth even from the first quarter. Among the many changes that occur in a woman's body we chose to research, the increase in body weight.

During the lifetime the human being faces a number of differences regarding the age, sex, constitution, race and symmetry. Ontogeny as a science, studies the development and morphological- functional transformations of the organism from fertilization until death. It is known prenatal stage between fertilization and birth and a postnatal stage (Enciulescu, Bănzaniuc, Butilcă, 2004).

Factors that may influence a woman in desiring to conceive, and to accept pregnancy are the socio-economic conditions, legal provisions, degree of development of medical and pharmaceutical sciences, local and regional traditions, divorce (Farkas, 2013).

Factors influencing the development of intrauterine shows a growing interest and the specialists in this field seek settlement for a deeper knowledge of the initial phenomena of reproduction (Roșca, Ifrim, 2007).

Pregnancy is considered a natural phenomenon, and in this period are produced many morphological and functional changes in the pregnant woman's life (Balint, 2010).

In most women, the nature ensures that pregnancy to be carried out without incident but with a regular specialist supervision materialized by clinical laboratory, which will bring to the future mother a calm and optimism throughout the pregnancy.

Pregnancy extends for a period of 40 weeks, respectively 280 days from the last day of the menstrual cycle until the day of birth (Seres-Sturm, Gogolák, 2006).

The whole duration of pregnancy is divided into three quarters that have about 12 to 14 weeks each. The first quarter is considered up to the 13th week, the second quarter is around 26 weeks and the third ends between 38-42 weeks (Cucerea, Simon, 2009).

The woman, even if is well informed and documented the many changes she cannot imagine the multiple changes her body will pass through in a relatively short time, that of the pregnancy.

Interdisciplinarity of physical therapy allows new guidelines aiming towards a dynamic psychological-body approach of the pregnant woman.

In psycho-mental hygiene, specific therapies can highlight the relational-corporal abilities with those psycho-corporals (Buiac, 2013).

Expanding the knowledge on preventing poor hygiene (Stan, 2004), it has an important role throughout the pregnancy.

The pregnant woman must be monitored throughout the whole pregnancy, complying with proper hygiene measures and practices, and also with its nutrition (Stamatian, et al., 2014).

Food hygiene will consider the increased needs due to the pregnancy, but there will be no abuse of any kind. It will be followed a healthy diet ensuring a caloric intake between the values 2400-2800 calories (Crăciun, 2014).

Proper nutrition and a balanced diet are essential during pregnancy, being elementary things both for mother and foetal health.

Pregnancy brings with it profound emotional changes and changes in the woman's body due to the dynamic development and growth of the foetus (Simkin, Whalley, Keppler, 2012)

All major organs and functions of the pregnant woman will be influenced by fluctuating proportions (Balint, 2010).

From the morphologically point of view the most visible transformation on pregnant woman is considered the weight gain with an average of 10 kg to 15 kg (Elleberg, 2013). This increase in weight brings a change in the centre of gravity and causes changes in body balance, which can lead in exaggeration of lumbar lordosis, dorsal kyphosis and back pain occurrence.

Good posture during pregnancy is very important and prenatal kinetoprophyllaxy considers it as a benchmark.

As the weight increases and the pregnant woman's body changes its shape, her posture should be adjusted because she must maintain her balance. Prenatal kinetoprophyllaxy will teach pregnant women to perform daily activities during the pregnancy, too and the right learned movements will result in reduced muscle tension, fatigue or even the various pains that may occur during this period of women (Simkin, Whalley, Keppler, 2012).

### **The hypothesis of the study**

- Practicing prophylactic exercise positively influences the changes in body weight during pregnancy.

### **Objectives of the study**

- Development and implementation of a comprehensive program of prenatal training.
- Analysis and interpretation of results.
- Establishing and drawing conclusions.

### **Period and location of carrying out the study**

Our research was conducted on a period of 42 months from 1<sup>st</sup> November 2010 until 30<sup>th</sup> June 2014.

