Social Effect of Implementing Wellness Programs During Pregnancy

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Abstract: *Pregnancy is the most important period for the formation of future life. The fetal stage is crucial not only for the physical development of a human being, but simultaneously it initiates the shaping of non-tangible characteristics. Wellness programs for pregnant women contribute to effective health promotion and preventive care, which in turn results in significant social long-term benefits. Effective wellness programs facilitates the birth of healthy children. Building a strong foundation of wellness culture among mothers allows for the implementation of a healthy lifestyle filled with a multiplicity of social effects through the upbringing of healthy offspring.*

Keywords: *women with normal pregnancy, recreational physical activities, healthy lifestyle, the effect of Wellness programs*

Ключови думи: жени с нормална бременност, рекреативни физически дейности, здравословен начин на живот, ефект от уелнес програми

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INTRODUCTION

The process of prenatal development is crucial for the formation of future life[1]. During pregnancy, the fetal stage is pivotal for the development of physical form, but also for the parallel construction of personality traits[2, 3].

During the gestation period, the mother becomes the spiritual teacher of her child, and her womb embodies its first world, the gateway to earthly living, where the baby first begins to adjust to various vibrations: noise, magnetic field, gravity, pain, environmental pollution, etc[4, 5, 6, 7]. Recreational wellness programs, particularly those specifically designed for pregnant women can provide effective health promotion and preventive care with significant social benefits[8]. They contribute to the birth

[1] *Clatworthy* 2012: 25-34.
[2] *Crockett et al.* 2008: 319-325.
[3] *Dumas et al.* 2009: 1-5.
[4] *Dunkel et al.* 2012: 141-148.
[5] *Glover* 2014: 25-35.
[6] *Goodman et al.* 2012: 277-2293.
[7] *Tomova* 2021: 33-38.
[8] *Letourneau et al.* 2012: 445-457.

of a healthy offspring, while simultaneously effectuating a holistic approach to maternal and fetal health[9]. The wellness programs for pregnancy contribute to the expansion of a unique health and wellness culture with multi-layered social effects by educating future generations in early stages of development[10]. Putting into practice wellness programs for pregnant women improves their psycho-emotional state, which directly relates to the harmonious and balanced growth of the fetus[11]. Our female participants in maternity wellness programs have shown an increase in their physical capacity and energy potential[12, 13]. The positive impact of maternal well-being and improved physical condition directly correlates to the healthy biological development of the fetus with the ability to strengthen its physiological defences and immune balance. The mother's recreational motor activity and mobility has the potential to activate metabolic processes in the fetal body and in turn increase oxygen delivery through higher blood circulation rates[14].

The World Health Organization[15] defines health, as '...the complete psycho-physical and social wellness (well-being) of each person...'. The research paper proposes two researcher's developed models that take place in indoor and aquatic environments. The research paper proposes two author's developed models that take place in indoor and aquatic environments. The analysis follows two pilot recreational programmes for women with normal pregnancy in different environments[16]. Leading researchers have observed physiological changes occurring during pregnancy, such as the onset of back and low back pain, physical overload, weaking of abdominal muscles, decrease of core stability, impact on musculoskeletal system, loss of mobility and motivation in mundane activities[17, 18, 19, 20]. Wellness programs for women with normal pregnancies are an alternative to eliminate pain in various parts of the body and achieve good health status of the fetus. Many authors point out in their works that a healthy lifestyle could not be achieved without recreational physical activity[23].

METHODOLOGY

In order to obtain feedback - information on the effectiveness of the authors' methodologies for pregnant women in both environments (indoor and aquatic), it was essential that the participants also engaged in a parallel psychometric experiment alongside the pedagogical experiment. Respondents expressed in writing, albeit through subjective evaluation, their personal perceptions of pain syndrome from their own individual perspectives. This study utilised a qualitative methodology in which the main research instrument consisted of pedagogical observation and self-assessment along the continuum of presence and absence of perceived pain. The measurement of the effectiveness of the implementation of Wellness (Wellness) programs was based on personal self-assessed perceptions of the presence or absence of back and low back pain. A prospective analysis was applied to put into practice the authors' methodology in the area of Recreational

