

REVIEW ARTICLE

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AEROBICS AND PREGNANCY

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ABSTRACT

One of the most important periods in a woman's life is the pregnancy period. It is quite essential for a woman to succeed in getting through these nine months as painlessly as possible and avoid any possible complications. The aim of the study was to investigate, using existing literature of the subject, whether aerobics or can be safely practiced during pregnancy. It is revealed that exercise positively influences both the woman's body and psyche. It prevents problems with the spinal cord, cardiovascular system and improves a woman's mood both during pregnancy and the postpartum period.

INTRODUCTION

The benefits of exercise during pregnancy have been extensively studied in recent years. Activities such as aerobics, cycling, swimming and running seem to be of particular significance to pregnant women [15]. Unlike in the earlier decades, pregnancy is now considered to be a perfectly regular period in a woman's life, during which she may continue her previous activities (except for specific circumstances), and not change her way of life and dietary habits. In fact, pregnancy can be a great opportunity to improve the latter. The excessive increase of body weight, lack of movement, emergence of diabetes mellitus type II and pre-eclampsia are some of possible problems which may occur in pregnancy and which may be prevented by exercise.

Pregnant women who do not experience any problems during pregnancy should take up low

intensity physical activity [1]. However, it seems that only 15.1% of pregnant women exercise at a level desirable for their condition, which is 45% lower than non pregnant women [9]. Generally, it seems that regular practice of a broad variety of recreational sports is safe for pregnant women. Naturally, the safety of each sport is directly related to the movements it requires. For example, practicing contact sports contact such as hockey, football, and basketball could cause an injury both to the future mother and the fetus. Likewise, activities involving the risk of falls such as gymnastics, horse riding, mountain skiing, and various racket sports are highly likely to incur injuries both to pregnant and non pregnant women. Such activities should be avoided during pregnancy [3]. Also free-diving or scuba diving should be eschewed, since they involve a risk of complications affecting the unborn child [7].

Pregnant women should be extremely cautious and stop exercising immediately when they experience dizziness, pain, breathing difficulties, dysphoria, tachycardia and cramps, i.e. conditions in which any person should cease exercising anyway [1].

The aims of the study were to investigate, using the existing literature of the subject, whether aerobics can be safely practiced by pregnant women and to seek any alternative choices for the future mother. It also discusses situations in which practicing aerobics should be avoided as well as possible complications related by practicing aerobics by pregnant women.

PREGNANCY AND EXERCISE

The question of exercise during pregnancy has been studied by a number of researchers, mostly by medical specialists. Some studies have focused on the question whether pregnant women should or should not exercise during the particular stages of pregnancy.

Low impact aerobics seems to be an ideal form of exercise for pregnant women. It is intense enough to provoke physiological adjustments, even in pregnant women, and safe enough not to harm the future mother or the fetus [13]. A study was carried out involving a group of 10 women. The VO_2 (1.1-0.3 l/min), carbon dioxide output (1.1±0.2 L/min) and the amount of calories spent during a 40 minute low impact aerobics program (5.3-1.2 kcal/min) were calculated and compared with the corresponding results of a parallel 40-min walking exercise performed by the same subjects (VO_2 1.4±0.2 l/min, VCO_2 1.4±0.2 l/min and 6.6±1.4 kcal/min). During the aerobics training an increase of the fetus's cardiac rate of 17±15.2 b/min was noted as compared with 147.6±7.6 b/min during walking. However, it did not constitute any possible risk to the fetus's health. The amount of calories burnt during the aerobics training was similar to the energy expense in some traditional dances [20]. In view of these results Greek traditional dancing could be proposed as an alternative form of exercise for pregnant women.

