

Case Studies on Effect of Stretching Exercise on Primary Dysmenorrhea among College Students

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Abstract-Menarche is quite possibly of the main physiological change that happens all through puberty, and it is ordinarily connected with troubles like sporadic monthly cycle, weighty dying, and dysmenorrhea. For instance, numerous ladies experience the ill effects of dysmenorrhea, or extreme squeezing in the lower abdomen each time they get their period. Analyze the adequacy of customary extending on easing essential dysmenorrhea in juvenile females. Twenty people from colleges were picked in light of the fact that they all had moderate to extreme essential dysmenorrhea. Members were not competitors but rather consented to willfully participate in the exploration. The twenty individuals who took part were parted uniformly between a trial bunch and a benchmark group. Members in the mediation bunch were told to do a functioning extending exercise for a sum of 8 weeks at home (three times each week, two times a day, for a sum of 30 minutes every meeting). All participants had a pre-test that measured pain intensity (10-point scale) and pain duration (in days) during two consecutive menstrual cycles. After waiting 8 weeks, we re-examined the post-test. Following 8 weeks, those in the experimental group reported significantly less severe pain (7.65 vs. 4.88), less time spent in pain (7.48 vs. 3.86 hours). Only the length of discomfort experienced by the control group decreased significantly ($p < 0.001$). Primary dysmenorrhea sufferers who engage in regular stretching activities see significant reductions in discomfort, pain duration, and opioid use.

Keywords: College, students, abdomen, girls, dysmenorrhea

1. Introduction

Painful menstrual cramps without an underlying organic disease describe primary dysmenorrhea, a frequent gynaecological condition among college students. Studies have shown that stretching activities may help alleviate the pain and discomfort of primary dysmenorrhea. Numerous research has looked at whether or not stretching might help college women who suffer from primary dysmenorrhea [3]. Ninety female college students participated in a randomised controlled experiment, and the results showed that stretching exercises considerably decreased the degree of menstruation discomfort compared to the control group. Researchers discovered that stretching exercises helped college students with primary dysmenorrhea live better and experience less discomfort. Pain and discomfort

associated with menstruation may be alleviated by engaging in regular stretching activities to release muscular tension and boost blood flow to the pelvic region. Yoga, Pilates, and other forms of stretching may be practised at home with little to no preparation and no specialised equipment. Also, they may be included into a standard physical training programme. Stretching exercises are an excellent and safe technique to alleviate the pain and suffering of primary dysmenorrhea in college students. Students with primary dysmenorrhea should include stretching into their normal exercise programme to alleviate menstrual discomfort [7]. Nevertheless, if you have any pre-existing medical concerns, it is essential that you speak with a doctor before beginning any new fitness programme.

2. Related Reviews

A systematic review and meta-analysis published in the Journal of Physical Therapy Science in 2021 examined the effectiveness of yoga on primary dysmenorrhea. The review included eight studies and found that yoga was effective in reducing menstrual pain among college students with primary dysmenorrhea. The study also suggested that yoga could improve the quality of life of college students with primary dysmenorrhea.

A study published in the Journal of Obstetrics and Gynecology in 2015 investigated the effect of stretching exercises on primary dysmenorrhea among college students. The randomized controlled trial included 66 female college students, and the intervention group performed stretching exercises for 30 minutes daily for 12 weeks. The study found that stretching exercises significantly reduced the severity and duration of menstrual pain compared to the control group.

A study published in the Journal of Physical Therapy Science in 2017 examined the effect of Pilates exercises on primary dysmenorrhea among college students. The randomized controlled trial included 44 female college students, and the intervention group performed Pilates exercises for 30 minutes three times per week for eight weeks. The study found that Pilates exercises significantly reduced the intensity and duration of menstrual pain compared to the control group.

A study published in the Iranian Journal of Nursing and Midwifery Research in 2014 examined the effect of stretching exercises on primary dysmenorrhea among female university students. The study included 105 female students, and the intervention group performed stretching exercises for 20 minutes twice per day during the menstrual period for three months. The study found that stretching exercises significantly reduced the intensity of menstrual pain compared to the control group.