Research locations were Clinics of Obstetrics and Gynecology number 1 and 2 in Târgu Mureş, Clinics of Neonatology number 1 and 2 in Târgu Mureş and Rheum Care Foundation, with its seat in Târgu Mureş.

### **The subjects**

In our study group were included 400 pregnant women who were recorded in Neonatology Clinics 1 and 2 Târgu Mureş.

Inclusion criteria were:

- Confirmation of pregnancy by Specialist Physician in Obstetrics-Gynecology.

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and agreed to participate in this research.

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and agreed to participate in this research without participating in primary kinetoprophylactic specially adapted and customized for pregnant women.

- Pregnant women living in Târgu Mureş.

- The pregnant woman being at her first pregnancy.

- The gestational age of 14-16 weeks.

Exclusion criteria:

- Pregnant women who received the consent of Gynecologist-Obstetricians Specialist Physicians to participate in research and have not agreed to participate in this research.

- Pregnant women who do not reside in Târgu Mureş.

- Pregnant is not at her first pregnancy.

- Gestational age is greater or less than 14 to 16 weeks.

Profile of pregnant woman both in the experimental group and in the control group, was a homogeneous group of pregnant women who receive no statistically significant differences following to the analysis of the two groups according to age and level of education.

## **Study methods and means**

Implementation of kinetoprophylactic program of pregnant woman included the theoretically, physically and psychologically training.

Complex of prophylactic exercise specially designed for pregnant women helps them to improve their physical and mental condition and to better support the pregnancy (Mongan, 2005).

The first step in establishing a primary kinetoprophylaxy program is the medical assessment of the pregnant woman.

Once a pregnant woman has the consent and favourable opinion from specialist physicians in gynecology and obstetrics, being considered healthy, they can enrol in the primary kinetoprophylactic program called "School of pregnant women."

Beneficiaries of this School of pregnant women participated in activities of primary kinetoprophylaxy with a frequency of twice a week and during of meetings was of 90 minutes / meeting.

Classification of kinetoprophylactic exercises according to their effects were determined after consultation of specialists physicians in obstetrics and gynecology.

Measurement and evaluation of weight gain during pregnancy were conducted as follows:

**a.** in the experimental group: initial body weight, before pregnancy, acquired based on anamnesis, and the final one, based on measurement conducted at the last kinetoprophylactic activity before birth.

**b.** in the control group: the data was taken from specialist physicians with whom we worked.

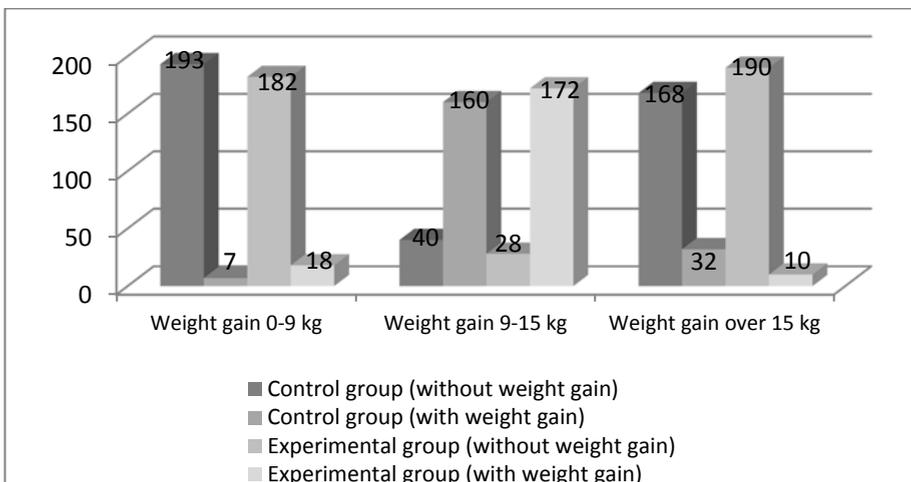
## Results

Analysis of the results was focused on comparing the three groups of levels of weight gain as follows:

- Weight gain between 0-9 kilograms at this level ascertaining the frequency of 17 subjects in the experimental group 8.5% and 7 subjects in the control group representing 3.5%.

