

## Reducing Dysmenorrhea In School-Aged Teenagers By Practising Yoga: A Literature Review Reducir la dismenorrea en adolescentes en edad escolar mediante la práctica de yoga: una revisión de la literatura

\*Jihan Faira Zanada, \*Hendra Setyawan, \*\*Nugroho Susanto, \*\*Ridho Bahtra, \*\*Tiok Wijanarko \*\*\*Khoiril Anam, \*\*\*\*Gema Fitriady, \*\*\*\*\*José Vicente García-Jiménez, \*\*\*\*\*Ratko Pavlovic, \*\*\*\*\*Agnieszka Magdalena Nowak  
\*Yogyakarta State University (Indonesia), \*\*Padang State University (Indonesia), \*\*\*Semarang State University (Indonesia), \*\*\*\*Malang State University (Indonesia), \*\*\*\*\*University of Murcia (Spain), \*\*\*\*\*University of East Sarajevo (Bosnia and Herzegovina), \*\*\*\*\*Josef Pilsudski University of Physical Education in Warsaw (Poland)

**Abstract.** Dysmenorrhea is the term used to describe lower abdominal pain that women feel during their menstrual cycle. Teens suffering from menstrual pain typically have lower abdominal cramps and other symptoms that interfere with day-to-day activities. An alternative to medication for treating menstruation discomfort is yoga. This study aimed to ascertain whether yoga may lessen dysmenorrhea in teenagers enrolled in school. This approach uses the MEDLINE/PubMed, Scopus, and Google Scholar databases to review literature. The PRISMA approach utilized for this literature review was adhered to during the article selection process. The research's selection criteria comprised works published within the last five years, specifically from 2018 to 2023. Yoga was employed to lessen dysmenorrhea discomfort in the research population, consisting of young women with monthly pain. Between 2018 and 2023, 666 studies were discovered to have satisfied the publication selection requirements. Fifteen journals that fit the requirements for this study were identified through the PRISMA route search. According to the data, yoga has been shown to have a calming effect on teenage menstrual discomfort in 15 journals. Thus, yoga is a successful non-pharmacological management strategy for lowering dysmenorrhea in school-age teenagers. This is because yoga may be calming, encouraging the body to release endorphins, which function as organic painkillers. Yoga is a mild activity that helps the body avoid stiffness, pressure, pain, and tiredness while increasing flexibility safely. It enhances lung capacity when breathing, improves blood circulation, eases physical and emotional stress, and lessens pain. Additionally, practising yoga helps women with PMS feel more at ease by reducing dangerous inflammatory secretions.

**Key Words:** Yoga; Dysmenorrhea; Menstrual; Teenagers

**Resumen.** Dismenorrea es el término utilizado para describir el dolor abdominal bajo que sienten las mujeres durante su ciclo menstrual. Las adolescentes que sufren dolor menstrual suelen tener calambres abdominales inferiores y otros síntomas que interfieren con las actividades diarias. Una alternativa a los medicamentos para tratar las molestias menstruales es el yoga. Este estudio tuvo como objetivo determinar si el yoga puede disminuir la dismenorrea en adolescentes matriculadas en la escuela. Este enfoque utiliza las bases de datos MEDLINE/PubMed, Scopus y Google Scholar para revisar la literatura. Durante el proceso de selección del artículo se respetó el enfoque PRISMA utilizado para esta revisión de la literatura. Los criterios de selección de la investigación incluyeron trabajos publicados en los últimos cinco años, específicamente de 2018 a 2023. Se empleó yoga para disminuir las molestias por dismenorrea en la población de investigación, compuesta por mujeres jóvenes con dolores mensuales. Entre 2018 y 2023, se descubrió que 666 estudios cumplían con los requisitos de selección de publicación. Se identificaron quince revistas que cumplían con los requisitos de este estudio mediante la ruta de búsqueda PRISMA. Según los datos, en 15 revistas se ha demostrado que el yoga tiene un efecto calmante sobre las molestias menstruales de las adolescentes. Por tanto, el yoga es una estrategia de tratamiento no farmacológica exitosa para reducir la dismenorrea en adolescentes en edad escolar. Esto se debe a que el yoga puede ser calmante y estimular al cuerpo a liberar endorfinas, que funcionan como analgésicos orgánicos. El yoga es una actividad suave que ayuda al cuerpo a evitar la rigidez, la presión, el dolor y el cansancio, al tiempo que aumenta la flexibilidad de forma segura. Mejora la capacidad pulmonar al respirar, mejora la circulación sanguínea, alivia el estrés físico y emocional y disminuye el dolor. Además, practicar yoga ayuda a las mujeres con síndrome premenstrual a sentirse más cómodas al reducir las peligrosas secreciones inflamatorias.