In 1996, 9,953 questionnaires were sent out to women in the United States who had given birth [19]. The aim of that study was to determine the percentage of women practicing some sports or recreational activities, their habits before and

during their pregnancy and such factors as their income and family situation. The results showed that single women worked out more than married ones, and that elder women as well as women with weight problems practiced exercises of lower intensity. There was also a difference in exercise intensity between women with and without problems during the previous pregnancy. The former revealed lower intensity measurements; however, there were no differences in the types of activities between both groups. The activities practiced during pregnancy included aerobics, walking, swimming, cycling, jogging, dancing, hiking and the Callanetics.

Most researchers recommend regular physical activity of medium intensity after the first trimester of pregnancy. In another study the fluctuation of glucose during exercise was measured in pregnant women performing different sport activities [10]. During a 40-min walking exercise and aerobics the glucose blood level was reduced but not so much as to cause hypoglycemia. Similar measurements in pregnant women with diabetes mellitus type 2 [2] led to the conclusion that exercise was safe even for these women. Exercise can play an important regulatory role in relation to the blood glucose level, because the working muscles assist in glucose transport. Exercise can also help women control diabetes without the aid of insulin.

Some researchers examined the hormonal fluctuations (insulin – cortisol) [10] since the role of these hormones is very important in terms of availability and use of energy substrata, which in turn are crucial for the fetus's development. The HR values obtained during aerobics training (133±5 b/min) and walking (135±6 beats/min) confirmed the fact that both activities could be safely recommended for pregnant women. The results also showed a lower reduction of insulin in plasma during aerobics training than during walking, but also a consistent cortisol concentration during aerobics in contrast with the changes noted during walking.

Another study used a sample of 149 healthy pregnant women divided in three exercise groups [17]. The first group followed a four-month program of yoga and relaxation respiratory exercises; the second group followed a four-month program of active exercising (20 minute rounds for each workout with a 62% intensity of maximum cardiac rate) as well as antenatal classes. The third group

followed a program which included swimming and exercises in water. Each workout lasted 20 minutes with an intensity of 62% of maximum cardiac rate. All women from the three groups had a normal delivery without any complications, and women from the 2nd and 3rd group improved their fitness which helped them gain less weight until the end of pregnancy (2 kg), while their babies were born 200gr lighter as compared with the women from the first group. The same results were also obtained in another similar research study [12].

AEROBICS AND SAFETY DURING PREGNANCY

The greatest concern of pregnant women is whether a workout program during pregnancy is safe both for them and their babies.

In one of studies [9] no influence of exercise or even intense physical activity on the duration of pregnancy was noted. The women who participated in the study had a timely and uncomplicated delivery.

Exercise can be safe and helpful in improving fitness even in women who did not exercise at all prior to pregnancy [11]. Neither bradycardia nor tachycardia was observed in women who had been pregnant, during aerobics training programs [6]. The researchers concluded that exercise of any intensity causes no danger during pregnancy.

Other researchers [3] reached similar conclusions noting that pregnant women who followed a training program should avoid exercises in a prostrate position, at a high altitude and in high temperatures, and should also control their diet and watch their liquid intake.

The response of the cardiovascular system during exercise in pregnant women follows the normal patterns. As far as the arterial pressure is concerned no difference was observed between pregnant and non pregnant women. The cardiac rate is higher during exercise in pregnant women as compared to the non pregnant ones, but immediately after work out it returns to the normal rate. Another study also showed that exercise was safe for pregnant women and presented no complications to their condition [4].

Physical activity reduces both the respiratory demands of the body as well as the respiratory fraction during exercise towards the end of pregnancy [11].

Women who participated in sport activities while being pregnant displayed a lower increase in their body weight and lower body fat than non-training women, and this occurred mainly when they did aerobics [14]. Water aerobics could be also an alternative form of aerobics for pregnant women [5].

