بسم الله الرحمن الرحيم

University of Elsheikh Abdallah Elbadri

Faculty of health science

Nursing department

Batch (5) BSc Nursing science

Evaluation of Physical Exercise on Premenstrual Symptoms among Student in Elsheikh Abdallah elbadri university

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بسم الله الرحمن الرحيم

الآية

قال تعالى ﴿ وَإِذَا مَرِضْتُ فَهُوَ يَشْفِينِ﴾

صدق الله العظيم

سورة الشعراء الآية(80)

Dedication

To those Who give us the best of life without payment

To our parents

To their patience and support

To our brothers and sisters

To our teachers

To all our friends .

Acknowledgement

We would like to express my appreciation my supervisor

Dr/ Noura Osman

She has cheerfully answer my question provide

Me with materials.

Also We are very grate full to my family ,friends ,

For their good support

Abstract

introduction Descriptive comparative study was done in Barber Town in University of Elsheikh Abdallah Elbadri (Faculty the aim to evaluate benefits of exercise during menstrual cycle of health science Nursing department).

Methodology: The study was conduct to evaluate of physical exercise on premenstrual symptom among student Total sample size from120 female students in health science Nursing department collected by questioner.

Result: This study explained that (6.7%) (mood swings) had reduced after exercise and (38.3%) (Swelling and tenderness in the breasts) had reduced after exercise .

Discussion: In this study the participants of group exercise had reduced the highest rate of premenstrual symptom (mood swings) after exercise , small percentage of premenstrual symptom (Swelling and tenderness in the breasts) had reduced after exercise .

Conclusion : This study showed concluded that use exercise effectively reduces and improves PMS symptoms in female students . encourage use variable type of exercise as a potential intervention for premenstrual symptom .

Recommendation : We recommended the ministry heath provide information about exercise in female, Physical activity may be recommended as a method for reducing the risk of premenstrual symptoms and its severity and as an alternative to pharmaceutical treatments .

ملخص الاطروحة :

أجريت دراسة مقارنة وصفية في بربر بجامعة الشيخ عبد الله البدري (كلية تهدف إلى تقييم أسلوب المواجهة وفوائد ممارسة الرياضة أثناء الدورة الشهرية لقسم تمريض العلوم الصحية).

المنهجية:

أجريت الدراسة لتقييم التمارين الرياضية على أعراض ما قبل الحيض بين الطالبات. إجمالي الحجم الواسع من 120 طالبة في قسم تمريض العلوم الصحية تم جمعه بواسطة الاستبيان.

النتيجة :

أوضحت هذه الدراسة أن(6.7%) (تقلب المزاج) قد انخفضت بعد التمرين و (38.3٪) من (التورم والحنان في الثديين) قد انخفضت بعد التمرين.

التفكك :

في هذه الدراسة ، كان المشاركون في التمارين الجماعية قد قللوا من أعلى معدل من اعراض ما قبل الحيض (تقلبات المزاج) بعد التمرين ، وانخفضت نسبة صغيرة من اعراض ما قبل الحيض (التورم والحنان و التورم في الثديين) بعد التمرين .

الخلاصة:

أظهرت هذه الدراسة أن استخدام التمارين الرياضية يقلل بشكل فعال ويحسن أعراض الدورة الشهرية لدى الطالبات.

التوصيات :

شجيع استخدام نوع متغير من التمارين كتدخل محتمل لأعراض ما قبل الحيض.

أوصينا وزارة الصحة بتوفير معلومات حول ممارسة الرياضة عند الإناث ، ويمكن التوصية بالنشاط البدني كوسيلة لتقليل مخاطر أعراض ما قبل الحيض وشدتها وكبديل للعلاجات الصيدلانية .

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Abbreviations	Meaning
MDQ	Menstrual distress questionnaire
IMB	Information Motivation-Behavioral Skills
HPO	Hpothalamo-pituitary-ovarian axi
DSD	Disorder of sexual development
GnRH	Gonadotropin-releasing hormone
LH	Luteinizing hormone
FSH	Follicle-stimulating hormone
IGF-Ⅰ	Insulin-like growth factor 1
IGF-Ⅱ	Insulin-like growth factor 2
PG	Prostaglandin
CL	Corpus luteum
VEGF	Vascular endothelial growth factor
βhCG	Beta-human chorionic
PMS	Premenstrual syndrome
PMDD	Premenstrual dysphoric disorder

Chapter One

Introduction

Research problem

Justification

Objectives

1-1 Introduction :

statistically significant association was detected between an exercise habit and a behavioral cha Menstruation is periodic and cyclical shedding of progestational endometrium accompanied by loss of blood and which involves many hormonal changes . It is a normal physiological process that begins during adolescence and may associated with the various symptoms occurring before or during the menstrual flow. Normal menstrual cycle in females represents the complex interplay of hormones such as estrogen and progesterone . Regular menstrual cycle occurs every 28-35 days ± 2-3 days in which the menstrual flow lasts for 3-5 days with and average loss of 30-80 ml of blood [(1)] . This monthly experience by females adds a powerful tool to the exclusion of pathological conditions among them , and it is one of the determinants of a woman is reproductive health [(2)]. The premenstrual symptoms defined as physical and emotional symptoms experienced within 7-10 days before menstruation . vomiting and abdominal bloating [(These symptoms included spasm, fatigue, headache, irritation and /or nervousness, breast tenderness, insomnia, nausea and /or [3)]. A premenstrual symptoms isaccompanied with pain which is one likely reason behind menstrual pains ،increase in the uterine musclecontraction which is innervated by the sympathetic nerves. These study found thelong-term sportactivities reduce stress, it is likely to decrease the sympathetic nerves activity and moderate the menstrual symptoms. On the other hand, doing sports causes the Endorphin Beta level increase, consequently they influence the painful feelings and it can reduce menstrual symptoms. During the past 28 to 35 years the researches evaluating the relationship between physical activity and menstrual disorders have significantly increased in number and it has been observed that performing aerobic physical activities once or twice a week for 1 to 6 month can be of great effect on menstrual disorders symptoms reduction [(4)] .

Physical as. The results of the logistic regression analysis stated that the subscale related to negative emotion before menstruation was associated with an exercise habit. In the analysis performed during menstruation, a nge such as avoiding interaction with others, in 2022[6] . activity is considered to be any muscular movement occurring above resting levels. It is an all – encompassing concept that includes any physical movements occurring within free daily living or planned leisure pursuits (exercise and sport) . Exercise is typically a planned and \ or structured physical activity which has an aim . the aim is usually to satisfy either a physical , psychological or social need , or often mixture of all three [5] . Across-sectional survey were done by rami mizuta, noriaki maeda, makoto komiya, yuta Suzuki, tsubasa tashiro, kazuki kaneda in Japanese young women, the aim of these study relationship between the severity of premenstrual symptoms and a regular exercise habit in 500 Japanese women aged 18–25 years young women, the final result found 282 (56.4%) young Japanese women were answered this survey. Respondents were divided into the exercise group (n = 157) and the non-exercise group (n = 125). The exercise group had significantly low premenstrual and menstrual MDQ score [6].