**Palabras clave:** Yoga; Dismenorrea; Menstruación; Adolescentes

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Nugroho Susanto  
nugrohosusanto@fik.unp.ac.id

### Introduction

Menstruation is a sign of puberty that teenage girls experience (Dwi Hareni et al., 2023). Dysmenorrhea is the most prevalent menstruation issue (Bahrami et al., 2020; Singh et al., 2019). The Greek words : meno, which means month, rrhea, which means flowing, and dys, which means difficult, unpleasant, or abnormal, are the source of the name dysmenorrhea (Chauhan & Kodnani, 2016). Accordingly, dysmenorrhea is the most prevalent gynaecological issue affecting women in their adolescent and early adult years (Boguszewski et al., 2021). Primary and secondary dysmenorrhea are the two main categories into which dysmenorrhea is typically classified (Wal et al.,

2023). Primary dysmenorrhea refers to cyclical pain without pelvic pathology; secondary dysmenorrhea results from pathology (Nwaezuoke & Gbonjubola, 2022).

Due to its substantial impact on women's quality of life, dysmenorrhea is a serious health issue (Carroquino-Garcia et al., 2019; Fernández-Martínez et al., 2019; Rahmawati et al., 2022). Women typically complain of cramps or stomachaches beginning the day before their periods and lasting up to two or three days (Anggasari & Windarti, 2021). Adolescent girls and women frequently experience dysmenorrhea, or menstrual pain, throughout their periods (Gerancher, 2018). Every woman experiences menstrual pain differently; some experience mild discomfort, while others experience severe pain that pre-

vents them from performing everyday tasks, forces them to rest, or even requires them to miss work or school (Prastiwi et al., 2021). Women who experience primary dysmenorrhea express discomfort, a lower quality of life, and trouble sleeping (Elbandrawy & Elhakk, 2021). Elevated levels of discomfort during menstruation are associated with a two- to three-fold rise in medical costs, reduced work output, and absenteeism, leading to a significant financial strain (Akiyama et al., 2017; Iacovides et al., 2015).

Dysmenorrhea occurs in 60% to 90% of menstruating teenagers (Goss, 2023). In a cross-sectional study, 370 female students had 85.7% primary dysmenorrhea, 12.7% mild dysmenorrhea, 65.6% moderate, and 8.4% severe (Rafique & Mona, 2018). (Zaid et al., 2022) state that an excess or unbalanced release of prostaglandin (PG), specifically PGF<sub>2</sub>α, from the endometrium during menstruation is the major physiological cause of primary dysmenorrhea. It has been found that this imbalance frequently results in arrhythmic myometrial contractions, which lower uterine blood flow and promote hypoxia in the uterus. This hypoxia causes painful cramps linked to primary dysmenorrhea (Armour et al., 2019).

All women, regardless of ethnicity or socioeconomic class, are affected by dysmenorrhea. Nonetheless, early menarche age, prolonged menstrual cycles, smoking, and a higher body mass index (BMI) positively correlate with longer or more intense pain episodes (Bayraktar et al., 2020). Additionally, psychological factors that affect women, such as emotional disorders and psychological disorders, impact the degree of dysmenorrhea. Other factors that may also be involved include prostaglandins, estrogens, progesterone, uterine nerves, oxytocin, and vasopressin. The stronger the contractions, the greater the pain experienced. Menstrual cycle disorders, persistent disruptions and blood counts during the menstrual cycle, and other problems still associated with menstruation are examples of menstrual disorders (Kulsum & Astuti, 2020).