ADVANTAGES OF AEROBICS DURING PREGNANCY

The multitude of advantages of exercise for pregnant women demonstrated by various researchers [18] include:

1. Improvement of general physical fitness.
2. Reduction of cardiovascular stress caused by pregnancy.
3. Maintaining body fat under control.
4. Retaining the muscle tone and muscular strength, which makes pregnant woman feel better by strengthening areas of the body burdened by pregnancy such as the waist, abdomen and pelvis.
5. Avoidance of cramps symptoms.
6. An easier delivery. Exercise brings about an increase in the muscle working ability and a functional improvement of the dedicated muscles which are activated at the time of delivery. An easier delivery is observed when a woman has already given birth once.
7. Faster recovery from delivery.
8. Reduction of possible low back pain. During pregnancy a gradual relaxation of the ligaments holding the pelvis joints is observed due to the secretion of various hormones, especially at the beginning of the third trimester. This accelerates an increase of the pelvis size in order to accommodate delivery. This joint relaxation along with the change in the body posture due to the increased abdominal weight often leads to low back pains. Exercise strengthens the waist and the abdominal muscles and thus relieves the pains in the spinal area.
9. Avoidance of gestational diabetes. During the third trimester of pregnancy some women develop diabetes because of the increased resistance of their insulin to carbohydrates. Exercise reduces the body's demand for insulin and increases fat metabolism in relation to carbohydrate metabolism.

10. Contribution to the neuromuscular relaxation which is necessary for women during pregnancy.
11. Accommodation of gastrointestinal function and reduction of the chances of constipation.
12. Retaining the essential appropriate body posture and avoidance of abnormal spinal curves. Pregnant women often experience lordosis because of the weight in the abdomen and their attempts to balance the center of mass.
13. This accommodation is greater when a woman has already given birth once.
14. Creation of conditions for functional relaxation, which proves very helpful for sleep.

Despite the numerous advantages of exercising during pregnancy special attention should be paid to some possible side effects. Exercise could cause acute hypoglycemia, chronic fatigue as well as injuries to the myoskeletal system in pregnant women. Also the increased demand for more vitamins, minerals and nutrients can be observed.

Medical conditions in which exercise should be forbidden by the attending doctor include:

1. Diagnosed heart disease. Exercise may have a negative effect as the body is burdened enough by the pregnancy itself.
2. Danger of premature delivery (premature contractions). In the case of premature contractions the pregnant woman should protect herself and not indulge in any activity which could entail fatigue and further burdening of her body.
3. Cervical failure, placenta previa, history of 3-4 abortions, pregnancy with twins or triplets.
4. Retardation of endometrial development.
5. Pregnancy hypertension ailment.
6. Vaginal hemorrhage.

Some contraindications are also:

1. Anemia
2. Thyroid
3. Excessive obesity.

CONCLUSIONS

Regular exercise during pregnancy has positive effects on the physiological parameters of healthy women. Exercise is safe even for women who prior to pregnancy did not work out, or those women who suffer from chronic diseases such as

diabetes, providing that the particularities and needs of each woman are taken into account.

The majority of research results show that exercising during pregnancy is safe and it can effectively reduce the risk of pre-eclampsia and gestational diabetes [9].

A systematic aerobics workout during pregnancy can significantly improve a woman's fitness, especially her aerobic capacity, while at the same time it helps in keeping body weight under control.

Babies born to women who participate in training programs have lower body fat than the babies of women who do not exercise. Regular exercise improves the course of pregnancy including labor, delivery and its final outcome.

In any case exercise should be done with consideration and never endanger the health of either the woman or the fetus. Doctor's instructions should be strictly followed at all times.

Exercising during pregnancy has been referred to in general bibliography as well as relevant websites only as woman's individual choice, while mass sports programs organized by municipalities or communities for pregnant women are not mentioned at all. Private gyms or public hospitals organize antenatal classes focusing mostly on painless delivery, rather than development of an individual training program. It is because pregnancy is a very special and sensitive condition in which, despite the existence of some general principles as to the way of exercising during pregnancy, the unique nature of each woman renders it impossible to claim anything in an absolute manner.

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