(1_2) RESARCH PROBLEM :

The Premenstrual symptoms causes (backache – abdominal bloating – headache – depressed – decrease interaction with other and emotional lability) which can affect the daily activates in employed women and affect on academic performance .

(1_3) JUSTIFACTION:

Premenstrual syndrome is collection of physical ,mental and behavioral problems that occur during leuteal phase of menstrual cycle , they are many women in the world suffer from this dilemma ،which affect their life and their daily performance, so we are interesting to search for treatment for this symptoms without side effects like exercise , on other side there is no research done before here in Sudan about this problem .

(1_4) OBJECTIVES :

(1-4-1) General objective :

To assess evaluation of physical exercise on premenstrual symptoms among student in Elsheikh Abdallah Elbadri University 2022.

(1-4-2) Specific objective :

1- To identify the symptoms of premenstrual in Elsheikh Abdallah Elbadri University 2022.

2- To determine benefits of exercise habits .

3-To estimate premenstrual symptoms in student with regular exercise habits in Elsheikh Abdallah Elbadri University 2022.

4-To measure premenstrual symptoms in student without regular exercise habits in Elsheikh Abdallah Elbadri University 2022.

5-To assess correlation between premenstrual symptoms in student with and without regular exercise habits in Elsheikh Abdallah Elbadri University 2022.

Chapter two

Literature Review

2. Literature Review

2.1 Menstruation :

Menstruation is the visible manifestation of cyclic physiologic uterine bleeding due to shedding of the endometrium following invisible interplay of hormones mainly through hypothalamo-pituitaryovarian axis. For the menstruation to occur, theaxis must be actively coordinated, endometrium mustbe responsive to the ovarian hormones (estrogen andprogesterone) and the outflow tract must be patent.

2.2 Anatomical Aspect :

The period extending from the beginning of a period to the beginning of the next one is called menstrual cycle. The first menstruation (menarche)occurs between 11–15 years with a mean of13 years. It is more closely related to bone age than to chronological age. For the past couple of decades, the age of menarche is gradually declining with improvement of nutrition and environmental condition. Once the menstruation starts, it continues cyclically at intervals of 21–35 days with a mean of 28 days. Physiologically, it is kept in abeyance due to pregnancy and lactation. Ultimately, it ceases between the ages 45–50 when menopause sets in.

The duration of menstruation (mens) is about 4–5days and the amount of blood loss is estimated to be 20 to 80 mL with an average of 35 mL. Nearly70 percent of total menstrual blood loss occurs in the first 2 days. The menstrual discharge consists mainly of dark altered blood, mucus, vaginal epithelial cells, fragments of endometrium, prostaglandins, enzymes and bacteria[(7)] .

2.3 Physiology of the menstrual cycle :

The external manifestation of a normal menstrual cycle is the presence of regular vaginal bleeding. This occurs as a result of the shedding of the endometrial lining following failure of fertilization of the oocyte or failure of implantation. The cycle depends on changes occurring after puberty within the

ovaries and fluctuation in ovarian hormone levels, which are themselves controlled by the pituitary and hypothalamus within the hypothalamo–pituitary–ovarian axis (HPO). In situations of DSD or hormonal abnormalities, menstruation may not begin.

The hypothalamus : The hypothalamus in the forebrain secretes the peptide hormone gonadotrophin-releasing hormone (GnRH), which in turn controls pituitary hormone secretion. GnRH must be released in a pulsatile fashion to stimulate pituitary secretion of luteinizing hormone (LH) and follicle-stimulating hormone (FSH).

2.4 The pituitary gland :

GnRH stimulation of the basophil cells in the anterior pituitary gland causes synthesis and release of the gonadotrophic hormones FSH and LH. This process is modulated by the ovarian sex steroid hormones estrogen and progesterone. Low levels of estrogen have an inhibitory effect on LH production (negative feedback), whereas high levels of estrogen will increase LH production (positive feedback). The mechanism of action for the positive feedback effect of estrogen involves an increase in GnRH receptor concentrations, while the mechanism of the negative feedback effect is uncertain. The high levels of circulating estrogen in the late follicular phase of the ovary act via the positive-feedback mechanism to generate a periovulatory LH surge from the pituitary. The clinical relevance of these mechanisms is seen in the use of the combined oral contraceptive pill, which artificially creates a constant serum oestrogen level in the negative-feedback range, inducing correspondingly low level of gonadotrophin hormone release. Unlike estrogen, low levels of progesterone have a positive-feedback effect on pituitary LH and FSH secretion (as seen immediately prior to ovulation) and contribute to the LH and FSH surge. High levels progesterone , as seen in the luteal phase, inhibit pituitary LH and FSH production . positive-feedback effects of progesterone occur via increasing sensitivity to GnRH in the pituitary . Negative-feedback effects are generated through both decreased

sensitivity to GnRH production from the hypothalamus and decreased sensitivity to GnRH in the pituitary . It is known that progesterone can only have these effects on gonadotropic hormone release after priming by estrogen .

The ovary :Starting at menarche, the primordial follicles containing oocytes, arrested at the first prophase step in meiotic division, will start to activate and grow in a cyclical fashion, causing menstruation in the event of non-fertilization. In the course of a normal menstrual cycle, the ovary will go through three phases : follicular, ovulatory and luteal.

2.5 Follicular phase :

The initial stages of follicular development are independent of hormone stimulation. However, follicular development will fail at the preantral stage, and follicular atresia will ensue if pituitary hormones LH and FSH are absent. FSH levels rise in the first days of the menstrual cycle, when estrogen, progesterone and inhib in levels are low. This stimulates a cohort of small antral follicles on the ovaries to grow. Within the follicles, there are two cell types that are involved in the processing of steroids, including estrogen and progesterone. These are the theca and the granulosa cells, which respond to LH and FSH stimulation, respectively. LH stimulates production of androgens from cholesterol within theca cells. These androgens are converted into estrogens by the process of aromatization in granulosa cells, under the influence of FSH. As the follicles grow and estrogen secretion increases, there is negative feedback on the pituitary to decrease FSH secretion. This assists in the selection of one follicle to continue in its development towards ovulation – the dominant follicle. In the ovary, the follicle that has the most efficient aromatase activity and highest concentration of FSH-induced LH receptors will be the most likely to survive as FSH levels drop, while smaller follicles will undergo atresia. There are other autocrine and paracrine mediators playing a role in the follicular phase of the menstrual cycle. These include inhibin and activin. In hibin is secreted by the granulosa cells within the ovaries. It participates in feedback to the pituitary