Menstrual discomfort can impact everyday activities because dysmenorrhea is always accompanied by other symptoms (More et al., 2019; Varghese et al., 2019). Lower stomach cramps coupled with gastrointestinal symptoms comprise the symptom complex of dysmenorrhea. Two types of interventions are available to treat dysmenorrhea: pharmaceutical and non-pharmacological. Non-pharmacological therapy is used to lessen menstrual discomfort without using chemicals, whereas pharmaceutical therapy involves the administration of chemical medications (Safitri et al., 2023). Non-pharmacological therapy is safer than pharmaceutical therapy because it does not have any negative side effects.

Yoga is one natural remedy for dysmenorrhea (Kanchibhotla et al., 2023). Yoga focuses on conscious movement made up of a wide range of dynamic and static postures (asana), breathing exercises (pranayama), and components of meditation postures (dhyana/dharana)

(Abasiyanik et al., 2020; Barrientos et al., 2021; Cardalda et al., 2022; Mesa et al., 2023; Vergeer et al., 2017). Physically effective yoga can facilitate balance between the body and mind (Gumenyuk et al., 2021). Consequently, one of the suggested relaxing techniques to lessen the severity of dysmenorrhea is yoga therapy. When comparing the exercise group (yoga and stretching) to the heat and acupressure groups for women with dysmenorrhea, a systematic evaluation of 23 clinical trials done in Iran, Taiwan, the USA, Turkey, Hong Kong, and Korea found that the activity group had the greatest impact on reducing menstrual pain symptoms (Armour et al., 2019). To reduce the intensity of dysmenorrhea, stretching exercises, jogging and yoga exercises are highly advised (Handayani et al., 2023). Proper breathing is crucial when doing yoga (Sereda et al., 2021). Yoga has several health benefits, such as improving lung capacity during breathing, boosting blood circulation, relaxing mental and physical strain, and soothing pain. Furthermore, yoga practice lessens the release of damaging inflammation, easing symptoms of PMS in women (Kamalifard et al., 2017).

Women sometimes complain about the difficulty of menstruation to doctors or other health professionals when their period comes. Dysmenorrhea is characterized by intense cramping in the uterus or the lower abdomen, which can result in menstruation abnormalities and low back discomfort. Apart from excruciating cramps, there could be additional symptoms like headaches, diarrhoea, nausea, and vomiting (Samy et al., 2019). An imbalance in progesterone is the source of pain and can result in lower abdominal cramps that extend down to the waist.

Based on the above problems, researchers conducted a literature review to learn more about yoga's effect on reducing dysmenorrhea in adolescents.

## Methods

The research methodology used was a review of the literature. In compliance with the most recent pre-established reporting components for systematic reviews and meta-analyses (PRISMA) standards, a systematic literature review was carried out (Page et al., 2021). This literature review aims to gather all available scientific information using inclusion and exclusion criteria (Martín-Moya & González-Fernández, 2022). The research process involved searching, evaluating, and finally drawing conclusions. References from various publications and pertinent theoretical sources on the subject were discussed. The following databases were searched for research for this systematic review: Google Scholar, Scopus, and MEDLINE/PubMed.

In September 2023, data were collected. Publications published between January 2018 and December 2023 that highlighted young women with menstruation pain and how they used yoga to track changes in pain intensity were considered for inclusion.

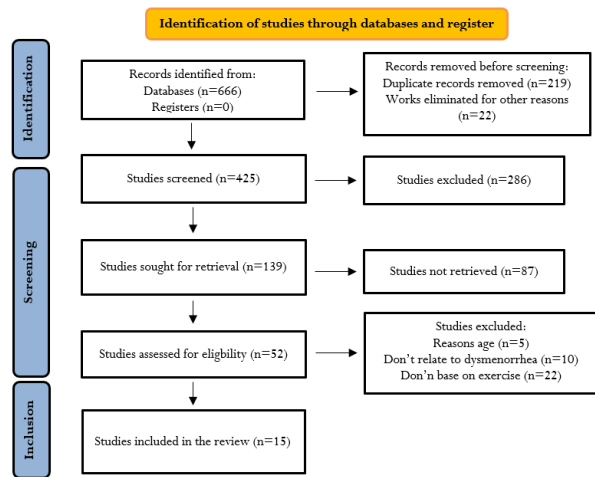


Figure 1. Process flow diagram for the inclusion, screening, and selection of articles.