[9] *Nesheva* 2019: 135-142.
[10] *Nesheva* 2020: 33-39.
[11] *Nesheva* 2019: 135-142.
[12] *Dimitrova* 2019: 143-149.
[13] *Donev et al.* 2019: 369-374.
[14] *Dimitrova et al.* 2021: 44-54.
[15] *WHO* 2022.
[16] Both programs on land and in water were developed in accordance with the specific objectives of project BG05M2OP001-1.001-0001 'Building and Development of Heritage BG Centre of Excellence' under the priority axis 'Creative and Recreational Industries', by the partner NSA 'V. Levski'.
[17] *Dumas et al.* 2009: 1-5.
[18] *Dunkel et al.*2012: 141-148.
[19] *Glover* 2014: 25-35.
[20] *Goodman, Santangelo* 2011: 277-293.
[21] *Tsanov* 2015: 17-26.
[22] *Veselinov* 2021: 11-16.

Exercise[23]. A systematic analysis of existing literature and online information sources was performed. An experiment was conducted with two groups of pregnant women (gymnastic program in gym: GG) and (gymnastic program in water: WG) in the period between November 2021 and March 2022. The age mean of the participating women was 23.4 and 67% of them were going through a second pregnancy. The content of the original programs required different means, but the same methods were applied in terms of structure and environmental impact analysis. The feedback provided by the female participants was collected through a psychometric experiment. The technological advancement and potential of Google Drive were used to distribute the specifically designed online survey forms and collect subsequent data. We developed an original methodology for indoor and aquatic programs. The intensity and movement dynamics were individually modified and adapted to the recreational and relaxation aspect of the new Wellness programs designed for pregnant women. The proprietary indoor and aquatic methodologies have a similar sequence and a four-part structure, but are adjusted accordingly to the spatial capacities of each environment. We illustrate them through the constructed diagram and chart shown below in Figures 1 and 2.

Program NSA for pregnant women

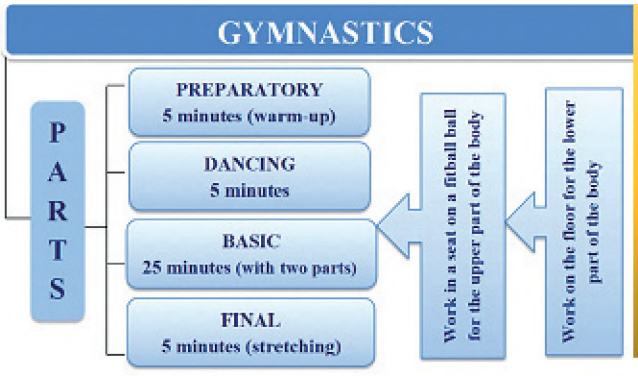


Figure 1. Structure of a gym class
Фигура 1. Структура на занимание в зала

Aqua gym for pregnant women

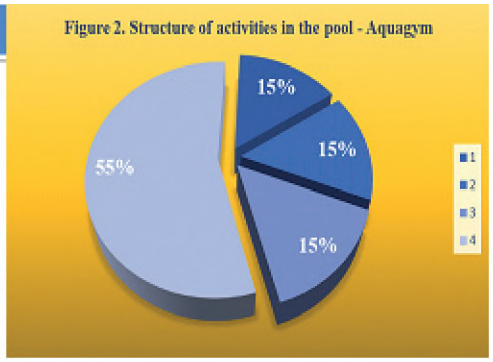


Figure 2. Structure of an aqua gym
Фигура 2. Структура на занимание в басейн

**Legend:*1.Intro; 2. Stretching; 3. Final; 4. basic*

The physical activities in each of the two wellness programs is adapted according to the amplitude of movements possible in the respective environment. The performance of the exercises is in harmonious unity with the specificity of dry land and water, as well as the physical capabilities of pregnant women. Intensity is controlled by manually assessing the heart rate for 10 seconds, using the palpation method to measure radial pulse. We determined the standard upper limit according to the Eurofit PVC-170 norms. This means that each pregnant woman is informed to have an effective pulse rate of 13-15 beats in 10 seconds, and the maximum upper limit is 16 beats, i.e. during exercise, the pulse rate (HR) should not exceed 150 – 160 beats/min. When the upper limit is reached, the rest interval is increased from 2 minutes to 3.