to down-regulate FSH release, and also appears to enhance ongoing androgen synthesis. Activin is structurally similar to inhibin, but has an opposite action. It is produced in granulosa cells and in the pituitary, and acts to increase FSH binding on the follicles. Insulin-like growth factors (IGF-I, IGF-II) act as paracrine regulators. Circulating levels do not change during the menstrual cycle, but follicular fluid levels increase towards ovulation, with the highest level found in the dominant follicle. Kisspeptins are proteins that have more recently been found to play a role in regulation of the HPOaxis, via the mediation of the metabolic hormone leptin's effect on the hypothalamus. Leptin is thought tobe key in the relationship between energy production, weight and reproductive health. Mutations in the kisspeptin receptor, gpr-54, are associated with delayed or absent puberty, probably due to a reduction in leptin-linked triggers for gonadotrophin release .

2.6 Ovulation :

By the end of the follicular phase, which lasts an average of 14 days, the dominant follicle has grown to approximately 20 mm in diameter. As the follicle matures, FSH induces LH receptors on the granulose cells to compensate for lower FSH levels and prepare for the signal for ovulation. Production of estrogen increases until it reaches the necessary threshold to exert a positive feedback effort on the hypothalamus and pituitary to cause the LH surge. This occurs over 24–36 hours, during which time the LH-induced luteinization of granulosa cells in the dominant follicle causes progesterone to be produced, adding further to the positive feedback for LH secretion and causing a small periovulatory rise in FSH. Androgens, synthesized in the theca cells, also rise around the time of ovulation, and this is thought to have an important role in stimulating libido, ensuring that sexual activity is likely to occur at the time of greatest fertility. The LH surge is one of the best predictors of imminent ovulation, and this is the hormone detected in urine by most over-the-counter 'ovulation predictor' tests. The LH surge has another function in stimulating the

resumption of meiosis in the oocyte just prior to its release. The physical ovulation of the oocyte occurs after breakdown of the follicular wall takes place under the influence of LH, FSH and proteolytic enzymes, such as plasminogen activators and prostaglandins (PGs). Studies have shown that inhibition of PG production may result in failure of ovulation. Thus, women wishing to become pregnant should be advised to avoid taking PG synthetase inhibitors, such as aspirin and ibuprofen, which may inhibit oocyte release.

2.7 Luteal phase :

After the release of the oocyte, the remaining granulosa and theca cells on the ovary form the corpus luteum (CL). The granulosa cells have a vacuolated appearance with accumulated yellow pigment, hence the name CL (‘yellow body’). The CL undergoes extensive vascularization in order to supply granulose cells with a rich blood supply for continued steroidogenesis. This is aided by local production of vascular endothelial growth factor (VEGF). Ongoing pituitary LH secretion and granulosa cell activity ensure a supply of progesterone, which stabilizes the endometrium in preparation for pregnancy. Progesterone levels are at their highest in the cycle during the luteal phase. This also has the effect of suppressing FSH and LH secretion to a level that will not produce further follicular growth in the ovary during that cycle. The luteal phase lasts 14 days in most women, without great variation. In the absence of beta-human chorionic gonadotrophin (βhCG) being produced from an implanting embryo, the CL will regress in a process known as luteolysis. The mature CL is less sensitive to LH, produces less progesterone and will gradually disappear from the ovary. The withdrawal of progesterone has the effect on the uterus of causing shedding of the endometrium and thus menstruation. Reduction in levels of progesterone, estrogen and inhibin feeding back to the pituitary cause increased secretion of gonadotrophic hormones,particularly FSH. New preantral follicles begin to be stimulated and the cycle begins anew.

2.8 The endometrium :

The hormone changes effected by the HPO axis during the menstrual cycle will occur whether the uterus is present or not. However, the specific secondary changes in the uterine endometrium give the most obvious external sign of regular cycles .

The proliferative phase :The endometrium enters the proliferative phase after menstruation, when glandular and stromal growth begin. The epithelium lining the endometrial glands changes from a single layer of columnar cells to apseudo stratified epithelium with frequent mitoses. Endometrial thickness increases rapidly, from 0.5 mm at menstruation to 3.5–5 mm at the end of the proliferative phase.

The secretary phase :After ovulation (generally around day 14), there is a period of endometrial glandular secretary activity. Following the LH surge, the estrogen-induced cellular proliferation is inhibited and the endometrial thickness does not increase any further. However, the endometrial glands will become more tortuous, spiral arteries will grow and fluid is secreted into glandular cells and into the uterine lumen. Later in the secretory phase, progesterone induces the formation of a temporary layer, known as the decidua, in the endometrial stroma. Histologically, this is seen as occurring around blood vessels. Stromal cells show increased mitotic activity, nuclear enlargement and generation of a basement membrane . Apical membrane projections of the endometrial epithelial cells, known as pinopodes, appear after day 21-22 and appear to be a progesterone-dependent stage in making the endometrium receptive for embryo implantation [(8)] .

2.9 Premenstrual syndrome (PMS) :

Is a disorder characterized by emotional, physical and behavioral symptoms in women of reproductive age that increases the severity of the menstrual cycle during the luteal phase and spontaneously disappears within a few days after the onset of menstruation 1–4. More than 40 million women are reported to have

PMS symptoms worldwide. While 20 % of women have symptoms that significantly affect their daily life, 90 % have mild premenstrual symptoms. More than 300 physical, psychological, emotional, behavioral and social symptoms have been shown to be associated with PMS.

2.10 The Premenstrual symptoms:

Include :Change in appetite, weight gain, abdominal pain, back pain, low back pain, headache, swelling and tenderness in the breasts, nausea, constipation, anxiety, irritability, anger, fatigue, restlessness, mood swings and crying .

Non-pharmacological treatment of premenstrual symptoms : The non-pharmacological treatment methods include physical activity and exercise, nutrition, herbal preparations، cognitive behavioral therapy and social support, adequate rest, regular hot baths and vitamin supplements. These complementary and alternative therapies are reported to have mitigating effects on symptoms [(9)] .

Physical activity :Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure.

Other definition of exercise is the one proposed by Caspersen et al. (1985): "planned, structured and repetitive bodily movement" [(10)] .