The process for selecting articles adhered to the PRISMA technique, which is utilized in systematic reviews and meta-analyses (Tricco et al., 2018). Duplicate articles were eliminated following a search across three databases using the reference management program "Paperpile," which was used for the data extraction. Disagreements in the scoring were settled by consensus or a third reviewer during the blinded, standardized screening process by two

writers for the publications. In order to determine eligibility, the principal author was contacted when the complete text was unavailable and requested to supply it. These studies were disregarded if no replies were received because it was impossible to evaluate their eligibility fully. Only the most current publication was considered when a study was mentioned more than once. Then, in order to weed out papers that were not relevant, a preliminary screening was done using the abstract and title. After identifying possible articles for the review, the entire texts were examined to determine which ones satisfied all inclusion requirements. Figure 1 depicts what is included in the literature review. The research authors participated in every stage outlined in the article selection process.

## Results

The author used fifteen publications as their primary reference source when completing the research assignments indicated in Table 1. The articles in the table below provide a research database. The table below needs to include several elements from the 15 articles: 1) Author and Year; 2) Title and publisher of the research; 3) Method; and 4) Study findings. An explanation of the reviewed articles is provided below:

Table 1. List of Articles Subject to Review

No	Author	Title, Publisher	Study Design	Intervention	Result
1	(Nuryaningsih & Rosyati, 2022)	Effect of Yoga on Dysmenorrhea in 6 <sup>th</sup> -grade Elementary School Students at Rusunawa Health Center: A Quasi-Experimental Study, Journal of Medical Sciences	Quasi-experimental	Subjects were asked to perform yoga movements for 14 days of the menstrual cycle within 20 minutes/day, which could be done in the morning before breakfast, before lunch, or before dinner (at least 3 hours after a regular meal or 2 hours after a light meal).	Yoga significantly reduces the length of time and intensity of dysmenorrhea pain in female pupils enrolled in sixth-grade primary school.
2	(Carolin et al., 2022)	Yoga Exercise on Reduction of Menstrual Pain among Adolescent Girls, Nursing and Health Sciences Journal	Quasy experiment	Yoga exercises were given to respondents 2 times (morning and evening) day for 3 days with a duration of 15 minutes for each yoga exercise.	An alternative for easing menstrual pain is yoga. Adolescent females can also use it as a resource for information on non-pharmacological dysmenorrhea treatment.
3	(Aggarwal et al., 2020)	Effect of Yogasanas and Pranayama on Pain, Severity and Quality of Life in Primary Dysmenorrhea, Internasional Journal of Medicine and Public Health	Experimental	The intervention consisted for a period of 4 weeks	The results showed that yogasanas and pranayama had an effect on primary dysmenorrhea pain.
4	(Ulaa et al., 2020)	Application of Mind-Body Practice: Yoga for Reducing Long Pain Primary Dysmenorrhea, Advances in Health Sciences Research	Quasi Experiment	Yoga intervention was done for 30 minutes each session while self tapping was done for 20 minutes each session	The results showed the effectiveness of yoga interventions in lowering chronic pain associated with primary dysmenorrhea.
5	(Prabhu et al., 2019)	Effect Yogasanas on Menstrual Cramps in Young Adult Females With Primary Dysmenorrhea, Internasional Journal of Phuyiotherapy and Research	Experimental	The intervention of this study was for 6 weeks and subjects had to perform yogasana (experimental mental group) and core exercises (control group) for 4 times a week, 2 of which were supervised sessions at their college.	The study's finding is that because yoga poses are affordable and easy to perform at home, they can be utilized to lessen menstrual cramps.
6	(Sa'adah et al., 2019)	The Effect of Hatha Yoga on Dysmenorrhoea Pain in Adolescent Principle, Journal of Maternity Care and Reproductive Health	Quasy experiment	The hatha yoga intervention was conducted for 1 month with a frequency of 2 times for 40 minutes.	The findings demonstrated that young women's dysmenorrhoea pain was reduced by practicing hatha yoga.
7	(L. T. Sari, 2018)	Effectiveness of Yoga Movement "Suryanamaskar" of Dysmenorrhoea Pain Reduction of Adolescent, Jurnal	Experimental	Suryanamaskar yoga intervention was done 6 times for 2 weeks.	In order for the body to burn fat and convert glucose into ATP, yoga poses involving surya-

