

Influence of moderate physical activity, including physical activity during menstruation, on the course of menstrual cycle among nullipara – an attempt to evaluate

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Original article

Abstract

This study is specifically concerned with the effect of regular physical activity during menstruation on the course of menstrual cycle among nullipara. Based on the author's questionnaire, the 152 women participating in the study were divided into three groups A, B and C – depending on their level of physical activity. The physical activity at a moderate level does not significantly affect the regularity of menstrual cycles. The cultivation of moderate physical activity during menstruation does not significantly affect the duration of bleeding. Moderate physical activity is irrelevant to the abundance of menstrual bleeding. Moderate physical activity has no significant effect on menstrual pain and its duration. Women who are physically active at a moderate level throughout their menstrual cycle are less likely to experience symptoms of premenstrual syndrome (PMS) than women who are only physically active outside of menstruation and are not physically active, which may indicate that moderate physical activity during menstruation prevents symptoms of premenstrual tension syndrome. Based on the results achieved, it is not possible to clearly determine the relevance of promoting moderate physical activity, with particular emphasis on that during menstruation, among women. The study needs to be continued with particular attention paid to physical activity during the day, the influence of environmental factors and stress on the examined women, and with attention paid to the intensity of pain accompanying bleeding. However, it can be assumed that there is no justification for limiting physical activity during the menstrual bleeding phase.

Keywords

- physical activity
- menstruation
- period
- moderate physical activity

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Article info

Article history

- Received: 2020-11-10
- Accepted: 2021-09-08
- Published: 2021-09-23

Publisher

University of Applied Sciences in Tarnow
ul. Mickiewicza 8, 33-100 Tarnow, Poland

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Financing

This research did not received any grants from public, commercial or non-profit organizations.

Conflict of interest

None declared.

Introduction

From the first hormonal changes (the beginning of puberty) to the period of menopause, every month a healthy non-pregnant woman is accompanied by a menstrual cycle and menstrual bleeding. Every menstrual cycle is different – they differ both in the abundance of bleeding, the duration of bleeding and in peri-menstrual disorders. The most common menstrual disorders include premenstrual syndrome and dysmenorrhea (painful periods) [1].

A 2013 study showed that 70% of women suffering from dysmenorrhea seek help on their own, and up to 83% of women choose non-pharmacological means of assistance. Dietary supplements, a hot-water bottle and heat, or exercise were among the ways mentioned to manage pain [2].

Research to date shows that aerobic exercise is not indifferent to symptoms suggestive of PMS (premenstrual syndrome). Indeed, physical activity significantly reduces both psychological and physical symptoms of this condition [3]. The higher the level of physical activity, the greater the likelihood of irregular periods, the longer the bleeding phase and the shorter the menstrual cycles, especially in women under the age of 30 [4].

Despite so many reports on the impact of physical activity on the menstrual cycle (both positive and negative), there are very few studies that distinguish between the physical activity of women in the study and activity throughout the cycle, or activity excluding the bleeding period. The scientific studies conducted so far present different approaches to the topic of the influence of physical activity on menstruation. The lack of a consistent recommendation on the topic of physical activity in menstruation led the author to undertake this topic of research with particular attention to the distinction between activity dependent on continued activity through all the phases of the menstrual cycle and activity excluding the bleeding phase.

Material and methods

The study was joined by 355 women, of whom only 152 met the inclusion criteria adopted at the beginning of the study. Selected respondents were then divided into 3 groups:

1. study group A – women practicing the entire length of their menstrual cycle;
2. study group B – women exercising outside the period of menstruation;
3. control group C – non-exercising women (Tab. 1).

Table 1. Number of individual groups qualified for the study

Group	N	%
A	48	31,6
B	20	13,1
C	84	55,3
Total	152	100

Criteria for inclusion:

- between 16 to 35 years old;
- normal body weight (according to BMI classification);
- not pregnant in the past and during the study;
- sustained menstrual cycle;
- no use of chronic drugs (including hormone therapy);
- no anatomical or pelvic pathologies;
- no drastic diets in the last 6 months.

The average age of the surveyed women was 21.9 (± 3.9) years. The majority of women lived in the town (76.3%) and had higher education (62%). The somatic characteristics of each group were very similar. The mean body weight of women in group A was 59 (± 6.8) kg, with a height of 167 (± 6.9) cm. In group B, the mean body weight was 58 (± 5.5) kg, with a height of 165 (± 4.7) cm. In the control group, body weight was 58 (± 6.6) kg, with a height of 166 (± 5.3) cm.

The study assumed that moderate physical activity means recreational exercises performed:

- d) at least 2-3 times a week at once over 15 minutes, subjectively experienced as moderate exercises;
- e) at least 2-3 times a week at once over 30 minutes, subjectively experienced as light exercises.