2.11 Benefits of exercise :

Exercise increases circulating endorphin levels (increases happiness), reduces adrenal cortisol for a short time and provides analgesic effects . Aerobic exercise is recommended for women with PMS because it reduces premenstrual mood symptoms. In a study, three month aerobic exercise was reported to reduce premenstrual symptoms in sedentary women. Exercises such as walking, cycling, swimming and running are seen as a good way to suppress stress and eliminate premenstrual syndrome. Although there are studies examining the effect of exercise in the literature . It is important to evaluate the effect of alternative methods to reduce pharmacological treatments [(8)]. Regular exercise is a great way of getting rid of stress and tension too, boots metabolism and improves circulation at same time. Another advantage of an aerobic exercise

program is that it will also help to keep weight down and it is generally accepted that carrying excess weight makes premenstrual symptoms worse . yoga is a highly effective way of reducing stress and anxiety levels, there are many poses which stretch and flex body in a way that both reduces the tension in limbs and muscles whilst also reducing the physical pain around groin area . passive stretches that reduce the pain this particular part of body will obviously help to minimize the worst effects of premenstrual symptoms, hence the effectiveness of yoga for counteracting the worst symptoms of the condition . As found learning to breathe correctly is another way of controlling emotions that can use as a standalone (stress reliever)[11].

2.12 Types of exercise :

Relaxation Therapy :Relaxation response is a physiological response that results in decreased . metabolism , decreased heart rate , decreased blood pressure , decreased rate of breathing , and slower brain waves . The repetition of a word , a sound , a prayer , a phrase , or a muscular activity is required to elicit the relaxation response . Most studies of relaxation techniques have used them as an adjunct to other modalities of therapy . Available trials of relaxation treatment showed conflicting results . Twice daily relaxation therapy is superior to keeping a daily symptoms chart and leisure reading in improvement of physical symptoms of PMDD .

Relaxation Techniques :Our minds and our bodies are not separate and clearly affect one another . Stress is part of everyone's life . It is normal and helpful in motivating us to get things done . Severe stress , on the other hand , is not healthy and often unpleasant physical symptoms are experienced (difficulty sleeping , upset stomach , diarrhea) . For women with PMS , it is often difficult to determine whether it is the PMS increasing the stress or if it is increased stress that is making the PMS worse . Either way , the following techniques may be of some help . It is important to plan to spend 15 to 30 minutes a day relaxing

. They may or may not want to include family members . Remember , they probably need it the most when they find they have the least amount of time .

• Progressive relaxation : They should wear loose clothes and get in a comfortable position . Starring at their head or your feet , they should concentrate on each muscle group , consciously relaxing the muscles . Think of the muscle as being soft and limp . Imagine the tension and stress floating away from them . They should spend about 15 minutes doing this and then take a few minutes to simply relax , keeping their minds as blank as possible .

Deep breathing : This can be done at any point in the day when they have a few minutes to themselves . They should simply take 5 or more deep breaths , letting the air slowly fill their lungs , expanding their chest , then abdomen . Imagine they are blowing away the stresses of the day as they exhale .

• Hot baths: Pamper themselves with bath oil or bubbles .

• Massage: Massage therapists are available in many communities who do full body massage . Find someone they feel comfortable with to massage their back , shoulders , legs

• Music: A relaxation tape , classical music - whatever they like . Put on headphones and listen alone or turn off the headphones and have members of their household join them .

Walking :Walking is an excellent exercise . It is suggested that starting at twomiles in 30 to 40 minutes . If patients are already exercising , keep it up . There are many health benefits of a regular exercise program and also evidence that it can be very helpful in reducing PMDD symptoms . Patients should find an activity that they enjoy so that they will be more likely to keep it up . The overall goal should be 3 to 5 times per week for 25 to 30 minutes .

Aerobic exercise traditionally is recommended particularly if depressive or fluid retention symptoms predominate . The efficacy of exercise could be because of raised endorphin levels , physiological changes and psychological changes [(12)] .

Yoga :In study the effect of yoga exercise on premenstrual symptoms among Female Employee was conducted Yoga classes designed for women with premenstrual syndrome are available, investigated the effects of 12 weeks' yoga exercise (yoga intervention) on premenstrual symptoms in menstruating females in Taiwan. Sixty-four subjects completed the yoga intervention, and before and after the intervention filled out a structured self-report questionnaire about their demographics, personal lifestyle, menstrual status, baseline menstrual pain scores, premenstrual symptoms, and health-related quality of life. Of 64 subjects, 90.6% reported experiencing menstrual pain during menstruation. After the yoga intervention, subjects reported decreased use of analgesics during menstruation ($p = 0.0290$) and decreased moderate or severe effects of menstrual pain on work ($p = 0.0011$). The yoga exercise intervention was associated with the improvement of the scale of physical function ($p = 0.0340$) and bodily pain ($p = 0.0087$) of the SF-36, and significantly decreased abdominal swelling ($p = 0.0011$), breast tenderness ($p = 0.0348$), abdominal cramps ($p = 0.0016$), and cold sweats ($p = 0.0143$). Menstrual pain mitigation after yoga exercise correlated with improvement in six scales of the SF-36 (physical function, bodily pain, general health perception, vitality/energy, social function, mental health).

There are five basic yoga poses practiced in these study included cat-cow, child's pose, downward dog, plank, and cobra. Cat-cow pose stretches the abdominal muscles, neck and back, and maintains the flexibility of the spine; this pose is especially helpful for people with stiff backs. Child's pose stretches the lower back and hips, and helps to relieve stress, decrease back discomfort, fatigue, gas, and bloating. The downward dog pose strengthens arms, shoulders, abdominal and quadriceps muscles, and ankles, while stretching the shoulders, hamstrings, calves, and chest. Plank pose strengthens the arms, wrists, and spine. The cobra pose stretches the chest and abdominal muscles and maintains

the flexibility of the spine. It also improves poor posture and combats depression, lower back discomfort, and low energy[13] .

There are types of yoga are recommended during menstrual For instance, Gomukhasana and Paschima Namaskarasana

Geeta Iyengar as poses that can be safely practiced during menstruation. They are not strenuous and do not interfere with the menstrual flow. Add Urdhva Baddangullyasana in Virasana to these two poses and, with the addition of Setu Bandha Sarvangasana II, you have an additional sequence. You can also practice them at the beginning of the menstrual sequence that follows. Practice time: 60–90 minutes [14] .