Ners dan Kebidanan					namaskar motions require an adequate intake of oxygen. Endorphins relieve pain at that point. Teens who practice yoga effectively experience less dysmenorrhea.
8	(Goudar, 2020)	Effect of yoga practices on dysmenorrhea, International Journal of Yogic, Human Movement and Sports Sciences	Experimental	Yoga practice was progressively introduced to the experimental group for 30 days with a frequency of six days a week for one hour. Asanas were taught for a period of 30 minutes, Pranayama for 15 minutes and relaxation for 10 minutes.	The research results show that yoga therapy is useful in controlling menstrual disorders and irregularities.
9	(Aprillia et al., 2023)	The Effect Of Yoga Training Butterfly Pose, Child Pose, Cat And Cow Pose On The Intensity Of Primary Menstrual Pain (Dysmenorrhea), Journal of Applied Health Management and Technology	Experimental	The intervention of Yoga Training Butterfly Pose, Child Pose, Cat and Cow Pose given for 30 days.	The degree to which female students experience dysmenorrhea, or primary menstruation pain, is influenced by the butterfly, child, cat, and cow yoga positions.
10	(Salman et al., 2022)	The Effect of Yoga on Pain and Quality of Life in Primary Dysmenorrhea: A Cross Sectional Survey, Pakistan Journal Of Health Sciences	A Cross Sectional	Yoga exercise is given 3 times a week at 60 second intervals for 12 repetitions.	The simplest and safest method to reduce menstrual pain in women is to practice yoga.
11	(Kirca & Celik, 2021)	The effect of yoga on pain level in primary dysmenorrhea, Health Care for Women International.	Experimental	The yoga program was conducted for 12 sessions, once a week for 12 weeks.	Women with primary dysmenorrhea find that yoga is a beneficial solution for lowering their menstrual pain.
12	(Cahyati et al., 2022)	The effect of yoga on the intensity of primary dysmenorrhea in adolescent girls at Insan Permai Youth Posyandu Cikancung Village Bandung, Science Midwifery	Pre-experiment	Yoga exercises are done for 20-30 minutes.	It has been demonstrated that yoga effectively lessens dysmenorrhea pain. This is evident from the examination of p values (0,000) < $\alpha$ values (0.05), this demonstrate how the pain intensity scale changed both before and after doing yoga.
13	(Julaecha et al., 2020)	Pain Reduction During Dysmenorrhea With Yoga Movement, Jurnal Kesehatan Prima	Quasi-experimental	Interventions in yoga movements are breathing exercises (pranayana) with exhaled breath, followed by physical movements (asana): Dandasana, Baddha konasana, malasana, face adho savasana, child's pose, uphavista konasana, supta baddha konasana, each movement is done for 2-5 minutes. The intervention was given for one month (6 meetings).	The results showed that yoga affected reducing the dysmenorrhea pain scale.
14	(Murtiningsih et al., 2021)	The Effect of Multiple Treatment Action: Yoga and Chamomile on Dismenore and Adolescent Anxiety, Malaysian Journal of Medicine and Health Sciences	Quasi-experimental	Yoga movements were performed 2 times a week for 30-45 minutes. And respondents drank 2 glasses of chamomile a day, in the morning and evening.	Deep breathing relaxation is not as beneficial as yoga and chamomile tea in relieving anxiety and dysmenorrhea.
15	(Hashemi et al., 2022)	The Effect of Water Yoga Exercises on the Intensity and Pain Duration in Girls with Primary Dysmenorrhea, Women. Health. Bull.	Experimental	Water yoga exercise is done twice a week, each session lasting 45 minutes and the entire exercise plan was conducted over eight weeks in a pool with a water temperature of 28°C	One of the best ways to help women with primary dysmenorrhea feel less discomfort and take fewer medicines is to do yoga poses in the water.

