

# Effect of Bosu Pilates on Primary Dysmenorrhea in Adolescent Girls

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## Abstract

**Background:** Dysmenorrhea is a painful menstruation or a cramp labor like pain in the lower abdomen that radiates to upper abdomen, waist and thighs and sometimes accompanied by systemic symptoms like nausea, vomiting, diarrhea and dizziness. Dysmenorrhea can be treated by various pharmacological and non-pharmacological remedies. Incidence rate of dysmenorrhea among Indian girls is found to be 79.67%. It complicates the lives among adolescents females and affect the quality of life of many women. Pilates exercises is safe, non invasive treatment modality to relief pain of primary dysmenorrhea.

**Objectives:** To study the effect of Bosu Pilates on primary dysmenorrhea in adolescent girls.

**Method:** Ethical clearance was obtained from the institute committee. 25 women were screen from KARAD aged between 18 to 30 years. They were selected according to the inclusion and exclusion criteria. They were allowed to fill the form given which included the scale which rated the working, location, intensity, days of pain in dysmenorrhea. According to which conclusion was made.

**Result:** After analyzing the data there was significant effect of exercises like stretching and core strengthening exercises performed on bosu ball which helped to reduce pain status in primary dysmenorrheal adolescent girls seen on Wong Baker scale ( $p < 0.0001$ ).

**Conclusion:** The study concludes that there was significant effect of bosu pilates on primary dysmenorrhea in adolescent girls.

**Key Words:** primary dysmenorrhea, adolescent girls, bosu pilates, menstruation pain.

## Introduction

Dysmenorrhea is a painful menstruation or a cramp labor like pain in the lower abdomen that radiates to upper abdomen, waist and thighs and sometimes accompanied by systemic symptoms like nausea, vomiting, diarrhea and dizziness.<sup>1</sup>This disease affects 60% of females with systemic symptoms 60% suffer from headache, 80% from low back pain, nausea and vomiting ,50% from diarrhea ,30% from irritability and 45% dynamic.

Dysmenorrhea can be classified into 2 types:

- 1)primary dysmenorrhea
- 2)secondary dysmenorrhea

Primary dysmenorrhea: it's a cramping like pain with menstruation and physical examination is completely normal.<sup>2</sup>

Physiological cause for dysmenorrhea include excessive production of uterine prostaglandin and overall production of vasopressin, a hormone which stimulate uterine muscular contraction. Primary dysmenorrhea usually presents during adolescence within 3years of menarche. It is usually for symptoms to start within the first 6months after menarche.<sup>3</sup>

Affected women experience sharp, intermittent spasms of pain, usually centered in the suprapubic area. Pain may have radiated to back of legs or lower back. Systemic symptoms of nausea, vomiting, diarrhea,

fatigue, fever, headache or light headedness are fairly common. pain usually develops within hrs. to start of menstruation and peaks as the flow becomes heaviest during the first day or two days of the cycle.<sup>4</sup>

The pain experienced by adolescents with dysmenorrhea can be very disabling and consequently affect the person's mood. Previous studies have demonstrated that young population affect by primary dysmenorrhea often is work or school because of discomfort which in turn can have an important social and economic impact.<sup>5</sup> An excess of prostaglandins is liberated during menstruation. It is thought that this may be the cause of incapacitating pain, as an excess of prostaglandins may lead to excessive uterine contractions which, in turn, may result in hypoxia and ischemia of the uterus, and lead to the typical pain.<sup>6</sup> Non-steroidal anti-inflammatory drugs (NSAIDs) are the pharmacological therapy of choice for patients with PD. However, most patients with PD do not seek medical help, or that of other health professionals.<sup>7</sup> Instead, they self-medicate or seek alternative solutions. The continued use of such self-medication without a medical prescription or, at the very least, a professional assessment, can also result in secondary effects.<sup>8,9</sup>

#### **Conventional therapy:**

There has been a major demand for new, complementary or integrative therapies which coexist alongside traditional medicine.

Several studies have proven that different complementary therapies, such as yoga, acupressure or herbal medicine, among others, may contribute towards an improvement in the symptoms of PD and therefore lead to improvements in overall quality of life.<sup>10</sup>

As Bosu Pilates is a technique aiming at working, Strength, stretching, maintaining physiological body curves with abdomen as the strength center which constantly works during all Pilates exercise on bosu ball, which will help to reduce pain with challenge your stability, balance and core strength. Pilates can manage primary dysmenorrhea through stretching and core strengthening exercise.<sup>11,12</sup>

JOSEPH HUMBERTUS PILATES has developed a series of exercises based on progressive movements the body is able to make currently called PILATES. Pilates is beneficial for all ages and ability level because it's a low impact exercise program aiming at core strength,

stability, flexibility, and correct alignment of the pelvic and spine.<sup>11,12</sup>

Each exercise is designed to target a specific muscle and breathing pattern are used to effectively cue the abdominals to support each movement.

