

# GYNAECOLOGICAL IMPLICATIONS OF WOMEN'S PARTICIPATION IN SPORT

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## ABSTRACT

*Until the beginning of the seventies, there were always those individuals who maintained that athletic activities during menstruation was dangerous and damaging to health. Others observed that sporting activities during pregnancy were lethal not only to the foetus but also the mother. There were still others who believed that long distance running by girls would spoil their womanhood. This was so until a few years back when women were allowed to compete in races beyond 3000m. Some educators were of the opinion that swimming during menstruation increases the risk of water entering the upper part of the vagina. All the above assessment was based on instinctive judgment without any supporting scientific evidence. This paper discusses the various gynaecological implications of women's participation in sports as far as recent researches are concerned. The paper focuses on the following areas: menstruation (i.e. amenorrhoea, dysmenorrhoea, menorrhagia), osteoporosis, pregnancy and general well being of females in relation to sporting activities.*

**Key words:** *Sporting activities, menstruation, female athlete.*

## **INTRODUCTION**

Until the beginning of the seventies, there were always individuals who maintained that athletic activities during menstruation were dangerous and damaging to health. Others observed that sporting activities during pregnancy were lethal, not only to the foetus but also to the mother. There were still those who believed that long distance running by girls would spoil their womanhood. This was so until years back when women were allowed to compete in races beyond 3000m. Some educators were of the opinion that swimming during menstruation increases the risk of infection and that there are chances of water entering the upper part of the vagina.

All the above assessment was based on instinctive judgment without any scientific evidence. It is the purpose of this paper to discuss the various gynaecological implications of women's participation in sports as far as recent researches and congress reports are concerned. The following areas will be considered:

- a) Menstruation and sporting activities
- b) Pregnancy and sporting activities

c) Implications of sport for the general well being of the female athlete, especially concerning those areas that are involved during childbirth.

## **PERFORMANCE AND MENSTRUATION**

At the time of puberty, the female begins a cycle of hormonal pattern, which results in the menstrual cycle. Menarche varies widely in the normal population and can begin as early as eight or nine years of age, or, in some instances as late as seventeen to nineteen years. This monthly rhythm will continue, once started, until about the age of fifty, when about 50 % of all women experience menopause.

Thomas (1979) notes that there is hardly a single body function or system that is not affected by the menstrual cycle. The psyche, the skin, the heat regulation system, the gastrointestinal system, may all be affected at various stages of the menstrual cycle. Datton (1960) has observed that there were adverse effects on routine schoolwork of a large group of menstruating girls in his study in English schools. In these schools where weekly examinations are given to all students, one out of every four girls had a lower weekly mark during the week preceding, menstruation, with an apparent rise in ability after the menses.

In his study, Wilmore (1967) argues that there does not seem to be any effect of the menstrual cycle on the physiological effects of exercise, except that core temperatures are higher during the post-ovulatory phase when work is performed in a hot environment. Olympic female athletes have been found to compete successfully during all phases of the menstrual cycle. Most of these sportswomen do not interrupt their training regimen, but may reduce the intensity of training if flow is excessive during menstruation.

In studies at the 1956, 1964 and 1968 summer Olympic games, it was determined that female members of the United States and other Olympic teams won gold medals and set world records during all phases of the menstrual cycle. As far as could be determined, not one female competitor abstained from any contest because of menstruation. Here, some researchers are of the opinion that these serious competitors are able to build immunity to the great number of physical and mental strains of training and competitions, one of which is the periodicity of the menstrual cycle for the female athlete.

Although it is obvious that physical and psychological capacity can be affected by cyclical changes, it is not true of all women to an equal extent. Recent research has shown that menstruation no longer necessarily requires any restriction in sporting activities. Even in the case of swimming during menstruation, there's no increased risk of infection and no question of water entering the upper part of the vagina. This is true because in this area, vaginal tampons are so commonly accepted and used for menstrual hygiene. But in some disciplines and forms of loading, trainability is reduced

and the results are therefore poorer. It has to be noted here that individual differences are numerous and as such the rates of reduction of performance are quite different and hence there are no laws universally valid for all women in this field. An examination that was carried out in the German National Athletic team by congress members who compiled the official report of this IAAF in Germany in 1983, revealed that majority of the athletes claimed to find their capacity reduced in the last 3 -7 days before and during menstruation. However, a number of athletes felt that they were able to make use of the aggressiveness that existed pre-menstrually to achieve an improved performance.