2.13 Previous studies:

In 2018 founded study in Turkey was done by Guner Cicek and aimed to assess the PMS symptoms between women who exercise and non-exercising sedentary women. it Concluded to This study showed that regular aerobic exercise reduces and improves PMS symptoms in sedentary women. The results of this study encourage regular aerobic exercise as a potential intervention for PMS. Physical activity may be recommended as a method for reducing the risk of PMS and its severity and as an alternative to pharmaceutical treatments, since regular aerobic physical activity improves cardiovascular, hormonal and neuromuscular functions, and it may minimize systemic dysfunction in women during the premenstrual phase of the menstrual cycle[15] .

other study in 2019 were conducted by Shabnam Omidvar, Fatemeh Nasiri Amiri, Mozhgan Firouzbakht, Afsaneh Bakhtiari, Khyrunnisa Begum in young females South Indian and seeker about association Between Physical Activity, Menstrual Cycle Characteristics, and Body Weight . this study concluded to In general, the present study obtained considerable results because, to the best of our knowledge, no study has so far well-explored and understood physical activity involvement. It is important to understand the relationship between involvement in physical activity, subjective factors, and menstrual

characteristics. Given that a proper understanding of physical activity can be effective in the health and life of young women, it is essential to study the prevalence of involvement in physical activity and its correlates. In this regard, there is a need for evaluating the factors which influence lifestyle behaviors including physical activity among Indian females. Thus, further investigation is warranted in this respect. Overall, physical activity had a positive influence on menstrual characteristics in young females. Therefore, it is important to educate women for regular physical activity in order to modify or reduce menstrual cycle disturbances[16].

In brazil were done study by Elvan Yilmaz-Akyuz, Yasemin Aydin-Kartal in 2019 . This study was conducted to determine the effectiveness of aerobic exercise and diet in female students with Premenstrual Syndrome Scale who were studying at the public university. the final result of this study , it was determined that most of the female students at the university had PMS complaints. Diet and aerobic exercise were effective in decreasing dysmenorrheal density with PMS symptoms. However, the two interventions have no superiority over each other. In order to provide healthy living habits to university students, appropriate conditions can be provided in the school environments where they spend most of their time and trainings on the effects of diet and aerobic exercise on PMS can be given. In addition, medical support treatment can be provided with a multidisciplinary team for the relief or alleviation of symptoms[17].

Other study in turkey were done by Didem Simsek Kucukkelepce, Hacer Unver, Gulcin Nacar, Sermin Timur Tashan. This study aims to identify the effects of acupressure and yoga for coping with premenstrual syndromes (PMS) on the premenstrual symptoms and quality of life in 2021. This study was concluded to yoga and acupressure for coping with premenstrual symptoms were found to decrease symptoms and improve quality of life. Moreover, in comparison to acupressure, yoga was found to be more effective in decreasing the severity of

the premenstrual symptoms and improving the quality of life. Yoga is a cost-effective, simple, safe, and effective approach that can be done alone anytime and anywhere for decreasing the severity of premenstrual symptoms; therefore, it is recommended that women should be instructed to do yoga for coping with PMS. In addition, future studies that compare the alternative treatment methods for coping with premenstrual symptoms with yoga and acupressure could be beneficial[18].

In Japan were surveyed study by Chang Yu Chen, Rika Kawabe, Saori Morino, Momoko Nagai-Tanima, Tomoki Aoyama, Kohei Mukaiyama, Yuki Shinohara, Hiroki Shimizu, Kanako Shimoura, Masaya Kato to detect the Relationship Between Physical Activity and Premenstrual Syndrome in Female College Students in 2022 . Overall This study is one of the few studies that analyzed the relative factors of PMS based on regular physical activity using a questionnaire. The findings of this research showed that people with high physical activity had milder physical symptoms of PMS. This implies that recommending more regular physical activity as a non-pharmacological therapy is likely to be an effective treatment for PMS because it is alow-risk, low-cost, and simple method of symptom management for PMS[19] .

Chapter three

Methodology

3 Methodology

3_1 Study design:

Descriptive Cohort study .

3_2 Study area and setting :

The Study was carried out in faculty of health science in Elsheikh Abdallah Elbadri University in Berber . This is located in Sudan-river Nile state.

In Berber there are several higher institutes and university colleges, including the College of Islamic and Arabic Studies of Nile Valley University, the College of Sharia and Law, the College of Agriculture, the Technical Institute and Elsheikh Abdallah Elbadri University .

Elsheikh Abdallah Elbadri University was Established in 2002 it was start by diploma programs and then converted to the university in 2013 and included 8 faculties (health science, engineering, medicine, economic, science and computer, technology, pharmacology and media ..)

The faculty of health sciences contains (department of nursing, laboratories and a diploma in pharmacy) .

3_3 Study period :

From June to October 2022.

3_4 Study population :

Students in Elsheikh Abdallah Elbadri University.

Faculty of health science (Department of nursing and laboratories) (969)

3_5 Inclusion Criteria:

All students are studying in Faculty of health science in Elsheikh Abdallah Elbadri University (Department of nursing and laboratories) (969).

3_6 Exclusion criteria:

Pregnancy .

Any students have Irregular menstruation or any menstrual disorder .

Any students are taking medication to treat menstrual disorder or are use contraception method .

3_7 Sample size :

$$n = \frac{[2(a+b)^2\ \sigma^2\ ]}{(\mu 1 - \mu 2)^2}$$

$$n = \frac{[2(0.05+0.8)^2\ 53.1^2\ ]}{(21.9-29.7)^2} = \ 63.3 \text{ participants}$$

The sample calculated by calculator by solvin,s formula

$n = N + (1-N)/e^2 = 969$

n = sample

N = population

e = margin error

120 student from 969 students

all students in Faculty of health science in Elsheikh Abdallah Elbadri University existing during research period

3_8 Data collection tools:

Data was collected using questionnaire (closed ended question),designed by researcher based on available literature review .

3_9 Data collection technique:

Structured questionnaire in face-to-face interview . verbal consent was obtained from each individual included in the study.

3_10 Data analysis method:

The data was coded and analysis by soft word computer SPSS version(21).

3_11 Ethical considerations:

Ethical approval well be obtained by Ethical Committee from university of Elsheikh Abdallah Elbadri .

Permission well be taken from faculty of health science .

The participants well be take verbal informed consent and explained the purpose of the study .

Participants informed they could withdraw from the study at any time .

Chapter Four

Results

Results

Table (1): Sociodemographic data:

Variables		**Frequency**	**Percent**
Age	18-19 years	18	15%
	20-21 years	51	42.5%
	22-23 years	46	38.3%
	> 24 years	5	4.2%
Total		**120**	**100%**
Marital status	Single	108	90%
	Married	12	10%
Total		**120**	**100%**

The table showed that variable group age20-21 years (42.5%), > 24 years (4.2%) and marital status single (90%), married (10%) .

Table (2): premenstrual symptoms in non-exercise group :

Physical Symptoms	Frequency	Percent	P. value
Fatigue	13	44.8%	0.071
Headache	11	32.4%	0.669
Back pain	12	35.3%	0.067
Abdominal pain	13	44.8%	0.08
Swelling and tenderness in the breast	20	55.6%	0.19
Nausea & vomiting	11	33.3%	0.129
Mood swings	9	40.9%	0.059
Crying	13	44.8%	0.22

This table show the premenstrual symptoms in non-exercise group, for fatigue 44.8%, headache 32.4%, back pain 35.3%, abdominal pain 44.8%, swelling and tenderness in the breast 55.6%, nausea and vomiting 33.3%, mood swings 40.9% and crying 44.8%.