Its advantage circulation stimulation and fitness improvement which help to prevent any injuries and provide pain relief with best results.<sup>11,12</sup>

The effect of Pilates was due to increase in the blood flow and metabolism of uterus during exercises on bosu ball which may affect in reduction in symptoms. Pilates decreases this sympathetic activity and release endorphins substances produced by brain and that raise the pain threshold so symptoms are reduced. Contracted ligamentous is band in abdominal region were causative factor for physical compression of nerve pathway and their irritation and so stretching exercises increase core stability improve the symptoms of dysmenorrhea.<sup>11,12</sup>

#### **Aim**

To find the effect of Bosu Pilates on primary dysmenorrhea in adolescent girls.

#### **Objectives**

To determine the effect of Bosu Pilates on primary dysmenorrhea in adolescent girls.

#### **Need For Study**

Primary dysmenorrhea is common in adolescent girls as it can be treated by various pharmacological and non-pharmacology remedies. As Bosu Pilates is a technique aiming at working, Strength, stretching, maintaining physiological body curves with abdomen as the strength center which constantly works during all Pilates exercise on bosu ball, which will help to reduce pain with challenge your stability, balance and core strength. Pilates can manage primary dysmenorrhea through stretching and core strengthening exercise. The effect of Pilates was due to increase in the blood flow and metabolism of uterus during exercises on bosu ball which may affect in reduction in symptoms. Pilates decreases this sympathetic activity and release endorphins substances produced by brain and that raise the pain threshold so symptoms are reduced. Contracted ligamentous is band in abdominal region were causative factor for physical compression of nerve pathway and their irritation and so stretching exercises increase core

stability improve the symptoms of dysmenorrhea.

## Materials and Methods

### Materials Required

-Pen

-Bosu ball

-Mat

### Methodology

Type of study: - experimental study

Study design: - analytic

Type of Sampling Method: - Simple random method

Sample size: -

$$n=4pq/l^2$$

$$4 \times 50 \times 50 / 20^2$$

$$10000 / 400 = 25$$

25 women to be screened from KARAD.

Study duration: - 3 months

Place of study: - Karad.

### Inclusion Criteria

-Females in age group of 18 -30 years diagnosed with primary dysmenorrhea.

-Irregular menstrual cycle.

### Exclusion Criteria

-Females on medications.

-Performing other type of physical activity like swimming, runner etc.

-Other gynecology disorders.

### Outcome Measures

-Wang-Baker scale

### Procedure

The study was conducted among rural areas in and around Karad.

The targeted population was medical students; the

focus of study was to find the effect of Bosu Pilates on primary dysmenorrhea in adolescent girls.

Subjects were selected for study according to inclusion and exclusion criteria

They were evaluated by using self-made evaluation from diagnosing dysmenorrhea. Selected subjects were trained to see the effect of the structured protocol exercises. Treatment duration was 3 times a day for 3 alternative days in a week for 3 weeks and menstrual days were skipped.

Exercises given were:

-One leg rocker:

Sit up tall on your sit bone and extend your legs out about shoulder width apart. Inhale and stretch out through the side of your back. Exhale and reach forward about shoulder height or touch your toes curling your spine. Release and continue.

-Side leg lift:

Lie down on your right side on bosu ball. Body should be in straight line with legs extended and feet stacked on top of each other. Place your arm straight on the ball or bend your elbows. Place your left hand out front for extra support and let it rest on your leg or hip. As you inhale gently raise your left off the lower leg. Stop raising your leg when you feel muscle flex in your lower back or oblique. Inhale and lower the leg back down to meet the right leg start your feet again.

-Supine leg lift:

Lie supine on the bosu ball with hand resting aside. Bend one knee and ground foot on to the mat. Extend the alternate leg long. This is the start position. Lift the extended leg until it aligns with the bend knee and return back to the start position.

-Opposite arm leg reverse crunches

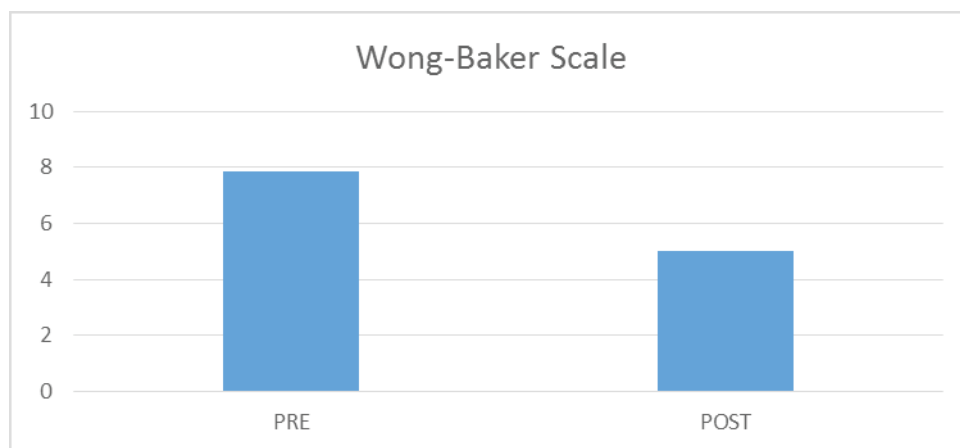
Lie supine on the bosu ball. Place your hand behind your head supporting your neck with your fingers. Have your abs tucked in and the small of your back pushed against the floor. Lift your knee towards the chest while lifting your shoulder blade off the floor. Rotate to the right bring the left elbow towards the right knee as you extend the other leg in to the air.