## Discussion

Yoga is relaxation method that can divert attention from dysmenorrhea pain (K. Sari et al., 2018). Yoga poses are a popular substitute for reducing menstruation discomfort, and young females can use them as a guide for treating non-pharmacological dysmenorrhea (Carolin et al., 2022). According to research findings (Nuryaningsih & Rosyati, 2022), yoga considerably shortens the time that female students experience dysmenorrhea pain and lessens its intensity.

Research (L. T. Sari, 2018), the moves of suryanamaskar yoga strengthen joints and muscles while balancing the abdominal muscles to improve oxygen supply and

lessen pain. Suryanamaskar yoga is a blend of breathing, movement, and relaxation practices designed to make you feel comfortable. Yoga's movement increases the body's oxygen requirement to burn fat and convert glucose into ATP, which in turn triggers the release of endorphins to reduce pain. The study (Aprillia et al., 2023) employed the butterfly, child, cat, and cow poses as yoga poses. The benefits of the butterfly pose movement are effective on the stomach, the cat and cow pose movement is useful in improving blood circulation, reducing anxiety, and tightening the waist and hips and the child's pose can reduce hip pain and trigger feelings of relaxation and calm. The yoga position helps relieve pain by stretching the muscles where the pain is centered (Aggarwal et al., 2020). Using

several types of yoga movements has been shown to be effective in reducing the dysmenorrhea pain scale (Julaecha et al., 2020).

Yoga practice is the safest and simplest method for reducing primary dysmenorrhea pain (Salman et al., 2022). Yoga intervention helps reduce long-standing primary dysmenorrhea (Ulaa et al., 2020). According to a study (Sa'adah et al., 2019), yoga can help with the discomfort associated with dysmenorrhea. Before being administered to 33 respondents in the intervention group with a mild pain scale category of 86.8%, yoga activities were provided to 23 respondents in the intervention and control groups with a moderate pain scale category of 60.5%. The analysis's findings indicate that variations in the pain intensity scale before and after practicing yoga account for the p-value (0.000) being less than the  $\alpha$  value (0.05) (Cahyati et al., 2022). Thus, yoga movements can reduce the duration of primary dysmenorrhea pain (Kirca & Celik, 2021).

Another study (Prabhu et al., 2019) supports these findings by stating that yoga can help distribute energy to the reproductive organs, thereby restoring the balance of hormones, which are responsible for the menstrual process. By regulating the hypothalamus-pituitary-adrenal axis and the sympathetic nervous system, yoga also improves mental and physical health by easing the pain associated with menstruation. Yoga poses done in the water can help women with primary dysmenorrhea feel less discomfort during their periods and take fewer drugs overall (Hashemi et al., 2022). Yoga movements and chamomile drinks help reduce anxiety and dysmenorrhea (Murtiningsih et al., 2021). This shows that yoga helps overcome menstrual disorders and irregularities (Goudar, 2020).

Yoga is a mild activity that helps the body avoid stiffness, pressure, pain, and tiredness while increasing bodily flexibility safely. Yoga can be used as a preventative measure against physical and mental health issues and as a treatment (Widiastini et al., 2023). ). In addition to being a traditional spiritual practice that incorporates breathing techniques, body movements, meditation, philosophical discussions, and lifestyle choices, yoga is an age-old health therapy (Cramer et al., 2016, 2019; Tellhed et al., 2019). Through the integration of mind and body, yoga can be utilized as a supplemental therapy that effectively reduces pain, tension, anxiety, and depression (Gothe et al., 2019; