

Effects of Menarche Age and Monthly Menstruation on Games Performance in Sri Lankan Female Athletes

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Abstract

The object of the study was to identify the effects of menarche age and monthly Menstruation on games performance in Sri Lankan female athletes. 80 Netball players, 75 Sprinters (Athletics), 40 volleyball, and 35 basketball players (total 230) athletes participated in the study. A questionnaire constituted from 14 questions about menstrual cycle applied. A one-way analysis of variance was used to assess differences between sport characteristics. Chi square was used to evaluate the regularity of menstrual cycle and performance. The mean age of Netball, Sprinters, Volleyball and basketball players were 20.70 ± 0.30 , 15.30 ± 0.21 , 20.21 ± 0.25 , 20.01 ± 0.64 years, respectively. The menarche ages of the female athletes were 13.65, 13.41, 13.78, 13.92 years, respectively. 19.8% participated in provincial competitions, 41.1% participated in the national competitions, and 15.2% participated in the international (Overseas) competitions. According to the analysis most of the athletes get used drugs (Medicine) without the permission of doctors during their menstruation because of the unbearable pain. Most of the athletes said that their pain will gradually reduce when they are engaging in sports training. Both in general and during the training the menstruation period of the athletes was found to be regular ($p < .01$). Most of the athletes said that they have a painful menstruation period, and during the competition their pain gradually decreased. As a result of the questionnaire, during the training and competition the number of athletes that did not use drugs were higher than the athletes that used drug ($p < .01$). The number of athletes that felt good before and during the menstruation were significantly higher ($p < .05$, $p < .01$). It has been concluded that the menarche age was high in the athletes. It has found that the physical performance was not affected by the menstrual period and the pain gradually decreased during the training and competition. Also, all the athletes feel well during their training and competition period than their normal days.

Key Words: Menstruation cycle, Menarche age, Sports Performance

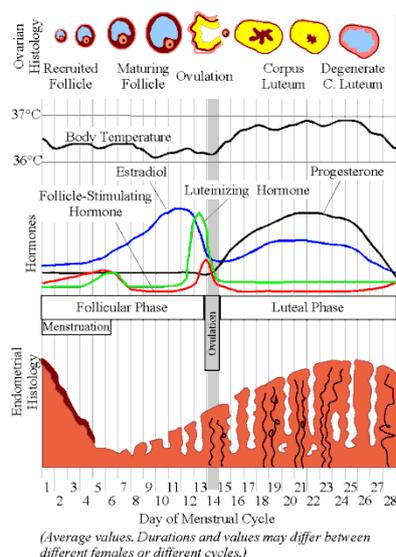
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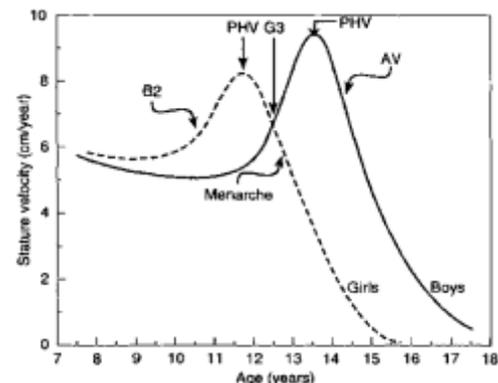
I. Introduction

Menarche and menstruation

The female reproductive life cycle is one of the most important biological rhythms. From prepuberty through to menarche, conception, pregnancy, the postpartum period, menopause, and beyond, the female athlete



is exposed to a constantly shifting kaleidoscope of endogenous sex steroid hormones. Although estrogen and progesterone are the most important in terms of their actions on the various body systems. Menarche defines the onset of menstruation, which is a normal physiologic process that occurs at regular monthly intervals. Menarche typically occurs around age 12 but a few years earlier or later is completely normal. Menarche happens during a time of physical and sexual maturation in adolescence known as puberty.



Menstrual cycle or periods is a natural biological process that happens in females. It is a series of changes that occurs in your body to prepare

for a possible pregnancy and involves an interplay of hormones like estrogen and progesterone. Controlled by rise and fall of hormones, a normal menstrual cycle is about 28 days long and has four main phases. The length of the menstrual cycle may be longer or shorter in some women. Usually periods start between the age of twelve and fifteen and it is called as menarch. In some cases, menstruation can start as early as eight. Woman stop menstruation between 45 and 55 and it is called as menopause. During a normal period, the bleeding usually lasts for about two to seven days.