It was primary in those disciplines involving an aerobic work that the athletes experienced a peak performance shortly before or during their periods. Endurance disciplines on the other hand, showed a trough in performance about the time of the menses. The poor performance in sport during menstruation might result from the following:

- (1) Before and during menstruation there are alterations in some parameters that effect performance.
- (2) The steadiness of the arm and hand are at their minimum. This leads to chances of poor performance in gymnastics and throwing disciplines, irritability, nervous tension, aggressiveness or depression tendency increases. Thus activities requiring concentration may be poorly performed.
- (3) Internal pressure of the eye decreases leading to a reduction in visual capacity. This might mean that gymnastics, tennis and other activities that require visual direction are affected.
- (4) There is increased water retention leading to an increase in the thickness of the mucous membranes of the respiratory tract. Body weight increases meaning that extra work must be done to achieve the same times and distance.

Thus, new and strenuous exercise that requires a high degree of concentration should be avoided during and in the days before menstruation in the case of those women athletes who have problems in carrying them out. It is good to note here that loss of performance due to effects of menstruation could be reduced by therapeutic measures. Women athletes have used the pill to remedy loss of performance. The pill reduces menstrual problems or abolishes them entirely. Where the pill may not be successful to achieve this, it is possible by planning well ahead to postpone menstruation. However, this can be done only under medical supervision.

Lately, it has been reported that certain athletic groups may experience primary or secondary *amenorrhoea* (i.e. either starting menstruation late or menstruating for some time and then ceasing to do so. This has been found to be true especially for those athletes who are active in sports before the

menarche. Specific data obtained from track and field athletics show that the amount of running activity in kilometres per week can affect the stability of the menstrual cycle. Feicht (1978) examined only women marathon runners and found menstrual irregularity in 50 % of them. Although it is most often noted in long distance runners, gymnasts and dancers, *amenorrhoea* may also occur in any female athletes who expend tremendous amounts of calories in their workouts without providing sufficient caloric intake. Several researches have linked *amenorrhoea* with a low percentage of body fat in the seasoned endurance female athlete. Frisch et. al. (1981) noted that when the female athlete reduces near 12 to 15 % body fat, the chances that the monthly cycle will stop are high.

Gynaecologists opine that athletic females (especially the thin ones) do not have to worry about discomforts of monthly periods or the fear of pregnancy. Frisch (1981) has gone as far as suggesting that athletics, which demands a great deal of the young woman may effectively serve as birth control. The degree of severity of hormonal changes in women long distance runners or those engaged in exercise before menarche, is influenced strongly by the amount of running (work load) she does. At the beginning of the training periods, the cycle will initially lengthen, the *corpus luteum* grows less and ovulation fails to occur. With an increase in the running (work load) there is a clear reduction in all the most important hormones that regulates the cycle. Thus the longer and more rapidly a woman runs, the more probable the menstrual disturbances. It is worth nothing at this stage that, naturally, in a certain number of women athletes, the menstrual cycle is irregular. Other possible causes of the irregularity include serve psychic or emotional stress, starvation and certain illnesses.

Active sports participation does not delay the onset of the menarche or contribute to the rather common menstrual irregularities, which occur in most girls during adolescence. According to Judy ((1987), stress or anxiety about anything, including competition, might cause temporary cessation of the menstrual function but this is not harmful, nor does it leave lasting effects.