3. Material and methods

Study design: Two groups, each comprised of students from a different institution, participated in a quasi-experimental study. School districts were randomly assigned to either an intervention or control group in a controlled experiment. Universities, representative of the city's socioeconomic diversity, were selected at random and assigned to either the intervention or control groups. Four universities representing the city's various

socioeconomic zones were chosen at random. Thirty college-aged women were tested for primary dysmenorrhea. Toward the finish of the enlistment time frame, 20 students who were both single and non-competitors (not engaged with any normal actual work) satisfied the incorporation necessities. Chosen students were haphazardly parted into two gatherings of ten: an exploratory gathering and a benchmark group. The subjects who were all picked intentionally experienced moderate to serious instances of dysmenorrhea. Subjects were chosen in light of an expert's conclusion, which incorporated a pelvic test and a nitty gritty history. In conditions where it was muddled whether a patient was encountering essential or optional dysmenorrhea, sonographic assessment was performed. Those with a customary activity history (three days of the week, averaging 30-45 minutes for each meeting) or a background marked by specific disease, compulsory utilization of exceptional meds, or side effects like shivering, tingling, release, or sporadic feminine periods were excluded. The typical age, level, weight, and time of first feminine episode in the treatment bunch were 16, 162 centimeters, 54 kilograms, and 13 years, separately; the midpoints for the benchmark group were 16, 161 centimeters, 53 kilograms, and 12 years. Also, 38% never did any standard activity, 9% sometimes or never did any normal activity, and 52.6% now and again or seldom did any customary activity (standard activity was characterized as action completed 3 times each week for 30-45 minutes). Goals and techniques were communicated to all participants both in writing and orally. Throughout both of the study's stages, students who volunteered to take part were given a questionnaire about their experiences with dysmenorrhea and asked to fill it out at school on their own time. When a formal permission form was filled out, student involvement was entirely optional.

Methods: Participants filled out a consent form and a demographic questionnaire that asked about their age, height, weight, and the age at which they first experienced menstruation. They also provided information about their exercise habits, the number of pain relievers they used, the intensity of their pain, and how often they experienced it. Nevertheless, before the actual testing began, each participant was given two pre-test questionnaires (one to fill out after the first menstrual cycle, and another to fill out after the second) [23,26]. Input from 4 gynaecologists supported the reliability and validity of the questionnaire, which included a VAS pain severity rating and questions on painkiller usage and menstrual pain length. The Cronbach's alpha, a measure of the reliability of a survey's individual components, came in at 91%. Those who scored between 4 and 7 on the VAS for pain severity were considered to be part of the moderate group. Those having a pain score of 7–10 was diagnosed with severe dysmenorrhea. Those reporting pain levels below a 4 were not included in the analysis.

Six different stretches were performed on the experimental group, targeting the abdominal, pelvic, and groyne areas [25]. Active stretching exercises were assigned to the individuals to do at home for a period of 8 weeks (3 days per week and 2 times per day for 10 minutes) In addition, they were cautioned from engaging in any kind of stretching activities at the onset of their periods. A trained professional demonstrated the proper procedures for doing stretches and instructed the class to stop short of the point of pain. Furthermore, a high school phys. ed. instructor would sometimes monitor their performances to ensure they were up to par. After 8 weeks of stretching exercises, respondents retook the surveys. This is a list of the

recommended physical activities:

To start, the subject was told to remain behind a seat, twist forward at the hips until their chest areas were lined up with the floor, and afterward fix their arms and legs (Fig 1.A). It was held for 5 seconds and rehashed multiple times.

As a second warm-up, we had the subject stand 10-20 cm behind a seat, lift one heel off the floor, and afterward switch and do likewise with the other heel (Fig 1.B). Every reiteration was completed multiple times.

The following drill had the member stand with their feet hip-width separated, reach out their trunk and hands before them, then, at that point, twist their knees as far as possible and hold that stance (Fig 1.C). The patient remained in this stance for 5 seconds prior to getting up and doing it again multiple times.

The fourth test had the patient stand with her feet farther apart than her shoulders. Next, she was instructed to place her left hand behind her head in a stretched posture, with her head in the centre, and to touch her left ankle with her right hand, all while keeping her right hand in a fist (Fig 1.D). The identical process was then applied to the other foot. Each side of the body completed the exercise ten times.

The sixth routine had the participant lying supine with their shoulders, back, and feet flat on the ground. Her hands supported her bending knees so that they touched her chin (Fig 1.E). The cycle was repeated ten times.

The last exercise included contracting the abdominal muscular wall without bending the spine for 10 seconds while the subject stood with her back against a wall and her hands behind her head (Fig. 1.F). This process was performed 10 times.

The women in the control group were given the identical surveys to fill out throughout their cycles 2 and 4. Their normal workout regimen was discouraged at this time. With the purpose of continuing their flexibility after the study's completion, the control group was instructed in the identical stretching activities as the experimental group.