Hold period: 1 to 2 sec, inhale and return to the starting position. At one time: 10 repetitions of each exercise was performed. The interpretation of the study was done on the basis of comparing pre and post assessment of Wong Baker scale. Thus statistical analysis was done.

**Statistics**

PARAMETERS	PRE	POST	t value	p value	Inference
Wong-Baker Scale	7.84±2.95	5±2.55	11.08	<0.0001	ES

**Table: parameter values**



**Fig: baseline parameters compared between pre and post values**

Above table and graph shows pre and post comparison within the group. Post treatment there was significant improvement noted.

**Discussion**

This study “effect of bosu pilates on primary dysmenorrhea in adolescent girls” was conducted to see the effect of bosu pilates which included one leg rocker, side leg lift, supine leg lift, heel beats, single leg kicks, opposite arm leg reverse cruches in reducing pain symptom among primary dysmenorrhea girls. Primary dysmenorrhea is common in adolescent girls as it can be treated by various pharmacological and non-pharmacology remedies. As Bosu Pilates is a technique aiming at working, Strength, stretching, maintaining physiological body curves with abdomen as the strength center which constantly works during all Pilates exercise on bosu ball, which will help to reduce pain with challenge your stability and balance and core strength and can manage primary dysmenorrhea through stretching and core strengthening exercise . According

to the gate control theory by stimulating large diameter sensory nerve fibres in a dermatomal segment, a blockage or gating affect is established at the dorsal horn level of the spinal cord inhibiting the transmission of pain related impulses. In this way the pain is reduced. So training on bosu ball will help to reduce pain of dysmenorrhea in adolescent girls.

The objectives were to determine the effect of Bosu Pilates on primary dysmenorrhea in adolescent girls. The study was conducted with 25 subjects. Subjects were selected according to the inclusion and exclusion criteria. Inclusion criteria was aged between 18 – 30 yrs, females and with Irregular menstrual cycle. Exclusion criteria was Females on medications and females Performing other type of physical activity like swimming, runner etc and Other gynecology disorders. Prior consent was taken from them. Pre assessment was taken for working ability, location, intensity, days of pain prior intervening with the treatment. The interventions were carried out for 3 days per week for 3 weeks along with 3 times per day.

The outcome measure was Wong-Baker Scale. After 3 weeks post assessment was taken. The results of this study indicate there was significant affect on pain status among primary dysmenorrhea girls. This was confirmed using statistical analysis by using 'Paired t- test'. Pre and post training there was significant improvement noted with structured protocol for pain status among primary dysmenorrhea ( $p < 0.0001$ ) on Wong-Baker scale.

Earlier studies was concluded by Shahr jerdy S, Hosseini RS (2012) titled "effect of stretching exercises on primary dysmenorrhea in adolescent girls". They concluded that there was significant effect of stretching exercises on pain in intensity and duration and reduce the amount of pain killer used in primary dysmenorrhea in adolescent girls.

"A case series on effect of yoga on quality of life and flexibility in menopausal women" was conducted by Mastrangelo MA, Galantino ML, House L (2007) and concluded the effect of pilates was due to increase the blood flow and metabolism of uterus during exercises on bosu ball which made effective in reduction of symptoms. Pilates decreases this sympathetic activity and release androphin substances produced by brain and that raise the pain threshold so symptom are reduced.

"To compare the effect of stretching and core stability exercise in primary dysmenorrhea in young females" by Kaur S, Kaur P, SS, et al (2014) and concluded that contracted ligament is band in abdominal region was causative factor for physical of nerve pathway and their irritation so stretching exercise can increase core stability and improve the symptoms of dysmenorrhea.

## RESULT

After analyzing the data there was significant effect of exercises like stretching and core strengthening exerices performed on bosu ball which helped to reduce pain status in primary dysmenorrheal adolescent girls seen on Wong Baker scale ( $p < 0.0001$ ).

## CONCLUSION

The study concludes that there was significant effect of bosu pilates on primary dysmenorrhea in adolescent girls.

## CONFLICT OF INTEREST

The author declares that there is no conflict of interest concerning the content of the present study.

**Source of Funding:** This study is self-funded.

**Ethical Clearance:** The study was approved by the institutional ethics committee of Krishna Institute of medical sciences deemed to be university, Karad.

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