*Dysmenorrhoea* (painful of discomforting menses) occurs to some degree in 50 % to 70 % of all menstruating females (Roland, Frech and Jansma, 1982). Symptoms include tension, constipation, pressure and pain in the pelvic region, headache, nausea or even vomiting. These physiological changes are linked to the reproductive hormone activity, but lack of exercise, poor posture and tight clothing aggravate the condition. There may be times when *dysmenorrhoea* may be severe enough to curtail training. There is some evidence that suggests that certain exercises and training can relief these distressful symptoms as Lawrence (1978) comments, "Trained girl athletes experience less pain during menstruation." Also Hollis (1978: 204), states that, "these girls should be encouraged not only to take part in their physical education classes but to participate regularly in a program of

special exercises, which are known to be of value in preventing and alleviating the effects of *dysmenorrhoea*.

*Menorrhagia* refers to excessive blood loss during menstruation. The condition can be caused by an inflammation of the pelvic organs, tumours in the uterus, organ displacement, and circulatory disturbances leading to the presence of excessive blood in the abdominal pelvic areas. Today, there are generally no restrictions related to physical activity during the menstrual period for women who have no menstrual disturbances. For those with severe discomfort and abnormally heavy bleeding, some activities may be restricted or modified based on medical advice. Depending on severity and associated side effects, females with *menorrhagia* may have to be temporarily excused from swimming.

Research has shown that increasing physical fitness reduces the cyclical fluctuations in performance. Considering all the individual differences that have been shown, the decision whether or not a girl exercises during all phases of a menstrual cycle should be decided by her rather than a physician, nurse or other advisers. Generally, most female athletes are able to achieve their average sports performances throughout the entire menstrual cycle.

## **SPORTS AND PREGNANCY**

During pregnancy, the cardiac rate is increased and systolic blood pressure is elevated, total bodily fluid increases by 5 to 8 litres (on the average). Total blood volume and erythrocytes volume increases, but blood volume increases more than erythrocytes. This usually might lead to *anaemia*. The oxygen consumption is much increased as well as the cardiac minute output. Various authors have shown that even the body is at rest, there is a considerable loading of the cardiac-circulatory system i.e. the body works at full intensity. This means that if there is additional athletic activity, pulse and systolic blood pressure increase further while diastolic pressure decreases. For the pregnant woman there is reduced oxygen supply to the foetus and working muscles. With serious physical loading (exercise of high intensity) there is a lowering of the blood sugar in the pregnant person. Since the entire energy requirements of the foetus are provided by the mother's blood sugar level, there is a potential danger to the foetus. However, pregnancy should be considered a period of intensive conditioning to enable the body to meet the demands of labour and delivery (Klafs and Lyons, 1973). This applies also to the period immediately following pregnancy. During pregnancy, over-all fitness should be the primary goal. Special attention should be given to stretching of the calf, thigh and perineal muscles. Exercise may decrease the frequency of leg cramps, which are common in pregnancy and may limber those muscles used in labour and delivery.

Swimming poses no problems to the pregnant woman. Although many feel clumsy because of the continuous forward shift of the centre of gravity, the water will eliminate this problem and allow them to maintain and develop fitness. Bicycling is an excellent way to inhibit the development of varicose veins because it stimulates circulation in the legs. Relaxation training is very important since it is a major component of childbirth, because tension is the primary source of energy loss during labour and delivery. Through training, a woman can learn to more effectively manage contraction in labour. If the woman is healthy and has been active prior to becoming pregnant, there is no reason why she cannot continue to be fairly active during pregnancy. Jokl (1978), has noted that in the 1956 Olympic games, three female athletes - one in shot put, one in the discus and one in 100m race were two, three and four months pregnant, respectively. Stifler (1982) knew of one particular active woman who continued to run and jog, although more slowly, right up to the day of childbirth, with no ill effects. He says that recovery (for the woman) from childbirth was quicker and made easier by their excellent condition.

Pregnancy can be considered an extra training stimulus for the female athlete. It is known that female athletes have shortened duration of labour and have few disorders and complications during the childbirth than non-athletic women. Erdelyi (1961) and a host of others found that complications of pregnancy are less, excluding toxemia and difficult labour, in those who have participated in competitive sports. Some of Erdelyi's subjects had continued their sports during the first three or four months of pregnancy without apparent harm to the participant or the foetus. Duration of labour was considerably shorter for those who participate in sports, frequency of caesarean section was less than in non-athletes, and there were no apparent ill effects upon the muscles of the pelvic floor and perineum from intensive sport activity.