Table (3): The physical activities the participants used:

	Done		Not done	
	Frequency	**Percent**	**Frequency**	**Percent**
Progressive relaxation	45	75%	15	25%
Walking	43	71.7%	17	28.3%
Massage	42	70%	18	30%
Hot baths	41	68.4%	19	31.6%
Deep breathing	39	65%	21	35%
Music	23	38.4%	37	61.6%
Aerobic exercise	21	35%	39	65%
Yoga	10	16.7%	50	83.3%

The table showed that (75%) of participants had used progressive relaxation and (16.7%) had used yoga .

Table (4) : Participate in activities on a weekly basis:

Activities	Frequency	Percent
Two time per week	21	35%
Three time per week	12	20%
Other	27	45%
Total	**60**	**100%**

The table showed that (45%) of participants had used activities on weekly basis other time and (20%) had used activities three time per week .

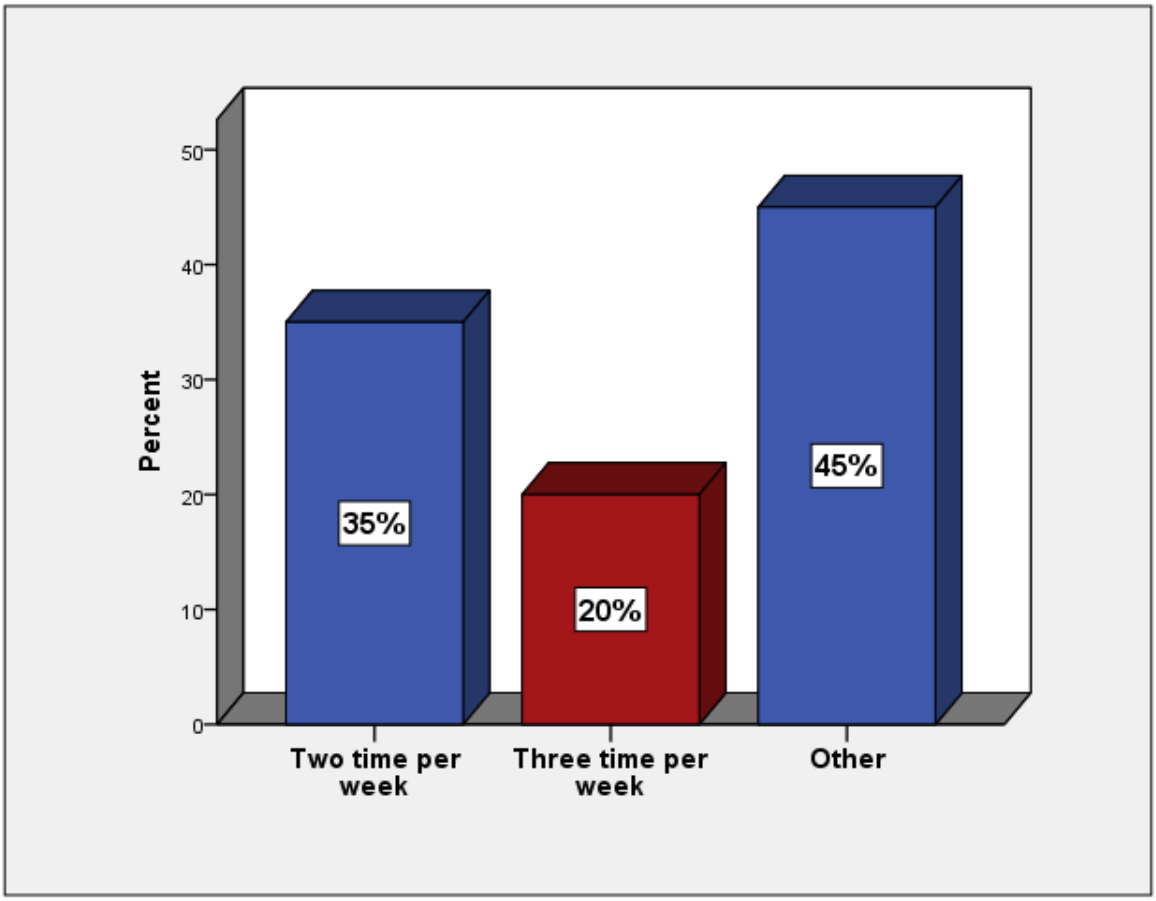

Figure (1) : Participate in activities on a weekly basis

Table (5) : Time spend per activities:

Time spend	Frequency	Percent
15-30 minutes	41	68.3%
45-60 minutes	2	3.3%
Others	17	28.3%
Total	**60**	**100%**

The table showed that (68.3%) of participants had spent in activities 15 - 30 minutes and (3.3%) had spent in activities 45 - 60 minutes.