Sport performance

Sport performance is the manner in which sport participation is measured. It is complex mixture of biomechanical function, emotional factors, and training techniques, skills and combination of body will and mind. Performance in an athletic context has a popular connotation of representing the pursuit of excellence & fair play, where an athlete measures his or her performance as a progression toward excellence or achievement. There is an understanding in sport that athletes interested in performance tend to the competitive or elite level; athletes interested in simple participation, for broader purposes such as fitness or weight control, are most often recreational athletes who do not set specific performance goals.

In those activities where the result is measurable and defined, such as a race, a jump, or an object to be thrown, movements the end result is quantifiable. In these sports, it is the quest for performance improvement that drives the analysis of the individual components of performance. When an athlete and the coach can isolate areas on which to focus in training, the ultimate result is likely to be improved. Sport performance has four main aspects, each of which has a number of subcategories, some of which are rooted in physical certainty, others of which tend to the highly variable. The four areas include neuromuscular factors, the relationship between the nervous system and its dimensions and the musculoskeletal system; mental control and psychological factors; environmental conditions; and coaching and external support for the athlete.

II. Materials And Methods

Subjects; 230 female athletes consented to participate in the study; all members in Sri Lanka during the 2019–2020 seasons (for Netball, n = 80; for Sprinters, n = 75; for volleyball n = 40, and for basketball, n = 35). Their age ranged from 16 to 28.

Assessment of Body Mass; Weight was measured using a weight scale. The subjects were weighted wearing thin shorts and a skinner, and without shoes and sox. Height was measured using a stadiometer. The body mass index (BMI) was calculated by the formula $BMI = \text{weight (kg)}/\text{height}^2 \text{ (m)}$. A questionnaire consisting of 20 questions.

Statistical Analyses; Means and standard errors were calculated for each sport. ANOVA and Scheffe tests were used to determine possible significant physical and physiological differences among the sports branches. Chi-square was used to evaluate regularity of menstrual cycle, performance, and drug taking. Values are expressed as means ± Standard Error.

III. Results

The mean age of Netball, Sprinters, Volleyball and basketball players were 20.70 ± 0.30 , 15.30 ± 0.21 , 20.21 ± 0.25 , 20.01 ± 0.64 years, respectively. The menarche ages of the female athletes were 13.65, 13.41, 13.78, 13.92 years, respectively. 19.8% participated in provincial competitions, 41.1% participated in the national competitions, and 15.2% participated in the international (Overseas) competitions.

Parameters	
1	Age (Years)
2	Weight
3	Height
4	BMI
5	Menarche age (year)
6	Number of weekly training
7	Duration of daily training
8	Participation in training during mens.
9	Participation in competition during mens.
10	Feeling pain during mens.
11	Using drugs during training
12	Using drugs during competition
13	Feeling good among mens.
14	Period of feeling worse

The answers given to survey questions and % values		
1	General menstruation situation	Regular Irregular Sometimes irregular
2	Pain situation of menstruation	Painful Sometimes painful Sometimes painful
3	Using medicine at exercise	Yes No Sometimes
4	Using medicine at competition	Yes No Sometimes
5	The effect situation of menstruation on daily life	Doesn't effect Sometimes effects Effects
6	Monthly menstruation situation	Less than 3 days 3-5 days 5-8 days 8-10 days
7	Attending situation at exercise on menstruating phase	I attend I sometimes attend Never attends
8	Attending situation at competition on menstruation phase	I attend I sometimes attend Never attends
9	The situation of feeling herself before menstruating	Very well Well Bad Very bad
10	Feeling situation of herself on menstruating phase	Very well Well Bad Very bad
11	Feeling situation of herself after menstruating phase	Very well Well Bad Very bad
12	At which phase of menstruation your acts are comfortable	At the beginning In the middle At the end From beginning till the end
13	The term in which your performance enhanced	At the beginning In the middle At the end From beginning till the end
14	Being effected of physical performance at menstruation phase	Negative Sometimes negative Sometimes positive Positive

IV. Discussion

It has been determined that women who started exercising earlier (Uysal, 1996) had later menarche and increased menstrual disorders in these women. American female athletes start menarche at a significantly higher age than non-athletes. The menarche of high school and college athletes was significantly later than that of non-athletes, and the menarche of national and Olympic athletes was significantly later than that of high school or college athletes.

On the other hand, the age at menarche of Hungarian athletes was found to be little affected by sports competitions (Fox et al., 1988). Although the average age at menarche of Belgian gymnasts is 15.6 ± 2.1 years, the average age at menarche of girls in the general population is 13.2 ± 1.2 years (Claessens et al., 1992). Kovalcikova (1989) studied the menarche age and menstrual cycle status of three groups of top volleyball players and non-athletes.