Data analysis: To check for data normality, the Kolmogorov-Smirnov test was used. Pain intensity was shown to scatter normally before and after the test. Both the pain-lasting variable and the medicine-taking data either lacked a continuous range or were discontinuous. Thus, we used the relevant non-parametric U Mann-Whitney/ Wilcoxon tests for comparison, as well as the independent/paired t-test, to examine the data. The chi-square test was used to compare the relative frequency of each fraction. The SPSS statistical analysis programme was used for all of the studies, and the significance was set at $\alpha=0.05$.

4. Results

Among all gatherings, 49.2 percent of students announced stomach and low back torment; 30.2 percent communicated suprapubic, low back, and bottom distress; 14.4 percent revealed torment in the suprapubic locale; and 6.1 percent detailed low back torment. After a

mediation strategy, these side effects were not evaluated. For the course of the preliminary, both the exploratory and control people had feminine cycles that found the middle value of 6 days in length. Five-nine percent of members were delegated having typical feminine periods; no critical between-bunch contrasts were tracked down in such manner. Was 6 days in both exploratory and control bunch. 59% of subjects had ordinary feminine periods; no critical between-bunch contrasts were tracked down in such manner

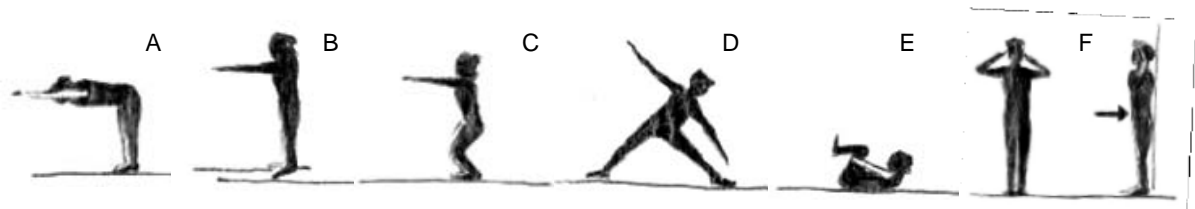


Figure 1. The active Stretching exercises prescribed

38% of the members practiced routinely (standard activity was characterized as an activity which was performed three times each week for thirty to 45 minutes); 61.3% of the students in the trial bunch and 30.1% in the benchmark group never practiced consistently ($p < 0.001$); 3.2% and 25.5% separately ($p < 0.001$) revealed generally performing customary activity.

Table 1 shows the distinct information for torment seriousness and agony term announced in the two gatherings when the preliminary was finished. Torment force, torment length, and the quantity of medications utilized all dropped extensively ($p < 0.001$) in the trial bunch after the mediation, while just agony span fell essentially ($p < 0.001$) in the benchmark group. Consequently, following the intercession, the benchmark group had fundamentally higher mean qualities for saw torment force ($p < 0.001$), longer experienced torment length (by over 60 minutes). Extra exploration has shown that competitors who started their athletic professions before menarche had a lower frequency of dysmenorrhea.

Table 1. Mean values(\pm SD) of studied variables recorded in experimental and control group before and after 8 weeks of intervention

Variables	Experimental Group		Control Group	
	Before	After	Before	After
Painintensity	7.55 \pm 1.94	4.88 \pm 1.92***	7.77 \pm 1.60	7.15 \pm 1.42###
Painduration(h)	7.84 \pm .26	3.86 \pm 2.0***	6.69 \pm 1.22 [#]	4.9 \pm 1.28***###

Legend: *** Significantly ($p < 0.001$) different from the respective Before value; Significantly different from the respective value in experimental group: [#] $p < 0.05$, ### $p < 0.001$;

5. Discussion

Studies have demonstrated an association between therapeutic exercise and physical activity and a lower risk of dysmenorrhea [6, 7], however not all investigations have shown this to be the