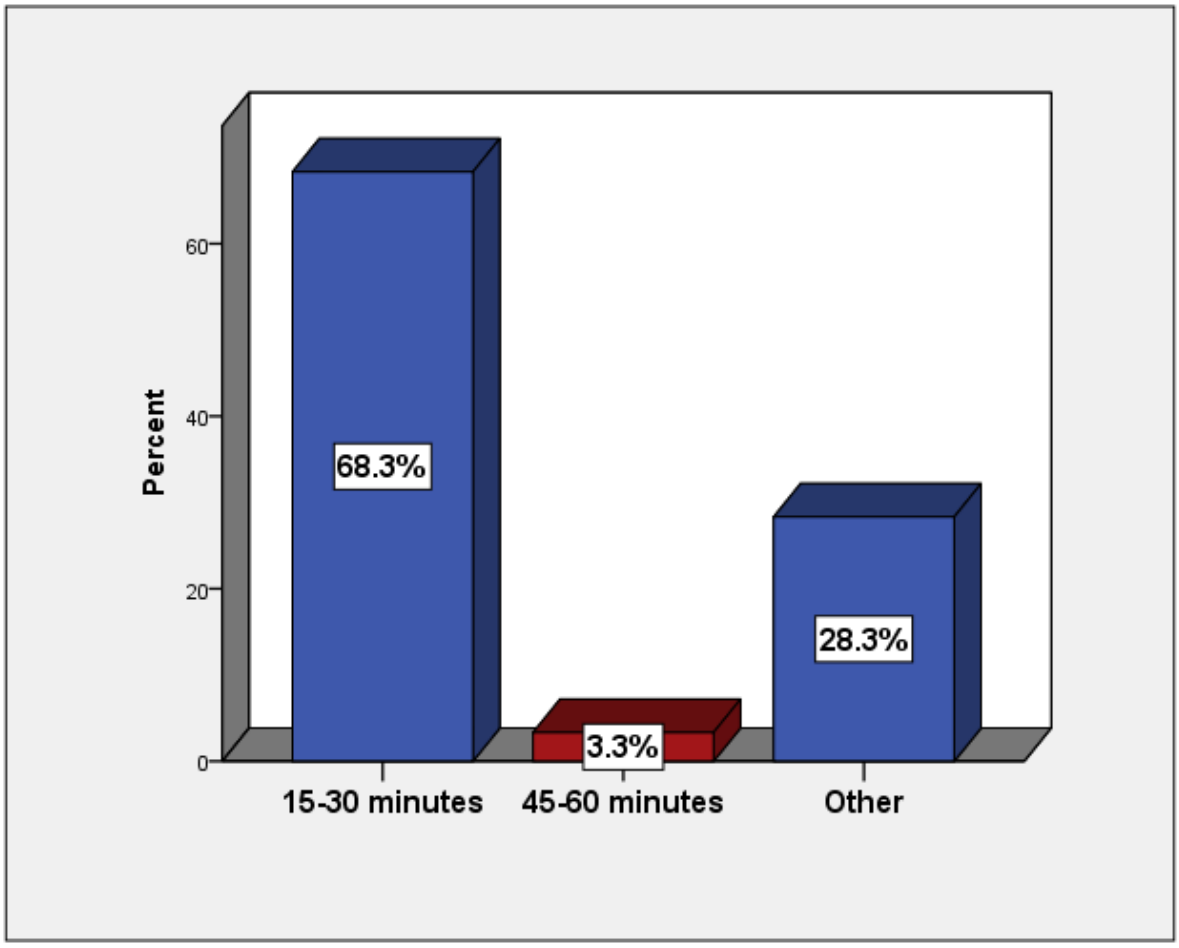

Figure (2) : Time spend per activities

Table (6) : students who do exercise regularly:

Exercise	Frequency	Percent
Regular	26	43.3%
Irregular	34	56.7%
Total	**60**	**100%**

The table showed that (56.7%) of participants had done irregular exercise and (43.3%) had done regular exercise.

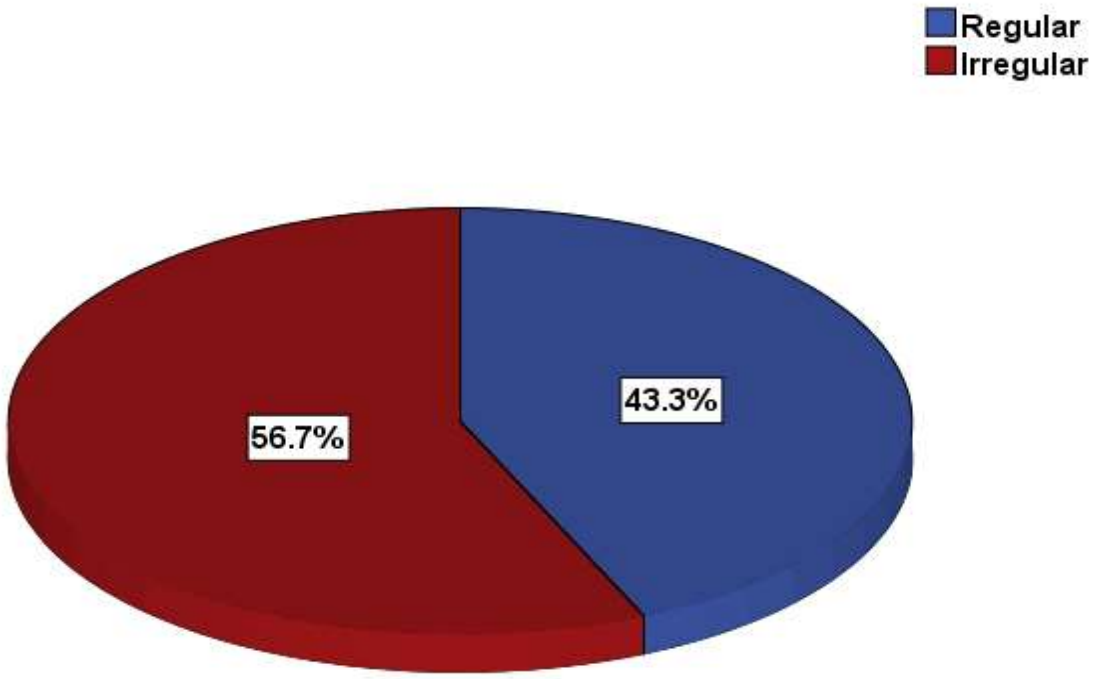

Figure (3) : Students who do exercise regularly

Table (7): Benefits of exercise:

	Done		Not done	
	Frequency	**Percent**	**Frequency**	**Percent**
Get quality sleep	57	95%	3	5%
Improve circulation	55	91.7%	5	8.3%
Reduce anxiety	55	91.7%	5	8.3%
Stretch and flex body	53	88.1%	7	11.9%
Reduce physical pain around groin	52	86.7%	8	13.3%
Increase happiness	51	85%	9	15%
Suppress stress	51	85%	9	15%
Provide analgesic effect	45	75%	15	25%
Control emotion	44	73.3%	16	26.7%
Boots metabolism	35	58.3%	25	41.7%
Keep weight down	22	36.7%	38	63.3%

The table explained that (95%) of benefit exercise had get quality sleep and (36.6%) had keep weight down.

Table (8): Exercise group:

symptoms	Present		Not present	
	Frequency	**Percent**	**Frequency**	**Percent**
Abdominal pain	54	10%	6	10%
Fatigue	52	13.3%	8	13.3%
Headache	50	16.7%	10	16.7%
Back pain	49	18.3%	11	18.3%
Nausea and/or vomiting	40	33.3%	20	33.3%
Swelling and tenderness in the breasts	37	38.3%	23	38.3%
Mood swings	56	6.7%	4	6.7%
Crying	40	33.3%	20	33.3%

The table explained that (6.7%) (mood swings) had reduced after exercise and (38.3%) (Swelling and tenderness in the breasts) had reduced after exercise .

Table (9): Correlation between exercise group & Non-exercise group:

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.360	6	.060	.229	.966[b]
	Residual	29.640	113	.262		
	Total	30.000	119			

a. Dependent Variable: Exercies

b. Predictors: (Constant), Nausea, Swelling, Headach, Backpain, Abdominal, Fatigue.