In some studies, the relationship between menstrual disorders and training intensity and training volume has been determined. 381 girls between the ages of 12 and 19 who were engaged in competitive sports (track and field, basketball, dance, gymnastics, swimming, skiing, tennis, volleyball) were examined. Delayed menarche and menstrual disturbances have been found in athletes to be more frequent, which turned out to be proportional to the amount of time spent in training and the type of exercise performed (Trivelli et al., 1995). In a study, 155 Nigerian athletes aged 13-19 and 135 non-athletes aged 12-18 were compared on menstrual function in different categories. They answered questionnaires and were interviewed. Compared with athletes (21%), non-athletes (44%) have more regular and normal menstruation (Triola, 1988).

References

- [1]. Fox, L. E., Bowers, R. W., & Foss, M. L. (1988). The physiological basis of physical education and athletics, U.S.A. 379–386, 553–569.
- [2]. Fraccaroli, G. (1980). Sports performance of women during the menstrual cycle. *Minerva Medica*, 71(48), 3557–3566.
- [3]. Hoeger, W. W. K., & Hoeger, S. A. (1990). *Fitness and wellness*. Boise: State University. Morton Publishing Company, p. 175.
- [4]. Reer R 1992. Physiologische und Medizinische Aspekte des Trainings und der Traininstherapie. Institut für Sport- und Bewegungsmedizin Universität Ham- burg.
- [5]. Sevim Y 1997. *Exercise Knowledge*. Ankara: Gazi Bu- reau Bookstore.
- [6]. Uysal GF 1996. *Women Athletes and Their Problems*. SESAM Academic Activities 1995-1996. Ankara. Warren MP, Perloth NE 2001. The effects of intense exercise on the female reproductive system. *J Endocrinol*, 170: 3-11.
- [8]. Kronisch RL, Pfeiffer RP, Chow TK, et al. Gender differences in acute mountain bike racing injuries. *Clin J Sport Med* 2002;12:158–64.
- [9]. Erdelyi G. Gynecological survey of female athletes. *J Sports Med Phys Fitness* 1962;2:174 – 9.
- [10]. Myklebust G, Maehlum S, Engebretsen L, et al. Registration of cruciate ligament injuries in Norwegian top level team handball. A prospective study covering two seasons. *Scand J Med Sci Sports* 1997;7:289–92.
- [11]. Kimberly, M., & Fagon, M. D. (1998). Pharmacologic management of athletic amenorrhea. *Clinics in Sports Medicine*, 17(2), 327–338.
- [12]. Kin, A., Yegu1I., & C, illi, M. (2000). Sporcu olan ve olmayan bayanlarda menstruasuyona
- [13]. ilişkin bazı özelliklerin karşılaştırılması. Gazi Beden Eğitimi ve Spor Bilimleri 1.
- [14]. Kongresi Bildirileri, 22–26 May, pp. 159–164.
- [15]. Quadagno, D., Faquin, L., Lim, G. N., Kuminka, W., & Moffet, R. (1991). The menstrual cycle: Does it affect athletic performance? *The Physician and Sports Medicine*, 19(3), 121–124.
- [16]. Carl EK, Daniel DA 1977. *Training For Girls and Women*. Modern Principles of Athletic Training. 4th Edition. Saintluis, USA: The C.W. Mosby Company.
- [17]. Colakoglu, FF, Can B, Ersoz G 2005. The evaluation of the women volleyball players' menstrual situations playing 2002-2003 away game Turkey Volleyball 1. League. *Gazi Physical Education and Sports Sciences Journal*, X(1): 51-64.
- [18]. Di Cagno A, Marchetti M, Battaglia C, Giombini A, Calcagno G, Fiorilli G 2012. Is menstrual delay a serious problem for elite rhythmic gymnasts? *The Journal of Sports Medicine and Physical. Fitness*, 52(6): 647-53.
- [19]. Wojtys EM, Huston LJ, Lindenfeld TN, et al. Association between the menstrual cycle and anterior cruciate ligament injuries in female athletes. *Am J Sports Med* 1998;26:614–9.
- [20]. Slauterbeck JR, Fuzie SF, Smith MP, et al. The menstrual cycle, sex hormones, and anterior cruciate ligament injury. *J Athl Train* 2002;37:275–80.
- [21]. Moller-Nielsen J, Hammar M. Women's soccer injuries in relation to the menstrual cycle and oral contraceptive use. *Med Sci Sports Exerc* 1989;21:126–9.
- [22]. Wojtys EM, Huston LJ, Boynton MD, et al. The effect of the menstrual cycle on anterior cruciate ligament injuries in women as determined by hormone levels. *Am J Sports Med* 2002;30(2):182 – 8.

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