In Table 1 are presented the results of the Mean ± SD of the blood circulation indicators and the vital capacity of the pregnant women during the gymnastics program.

The results obtained in relative resting conditions for HR, RRs and RRd display heart rate values in the upper limit of the norm, systolic pressure around the lower limit and mean for the normal diastolic pressure. The established status of blood circulation is consistent with published literature data[24]. Vital capacity does not differ from that of healthy non-pregnant women[25].

[23] *Ilinova, Toteva* 2019: 280-285.
[24] *Nesheva* 2019: 135-142.
[25] *Nesheva* 2020: 33-39.

Table 1. Values (Mean ± SD) of the functional parameters at entry into the program
Таблица 1. Регистрирани средни стойности на функционалните параметри

Indicator	N	Mean ± SD
HR [bpm] Heart rate	100	87.9±12.23
RRs [mm Hg] Systolic blood pressure	100	109.5±13.68
RRd [mm Hg] Diastolic blood pressure	100	69.1±8.36
VC [ml] Vital capacity	100	3038.5±525.55

Vital capacity does not differ from that of healthy non-pregnant women (Nesheva 2020). The program content was branded under the author's last name: 'Nesheva Program – Gymnastics for Pregnant Women' and was validated in the doctoral dissertation. According to the dissertation analysis we published a monograph with a patented methodology. The specific content of the Wellness programs is presented in the following **tables 2 and 3**).

Table 2. Content of the author's Wellness program in indoor gym.
Таблица 2. Съдържание на тренировъчната уелнес (Wellness) програма в зала

PART	CONTENTS	DOSAGE	TASKS	METHODOLOGICAL INSTRUCTIONS
PREPARATORY	Warm-up exercises in methodical sequence.	5 minutes	Prepares the body for the upcoming load of motor tasks.	Proper and accurate execution is required.
DANCING	Steps from folk dance folklore, classical exercise, modern, Latin and non-traditional dances.	5 minutes	Creates mood, warms up the body, supports orientation in space, improves coordination of movements. Effectively affects the nervous system.	Follow the right direction when performing movements and synchronizing with the music.
BASIC	➢ upper body work ➢ work for the lower body	15 minutes 10 minutes	It has a general strengthening effect. Increases the strength of the upper and lower limbs and has resistance in the endurance of the body.	Proper starting position is required, technical performance and repeatability of the series of exercises.
FINAL	Specially preparatory exercises for childbirth, stretching exercises, pelvic floor exercises and elements of yoga.	5 minutes	Increases elasticity in the joints, removes muscle tension and stress.	Make sure that the exercises are performed correctly and that the breathing technique is correct.

Table 3. Content of the author's Wellness program in aquatic environment.
Таблица 3. Съдържание на авторската уелнес (Wellness) програма във водна среда.

PART	CONTENTS	DOSAGE	TASKS	METHODOLOGICAL INSTRUCTIONS
PREPARATORY	Warm-up exercises in methodical sequence.	5 minutes	Prepares the body for the upcoming load of motor tasks.	Proper and accurate execution is required.
BASIC	Exercises for different muscle groups. Exercises to stimulate the back muscles associated with pain in the lumbar region and back.	25 minutes	It has a general strengthening effect and has stability in the body's endurance.	Proper starting position and precise technical execution of the exercises are required.
COOL DOWN	Low intensity exercises.	5 minutes	It has a relaxing effect to cool the body.	Proper body posture and synchronization with the presenter is required.
FINAL	Stretching and relaxing exercises for the upper, lower limbs and body.	5 minutes	Increases the elasticity of muscles and joints.	Monitor the correct performance of the exercises.