Although the works of Erdelyi and Casper (1961) appear quite obsolete, their opinions have been reiterated on many occasions by other researchers in recent years as the comment below shows. The congress members who compiled the official report of the First, IAAF competition in Germany 1983 stated that, " Although it is known that some women athletes, mainly from the Eastern hemisphere, have taken part in world championships and Olympic games when they were at an advanced stage of pregnancy and succeeded, it cannot be taken as evidence that such activity is risk free". For sport in pregnancy to be fairly risk free, medics have suggested the following: The athlete should not be involved in team sport, no hard training and in the second and third months of pregnancy, there should be no sudden acceleration or braking since this can lead to premature detachment of the placenta, resulting in the death of the child. Depending upon the discipline, specific training can be carried out up to the fifth month of pregnancy at the latest. After the 5th month and until birth only relaxation and loosening up exercises should be used. The pregnant athlete needs an increase in nutritional requirements and iron supplementation.

Extra protein, vitamins, phosphorus and calcium should be taken. Altitude training carried out above 1300-1500m should be avoided in the interest of foetal development. There should be aerobic instead of anaerobic loading, on account of the risk of foetal oxygen deficiency.

As pregnancy progresses the athlete is advised to discontinue activities, which are too strenuous and concentrate on activities such as bowling and golf that provide intermittent rest. If exercise has to continue beyond 5 months, then, during the last part of pregnancy, activities in which the body is suddenly placed on one foot should be avoided to prevent balance difficulties and falling. Also water skiing should be avoided because of the jolting involved.

### **Implications of Sport Participation for the General Well Being of Women**

Some few years ago, women were only restricted to a few track and field events. This is due mainly to the belief that those particular activities could be harmful especially to the childbearing organs of a woman. Scientific research has disapproved this as the report on the National Research Conference held at Pennsylvania State University shows "No observer has found evidence that physical exercise by young girls has had any ill effect on growth and development of the pelvis or the ovaries, fallopian tubes, uterus and adjacent ligaments and soft tissues. The uterus is well protected by the pelvis and firmly anchored by ligaments and is not nearly as susceptible to injury as is the partially filled bladder or the sigmoid region of the colon" p. 330.

Following childbirth, many female athletes have recorded greater personal athletic achievements. The best example is that of the Dutch Olympian, Fanny Blanker Koen, in the 1948 Olympic games. In her seven days of competition, she ran a total of eleven races, winning them all, and in the process won four gold medals. Then she was thirty years old and the mother of two children. In the 1974 AAU women's marathon, the top two finishers were Judy Ikenberry and Marilyn Paul. Both women were mothers at the time of that marathon (Alfred, 1984).

Cases have been known especially in former East Germany where athletes have been impregnated during training. They are then rigorously trained until four to five months to the competition when the foetae are all aborted and the women continued training. Although there is no documentary evidence, these women have been said to perform so well in their respective area of competition. It can be concluded here that limitation on women's responses to strenuous activity and to test of endurance are the more rapid heart rate, fewer blood cells, smaller maximal pulmonary ventilation, lung capacity less than that of males, lower maximal oxygen uptake, and less muscle mass. The latter has an indirect effect on endurance because readily available carbohydrate and glycogen is stored in muscle and in the liver.

Physical performance depends largely on the ability to take in and utilise oxygen. Oxygen consumption depends not only on pulmonary and cardiac function, but also on the transport of oxygen from the lungs to the tissues. The delivery of oxygen from the heart to the lungs depends on haemoglobin, which is synthesised from iron and proteins within the body. It has to be recalled that women have a shortage of the iron, thus making the above processes to happen to a lesser extent.

On the whole, there seems to be no documented reason to restrict the physical activity of women because of the reproductive organs and no need to be concerned about later effects of sports participation on pregnancy, labour, menstruation and well being. This is especially so if the above-mentioned precautions and pieces of advice are adhered to.

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