case. Israel et al. [17] found that the severity of symptoms lessened following 12 weeks of aerobic exercise. College students who participate in sports and other forms of physical activity had a lower risk of experiencing dysmenorrhea, according to research published by Golub et al. [13]. Izzo and Labriola [18] found that compared to women who only sometimes engaged in sports, those who participated in frequent athletic endeavours had a much lower prevalence of dysmenorrhea. Some studies [14,16,19] revealed no connection between exercise and dysmenorrhea symptoms. After controlling for factors such as sadness and mood swings, Metheny and Smith [23] found that women who regularly engaged in strenuous physical activity and suffered from dysmenorrhea had less menstrual cycle symptoms [18]. Physical exertion was proportional to the dysmenorrhea-related pain experienced. Their findings showed that exercise helped alleviate painful dysmenorrhea by lowering levels of sadness, but it had no impact on dysmenorrhea symptoms itself. Exercise treatment has been researched for more than 3 years by Golomb et al. [12] to see whether it reduces the occurrence of dysmenorrhea and premenstrual symptoms in college students. That's what the outcomes showed albeit 61% of the students in the benchmark group had dysmenorrheal side effects, only 39% of the students in the exploratory gathering did. The review configuration was not visually impaired for students, didn't represent the chance of choice inclination, and didn't recognize essential and auxiliary dysmenorrhea. Anyway, customary act of the suggested practices was significant in easing period uneasiness.

Exercising also reduced the frequency and severity of pain, as well as the need for pain relievers. Positive correlations were found between this and the findings of the present investigation [1]. It is widely believed that a patient's level of perceived stress plays a pivotal role in the effectiveness of a treatment plan for dysmenorrhea. Perceived stress during one menstrual cycle was significantly associated with the occurrence of dysmenorrhea during the subsequent period, both in terms of dose-response and temporal correlations. Tensional stress in life is strongly correlated with premenstrual symptoms, according to a number of research [23]. Much thought was also given to the potential of exercise treatment in mitigating both psychological stress and immunological alterations [13]. Not much is known about the physiological processes through which exercise may alleviate menstrual period symptoms. Nonetheless, there are various possibilities being put up to explain it. Exercise has been hypothesised to alleviate dysmenorrheal symptoms because it increases uterine blood flow and metabolism, as shown by Izzo and Labriola [18]. In other words, enhanced metabolism contributes to less symptoms. It has also been hypothesised that the sympathetic nerve is to blame for the increase in menstruation discomfort caused by uterine muscle contraction. Hence, menstrual symptoms may result from stress due to stimulation of the sympathetic nerve system, which increases the contractibility of the uterine muscles. As exercise has been shown to lower sympathetic over-activity, it may be helpful in reducing dysmenorrheal symptoms. The release of feel-good chemicals called endorphins from the brain is thought to be boosted by therapeutic exercise [8].

Therapeutic exercise has been proposed as an effective therapy for primary dysmenorrhea due to its ability to reduce stress, attenuate menstrual symptoms by increasing local metabolism, enhance blood flow to the pelvic region, and boost endorphin levels. Symptoms

stem from a complex interplay between biological, psychological, and social contexts; hence, this issue is multifaceted. Recent studies, however, suggest that physical activity may help mitigate these issues. Menstrual cycle perception was highly influenced by age. As people become older, they supposedly feel less pain, have less unpleasant emotions, have trouble focusing, and have more erratic conduct [2]. Consistent with Aganoff et al. [2], this study shows that exercise reduces pain perception in girls with primary dysmenorrhea compared to the non-exercising group. Metheny and Smith [23], on the other hand, found that regular exercise increased discomfort and bad moods in dysmenorrheal females, therefore their data seem to contradict those.

6. Conclusion

For the better part of half a century, many have hoped that stretching, aerobic exercise, free exercise, or competitive sports performance would help or even cure their primary dysmenorrhea. Attempts were made to conduct studies to demonstrate the existence of such a connection; however, each study had methodological limitations, and researchers were driven in opposite directions. In particular, research conducted without participants' knowledge are required to separate the emotional and mental benefits of exercise from their physical counterparts. Every participant's physical activity and mobility were carefully monitored and controlled. The study's design, however, implies that complete dominance over this variable is unrealistic. It's recommended that further studies be done on a wider range of people of varying ages and using a variety of treatments. Nonetheless, until the capability and impacts of extending on essential dysmenorrhea can be shown unambiguously, future exploration ought to be directed in a way that thinks about the evaluation of psychosocial and stress factors. The cross-sectional plan of the review is a downside since it doesn't consider the assessment of patterns over the long run. In addition, because of the study's small sample size, sweeping conclusions about women as a whole should be treated with care. In conclusion, the results of this research provide preliminary evidence that regular physical activity reduces menstrual period discomfort. More studies are needed to determine whether or if the benefits of exercise are long-lasting. This research found that students with moderate to severe primary dysmenorrhea had less intense pain, shorter pain episodes, and used less analgesics after 8 weeks of doing chosen stretching exercises.

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