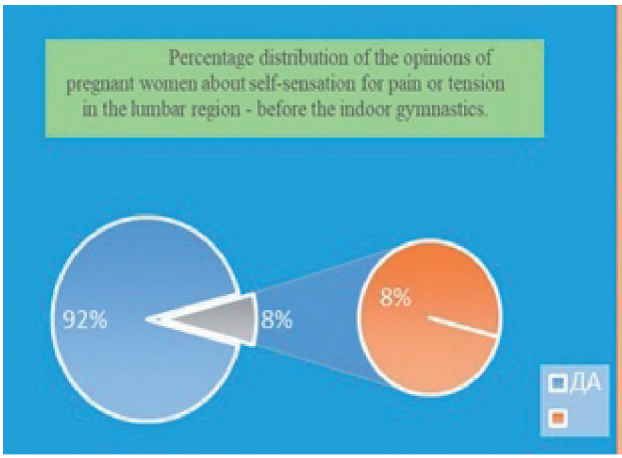
While these two exercise programs are different in substance, they both enable analogous effects for the research contingent described below. The content of the methodologies applied are as presented in **Figure 3 and Figure 4**.

Figure 3. Author's Wellness Methodology Program for Pregnant Women in a Gym (on land) – Specialized Aerobics Gym of NSA 'V. Levski' women (Pool – INERGY Fitness & SPA Center)
Фигура 3. Авторска методика Wellness програма за бременни жени в зала (на суша) – специализирана зала по аеробика на НСА „В. Левски"

Figure 4. Sample Wellness methodology of aqua aerobics for pregnant
Фигура 4. Примерна Wellness методика на аква аеробика за бременни
(Басейн – Inergy Fitness & SPA Center)

RESULTS

The pregnant women participating were aged between 20 and 40 years, the mean value and standard deviation for kg (WG) was 28,98±3,94 and EG (WG) was 27,78±2,98.



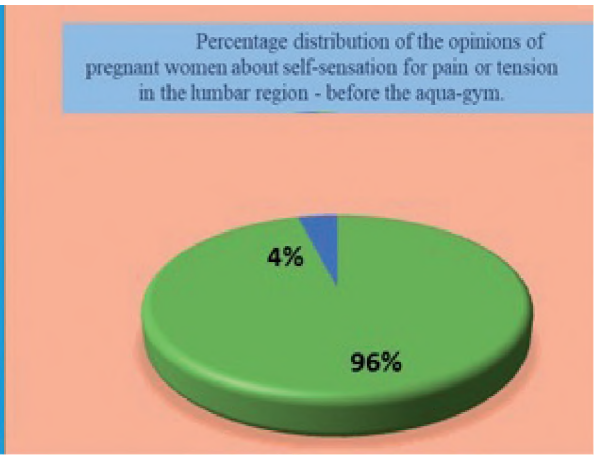


Figure 5. Before gymnastics
Фигура 5. Гимнастика в зала

Figure 6. Before aqua gymnastics
Фигура 6. Водна гимнастика

**Legend: 1. High level pain; 2. Low level pain.*

They were divided into two groups: Bulgarian women (gymnastics – WG) practicing gymnastics twice a week according to the Nesheva Program and Italian women (aqua gymnastics – WG) practicing aqua gymnastics, also twice a week. Through the psychometric study, we collected data via the feedback provided by the participating pregnant women in the form of specialised questionnaires with structured answers. **Figures 5 and 6** illustrate the pattern that women from both GG and WG groups reported complaints of pain and/or the

feeling of tightness in the sacroiliac region after becoming pregnant.

The perceived opinions related to "Feeling pain in the back and low back after becoming pregnant was very high (96 %) for the aquatic gymnastics methodology group and 92 % indicated for the indoor gymnastics methodology group. Percentage distribution of the pregnant women opinions about self-sensation for pain or tension in the lumbar zone – after indoor gymnastics.

To ascertain the degree of pain or tension relief, we administered a self-reported scale based on Self-perception scores, which we calculated in valid percentiles according to the frequency distribution of related responses.