The survey was conducted in the period from January to February 2020 by electronic means – through social media. The questionnaire was the author's own questionnaire, consisting of five sections. The first section asked about the selection criteria for the study. The second section was common to all three groups – it concerned body weight, height, education, and additionally it asked whether the woman was or was not active, which made it possible to determine which further questions should be asked to the respondent. The third section referred to the gynecological profile and was common to all women – it included questions about the course of the menstrual cycle (e.g. duration of the cycle, abundance of bleeding, coexisting pain complaints). The fourth section was exclusively for women in groups

A and B (physically active) and concerned the level of physical activity. The last section was addressed exclusively to women from group A and determined, among other things, the subjective feelings of exercising women during bleeding.

The JASP version 0.12 was used to determine standard deviation, mean, percentage changes and Pearson's chi-squared test. The statistical significance level was assumed to be $\alpha < 0.05$.

Results

Among the activities chosen by physically active ladies, the following were of particular interest: aerobic exercises at home (19%), walks (19%), cycling (10%), running (10%) and yoga (10%). The advantage of aerobic exercises over strength exercises was observed (Fig. 1).

Most menstrual cycles lasted from 28 to 30 days (38%). Ladies in group A least frequently experienced irregular menstrual cycles (20%) ($p > 0.05$), comparing the result to the control group, in which the frequency of irregular periods was the highest. Differences in

the duration of irregular menstrual cycles (28%) were no longer than 7 days (Fig. 2). Menstruation of the respondents lasted from 4 to 7 days ($p > 0.05$) (Tab. 2). The monthly bleeding in each of the three groups was most often described as moderate (67%) ($p > 0.5$).

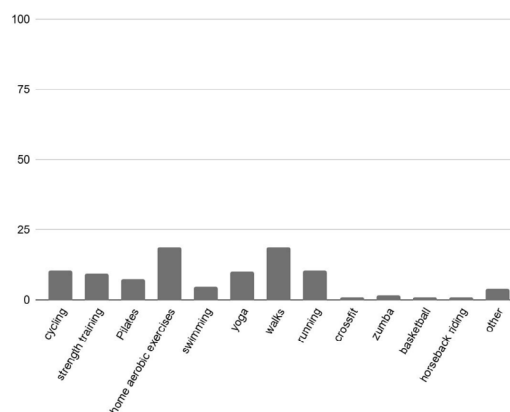


Figure 1. Preferred physical activity*

* The sum does not equal 100, because it was a multiple-choice question.

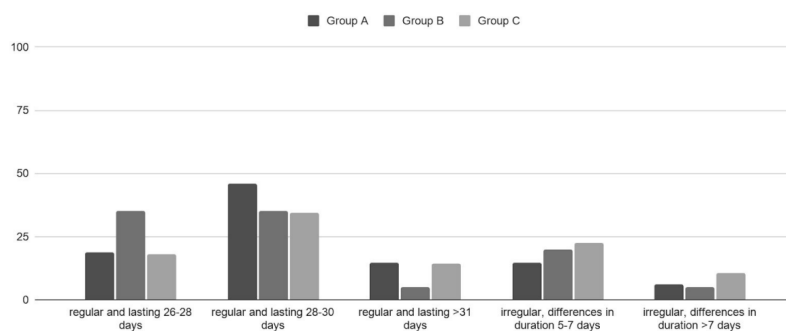


Figure 2. Length and regularity of menstrual cycles

Table 2. Duration of menstruation

What is the average duration of menstruation?	Group A		Group B		Group C		Total	
	N	%	N	%	N	%	N	%
< 3 days	0	0	1	5	3	3,6	4	2.6
4-7 days	44	91.7	19	95	75	89.3	138	90.8
> 7 days	4	8.3	0	0	6	7.1	10	6.6

During the period, ladies used the menstrual cups least frequently (14%) - mainly ladies with moderate bleeding (9%). The symptoms accompanying menstruation occurred in group A - 89%, in group B - 95%, and in group C - in 96% of women ($p > 0.05$). Among the reported symptoms abdominal pain (41%) and diarrhea were the most common (16%) (Fig. 3).

The duration of the disorder was no longer than 2 days in each group ($p > 0.05$). Dysmenorrhea symptoms had the least effect on absence at work/school in group A ($\chi^2 = 6.97$; $p = 0.03$). Group B was more likely to be absent from school/work due to menstrual symptoms than the control group (Tab. 3).

Nearly 80% of women experienced discomfort a few days before the bleeding suggesting premenstrual tension syndrome. More than half (53%) of those that do not show the symptoms of PMS belonged to group A ($\chi^2 = 8.71$; $p = 0.01$) (Fig. 4).

Pain was the most frequently indicated reason for giving up exercise during menstruation in group B. Women who have experienced symptoms less frequently since they exercise (37%) - usually reported abdominal and limb pain reduction (72%).

A significant part of respondents had no contact with a urogynecological physiotherapist before (84%).