- Weight gain between 9-15 kilograms; at this category, it has been found a frequency of 173 subjects, ie 84.5% in the experimental group and 161 subjects, ie 80.5% in the control group.

- Increase in weight over 15 kg, it was found a frequency of 10 subjects, i.e., 5% of the experimental group and 32 subjects, meaning 16% in the control group, of the total subjects of our research group.



**Figure 1.** Graphic presentation on the weight gain of the subjects group of our research.

## Discussions

The study conducted by Evenson and Wen in 2010 in the United States on the body excess weight during pregnancy, revealed that of all pregnant women receiving the consent and recommendation of specialists in obstetrics and gynecology in performing prenatal prophylactic physical exercises only 25% of them comply with these guidelines (May, 2012).

## Conclusions

Presentation of increase in body weight of the two groups studied and viewed in Figure 1 – Graphic presentation of weight gain, refute us the hypothesis of the study and reveals that there is no significant difference between the two groups in the study. Thus, there is no association between practicing prophylactic exercises and weight gain during pregnancy.

Through this study we wanted to verify if there is compliance between primary prenatal kinetoprophyllaxy and weight gain of pregnant women. Even if the analysis of weight gain frequency appears to refute working hypothesis, this aspect we consider positive as it reveals us a trend in society regarding the principles of care of the mother during pregnancy and weight control and if she does not participate in special programs such as the “School of pregnant women.”

## REFERENCES

- Balint, N.T. (2010). *Kinetoprofilaxie curs studii de licență*. Bacău: Editura Alma Mater, pp.139, 139-140.
- Buiac, D. (2013). *Elemente de psihokinetoterapie*. Cluj-Napoca Editura: Eikon, pag. 8.
- Cucerea, M. & Șimon, M. (2009). *Nou născutul normal, evaluare, îngrijiri, nutriție*. Târgu Mureș: Editura University Press, pp. 5,169-170.
- Ellemborg, D. (2013). *Exercise during pregnancy gives new-born brain development a head start*. Retrieved from [www.nouvelles.umontreal.ca](http://www.nouvelles.umontreal.ca).
- Enciulescu, C., Brânzaniuc, K. & Butilcă, F. (2004). *Anatomie Generalități membre. ediția a II-a revizuită, vol. I*. Târgu Mureș: Editura University Press, pag. 2.
- Farkas, E. (2013). *Népegészségtan és egészségügyi menedzsment előadások*. Târgu Mureș: Litografia UMF, pag. 38.
- May, L.E. (2012). *Physiology of Prenatal Exercise and Fetal Development*. New York: Springer, pp. 35-36.

- Mongan, M.F. (2005). *Szülés, ahol én irányítok*. Budapest: Sanoma Kiado, pag.139.
- Munteanu, L. (2014). Modificari anatomice si fiziologice ale femeii in timpul sarcinii. Retrieved from <http://www.bebelu.ro/modificari-anatomice-si-fiziologice-ale-femeii-timpul-sarcinii.html>, preluat în data de 16.07.2014.
- Roșca, E. & Ifrim, M. (2007). *Embriologie umană normală și patologică*. Arad: Editura "Vasile Goldiș" University Press, pag. 11.
- Seres-Sturm, L. & Gogolák, H.E. (2006). *Általános embriológia*. Târgu-Mureș: University Press, pag. 7.
- Simkin, O., Whalley, J. & Keppler. A. (2012). *Sarcina, nașterea și nou-născutul, ghid complet*. București: Editura Meteor Press, pp.38, 140.
- Stamatian, F. et al. *Obstetrică și ginecologie*, vol. 1, Retrieved from [www.medclub.org.md/.../591-obstetrica-si-ginecologie-vol-1](http://www.medclub.org.md/.../591-obstetrica-si-ginecologie-vol-1), preluat 25.03.2014.
- Stan, L. (2004). *Fundamente ale succesului educational*. Iași: Editura Fundației Axis, pag. 144.