The self-report rating scale in score and percentages looks graphically as follows superimposed on the continuum of presence of pain and pain relief (**Figure 7**):

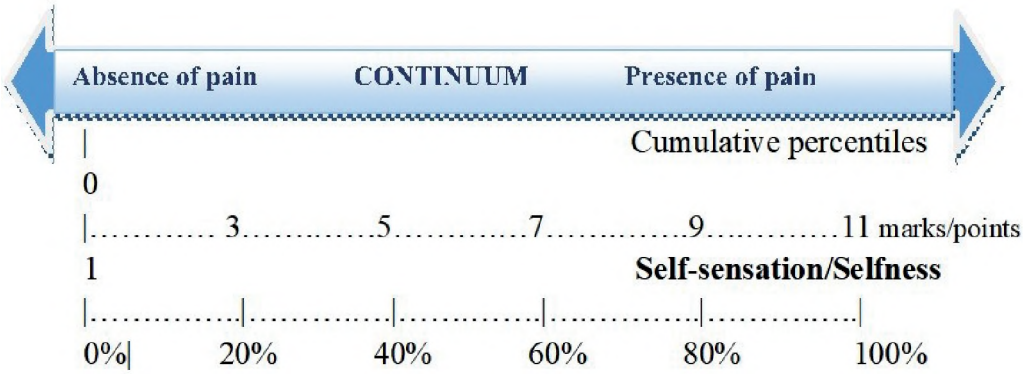


Figure 7. Continuum for the presence of pain and pain relief
Фигура 7. Континуум за наличие на болка и облекчаване на болката

We have shown that after practicing the Wellness Methodology of a gymnastics ymnastics program in a gym (GG), 31 % of the women reported back a pain relief, 40 % self-perceived pain of – 5 points; 25 % reported – 3 points pain; and 4 % only tension in the back and lumbar zone or reached insignificant pain. We found that the Wellness Methodology of aquatic exercise program is also a desirable and sought after health prevention practice for pregnant women. The effectiveness and benefits of practicing it are associated with rapid relief and elimination of pain sensation in the sacroiliac region. Women cited several indicators of improved quality of life: a balanced psycho-emotional state, reduced back and low back pain or tension, increased feelings of energy and cheerfulness, self-confidence about a worthwhile investment in one's own healthy lifestyle, feelings of good general health, and more daily energy and cheerful thoughts (**Figures 8 and 9**).

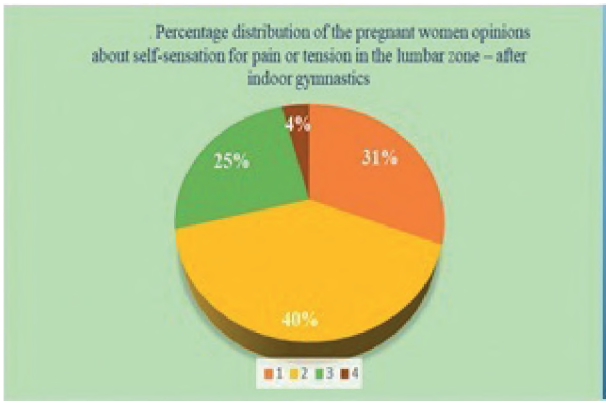


Figure 8. Effects after the program in hall
Фигура 8. Ефекти след програмата в зала

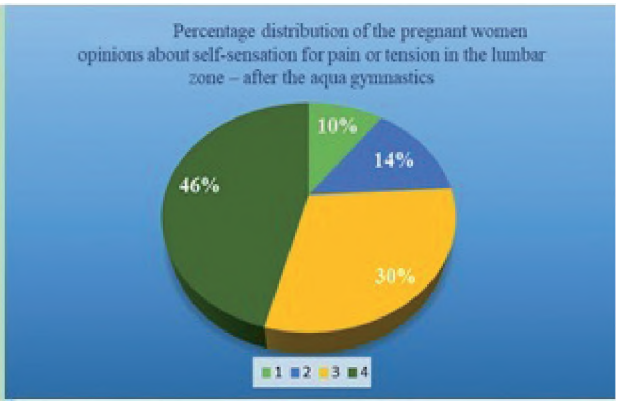


Figure 9. Effects after water gymnastics
Фигура 9. Ефекти след водна гимнастика

We found that after practicing the Wellness Methodology of Water Gymnastics (WG) program, 14 % of women scored – 5 points, 46 % self-reported around to 1 point so reached a low pain threshold or feel only tension, 30 % reported 3-points pain relief and 10 % had no back and lumbar back pain.