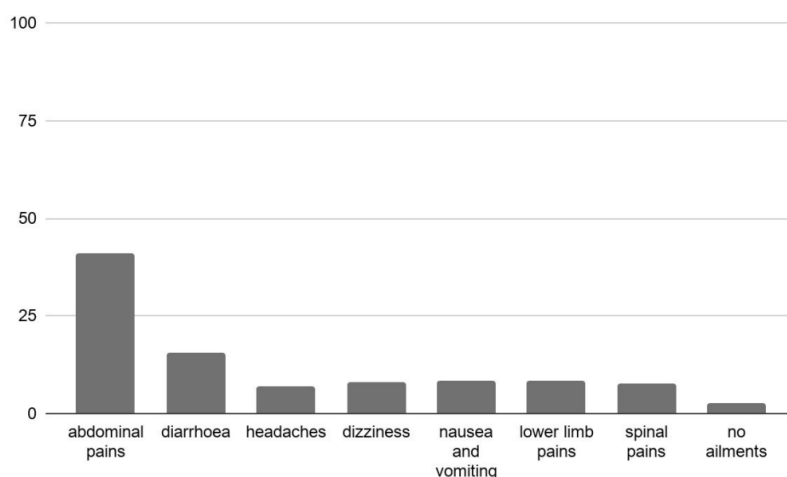


Figure 3. Symptoms accompanying menstruation*

* The sum does not equal 100, because it was a multiple-choice question.

Table 3. Absence at work/school during menstruation

Do you ever quit your day at work/school because of your menstruation and the ailments associated with it?	Group A		Group B		Group C		Total	
	N	%	N	%	N	%	N	%
Yes	6	12.5	8	40	24	28.6	38	25
No	42	87.5	12	60	60	71.4	114	75

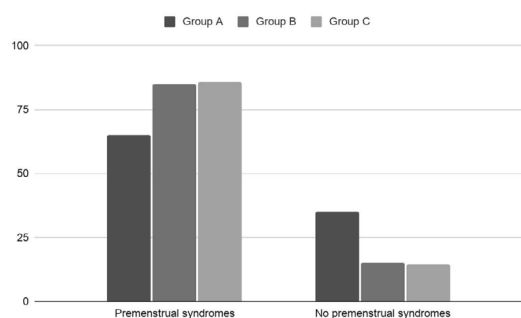


Figure 4. Premenstrual syndrome

Discussion

Irregularity of menstrual cycles is a common disorder in physically active women. It should be noted that in the history of research on the relationship between physical activity and regularity of the menstrual cycle, exercises were most often performed on a professional level or were oriented towards endurance [5,6]. Although among the scientific output we can find work carried out on women who practice sport only as amateurs and report that physical activity contributes to reducing oligomenorrhea (excessively long menstrual cycles) [7]. Physical activity is not the only stressful factor that leads to changes in a woman's hormonal system. It is often associated with patterns of dietary decisions or mental health [8-10]. The survey did not reveal any significant abnormalities in menstrual bleeding. The smallest percentage of irregularly menstruating women belonged to group A (20%) ($p > 0.05$). Most of the ladies described the intensity of their bleeding as moderate. The length of bleeding in each group was between 4 and 7 days ($p > 0.05$).

According to the summaries of studies by various authors, dysmenorrhea affects even 9 out of 10 women [11,12]. Research to date confirms the positive effect of physical activity on dysmenorrhea [13,14]. In our study, the percentage of women experiencing pain varied from 89-96%, and the group experiencing the least symptoms was physically active during the whole menstrual cycle ($p > 0,05$). The symptoms usually included abdominal pain and diarrhea, lasting for 1-2 days. The study showed that 25% of the women participating in the study are not present in day-to-day duties at the time of the discomfort. When analysing the impact of the symptoms on school/work absence, it was noted that the group that used the day off the most rarely at that time was group A ($\chi^2 = 6.97$; $p = 0.03$). This may suggest that although the physical activity undertaken

did not significantly affect the occurrence of symptoms, it could affect the scale of their intensity.

An argument in favour of the presence of a beneficial effect of physical activity on the symptoms of premenstrual syndrome may be, for example, the role of exercise in stimulating brain neuroplasticity, which, according to research, could explain the possibility of regulating sadness [15]. Among the respondents, almost 80% of women experienced conditions that could suggest symptoms of PMS (premenstrual syndrome). Ladies in group A were the least likely to notice ailments occurring a few days before planned menstrual bleeding ($\chi^2 = 8.71$; $p = 0.01$).

The division of the groups created for this work was not ideal, because it did not take under consideration the variety of exercises undertaken and their intensity. Thus, in the group of exercising women there were ladies practicing less often, but longer and ladies practicing more often, but shorter. Therefore, it is recommended to conduct further research with the indication of using more objective methods in the context of classifying women into groups with different levels of physical activity. It may also be important to extend the survey with questions about the severity of pain during menstruation for example, to further evaluate the relationship between absence and physical activity of women, as well as to study the impact of environmental factors and stress levels.

Conclusions

1. Women who are physically active at a moderate level throughout the entire menstrual cycle are less likely to experience symptoms of premenstrual syndrome compared to women who are only physically active outside menstruation and physically inactive, which might suggest that moderate physical activity performed during menstruation can be helpful in the prevention of PMS.
2. Physical activity at a moderate level does not significantly affect the regularity of menstrual cycles, the duration and intensity of bleeding.
3. Moderate physical activity has no significant effect on symptoms related to menstruation and the duration of their persistence.

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