Coefficientsa

Physical Exercise	Unstandardized Coefficients		Standardized Coefficients	t	P. value
	B	Std. Error	Beta		
(Constant)	1.534	.192		7.992	.000
Fatigue	.029	.070	.047	.421	.675
Headache	-.013-	.066	-.021-	-.203-	.839
Back pain	.014	.064	.023	.222	.824
Abdominal pain	-.005-	.063	-.009-	-.083-	.934
Swelling and tenderness in the breast	.007	.065	.011	.111	.912
Nausea & vomiting	-.078-	.076	-.099-	-1.036-	.303
Mood swings	.067	.057	.115	1.165	.247
Crying	.037	.065	.056	.566	.572

a. Dependent Variable: Ex

According to table (8) there is significant relation between exercise group & non exercise group P. value > 0.05.

Chapter Five

Discussion

Conclusion

Recommendation

5.1 Discussion

The current study was reflect that the evaluation of physical exercise on premenstrual symptom among student , to sample size one hundred twenty , most participants age is young female , the large percentage are unmarried and a small percentage of them are married .

the study found the correlation between premenstrual symptoms in group exercise and non-exercise in) there is significant relation between exercise group & non exercise group P. value > 0.05. the study found the highest for participants had used progressive relaxation , lower percentage had used yoga and large percentage for participants had used activities on weekly basis other time , small percentage had used activities three time per week , higher percentage of participants had spent in activities fifteen to thirty , the lowest percentage forty five to sixty minutes and large percentage for participants had done irregular exercise , small percentage for participants had done regular exercise and these study found that largest benefit of exercise had get quality sleep , small percentage had keep weight down .

in this study the participants of group exercise had reduced the highest rate of (6.7%) (mood swings) had reduced after exercise and small percentage (38.3%) (Swelling and tenderness in the breasts) had reduced after exercise .

Our study was similar to study conducted by Guner Cicek in 2018 in Turkey and aimed to assess the PMS symptoms between women who exercise and non-exercising sedentary women, The result of this study was performed on 220 women between the two different groups : the exercising group and the non-exercising group. in which the mean number for menstruations in a year and the frequency of menstruations was compared between the exercising group and the non-exercising group, no significant differences were found ($p>0.05$), but significant differences were found for the length of menstrual flow ($p<0.05$). In the present study, in 83% of the exercising group and 80.8% of the non-

exercising group the frequency of menstruation was between 21−30 days, and in 39.2% of the non-exercising group the length of menstrual flow was higher compared to 26.2% of the exercising group. PMS scores were compared in each menstruation phase, and the premenstrual PMS scores were found significantly higher in the non-exercising group than in the exercising group ($p < 0.01$). Menstrual and inter-menstrual PMS scores were not found significantly different between these two groups ($p > 0.05$). The highest PMS average score was found for the menstrual phase in both groups The mean and the standard deviation for the eight scales in each phase. Water retention, negative effect, impaired concentration, behavioral change, arousal, and control showed significantly higher scores in the non-exercising group than in the exercising group for the premenstrual phase ($p < 0.05$ and $p < 0.01$). There was also a significant difference with higher scores found in the non-exercising group than the exercising group for the water retention symptom in the menstrual phase ($p < 0.01$) and the arousal symptom in the menstrual and inter-menstrual phases ($p < 0.05$ and $p < 0.01$) In addition, the highest PMS average score was found for the menstrual phase for each scales in both groups [15].

5.2 Conclusion :

This study concluded that use exercise effectively reduces and improves PMS symptoms in female students . The results of this study there is significant relation between exercise group & non exercise group on premenstrual symptoms and encourage use variable type of exercise as a potential intervention for premenstrual symptom .

5.3 Recommendation :

We recommended the ministry heath provide information about exercise in female, Physical activity may be recommended as a method for reducing the risk of premenstrual symptoms and its severity and as an alternative to pharmaceutical treatments, since regular physical activity improves cardiovascular, hormonal and neuromuscular functions, and it may minimize systemic dysfunction in women during the premenstrual phase of the menstrual cycle. We recommend people to work more on this research to achieve better results

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Appendix

University of ElsheikhAbdallahElbadri

Faculty of health science

Evaluation of physical exercise on premenstrual

symptom among student

Name _____ Age _____

Marital status _____ address _____

Religious _____

premenstrual symptoms :

Fatigue ☐

Headache ☐

back pain ☐

abdominal pain ☐

swelling and tenderness in the breasts ☐

nausea and /or vomiting ☐

mood swings ☐

crying ☐

ACTIVITY SURVEY

Please check all the physical activity using you participate in :

Progressive relaxation Yes ☐ No ☐ Deep breathing Yes ☐ No ☐

Hot baths Yes ☐ No ☐ Massage Yes ☐ No ☐

Music Yes ☐ No ☐ Walking Yes ☐ No ☐

Aerobic exercise Yes ☐ No ☐ Yoga Yes ☐ No ☐

How often do you participate in activities on a weekly basis ?

☐ Two time per week ☐ Three time per week ☐ Other

On average, how much time do you spend per activity ?

☐ 15 - 30 minutes ☐ 45 - 60 minutes ☐ Other

Do you been exercise regularly ?Yes ☐ No ☐

What are the benefits of this exercise you are using

Increase happiness Yes ☐ No ☐ Get quality sleep Yes ☐ No ☐
Control emotion Yes ☐ No ☐ suppress stress Yes ☐ ☐ No

Provide analgesic effect Yes ☐ No ☐ Improve circulation Yes ☐ No ☐

Keep weight down Yes ☐ No ☐ Reduce anxiety Yes ☐ No ☐

Stretch and flex body Yes ☐ No ☐ Boots metabolism Yes ☐ No ☐

Reduce physical pain around groin are Yes ☐ No ☐

When you exercise do you experience reduce of these symptoms ?

symptoms :

Fatigue Yes ☐ No ☐ Headache Yes ☐ No ☐

back pain Yes ☐ No ☐ abdominal pain Yes ☐ No ☐

swelling and tenderness in the breasts Yes ☐ No ☐

nausea and /or vomiting Yes ☐ No ☐ mood swings Yes ☐ No ☐

Crying Yes ☐ No ☐

THE REPUBLIC OF SUDAN
ELSHAIKH ABDALLAH ELBADRY UNIVERSITY
Faculty of Health Sciences
Dean's Office

جمهورية السودان
جامعة الشيخ عبدالله البدري
كلية العلوم الصحية
مكتب العميد

التاريخ 2022/9/13م

السيد / .....

الموضـــوع/موافقة بأداء بحث علمي لنيل درجة البكالوريوس في علوم التمريض

وبالإشارة للموضوع أعلاه ، لامانع لدينا للطلاب المرفقين بأداء بحث التخرج في الكلية الصحية بقسمي المختبرات الطبية وعلوم التمريض وهذا بناءا علي طلبهم.

...وفقنا الله واياكم ...

د.ايمان زين العابدين هاشم يسن
عميد الكلية