Psychometric measurement found significant social improvements in the pregnant women's quality of life after implementing the proprietary Wellness Program methodologies in a gym and aquatic environment. The participants reported several indicators of improved quality of life: a balanced psycho-emotional state, reduced back and low back pain or tension, increased feelings of energy and alertness, self-confidence and motivation to invest in and maintain a healthy lifestyle, a sense of overall health and well-being, boost of energy and cheerful thoughts on a daily basis. The combined opinions of respondents from both groups prove our working hypothesis that exercising during pregnancy in an aquatic environment (GA) has significant benefits with the highest proportion of respondents reaching a sensation of minor or insignificant pain (30 %).

DISCUSSION

We attribute the higher percentage of respondents (30 % WG vs. 25 % WG) experiencing self-perceived insignificant pain as a result of physical activity in the aquatic environment. The lifting force of the water removes the weight of the body on the joints, and the fetus is isolated from the impact of the earth's gravitational pull, which creates a soothing and relaxing physical activity for both the fetus and the mother. We have observed reported improved physical condition which we contribute to the unique properties of the water environment, which has long-standing therapeutic effects in various rehabilitative practices. The sensation of softness and caressing due to the water's resistance to movement beneath the surface is a consequence of the activation of tactile proprioceptors. Simultaneously, a hardening effect is achieved due to the excitation of the heat receptors and the balancing of the body temperature against the water temperature, the difference can reach 8-10 C°. The European standard for aqua gymnastics for pregnant women in a swimming pool is to heat the water by 2-4 C°, more than the temperature for swimming sports (24-26 C° to 27-30 C°).

CONCLUSION

The obtained results establish significant grounds to highlight the positive outcomes on psycho-physical and emotional health of women with normal pregnancy from practicing wellness methodology for gymnastic programs on land and in water. The aquatic environment has the advantage of being an effective toolkit without the risk of trauma or injury due to the unique properties of water environments to create alleviating conditions of buoyancy and softness from water resistance. Proprietary gymnastic programs modified for specific indoor dry land and aquatic settings are an important tool in aiding a Wellness lifestyle for both pregnant women and their babies. We have observed and described how recreational exercise is directly linked to improved maternal and fetal health.

Based on the above analysis we formulate the following **conclusions:**

1. Women with normal pregnancies identify a reduction (44 %) and reaching insignificant pain (35 %) in the sacroiliac region after practicing Wellness Methods exercise programs on land or in an aquatic environment;

2. The applied author's specialised programs, have a proven effect against pain on the delicate contingent of the studied women, enriching in parallel their motor culture and Selfness;

3. Young mothers with first pregnancies need to be encouraged to partake in exercise programs early on in the prenatal development and to keep active throughout their pregnancy;

4. The social relevance of Wellness methodologies for pregnant women is conspicuous in the attempt to achieve a balanced psycho-emotional and physical health which contibutes to theupbringing of healthy offspring.

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Социален ефект от прилагането на уелнес програми по време на бременност

Ирина Нешева, Бистра Димитрова

Въведение: Специфичната област Уелнес за бременни жени корелира с профилактика чрез холистичен подход към здравето, което води до значими социални ползи. Подходът се характеризира с разбиране на отделните индикатори на здравословен стил на живот като тясно взаимосвързани и обясними само през призмата на цялостния здравен баланс на плода и майката. **Методи**: Осъществен е систематичен преглед на използването на инструментариум свързан с изследване динамиката на психо-функционалния статус на майката и плода. **Резултати**: Прилагането на Уелнес програми при жени с нормална бременност подобряват здравния статус, като в същото време увеличава тяхната дееспособност и Селфнес (Selfness). **Дискусия**: При жени с нормална бременност чрез ангажиране с двигателна активност се засилват защитните сили на организма, рефлектиращо върху здравето на плода. **Заключение**: Извеждат се предимствата на разработени два модела – в зала и във водна среда.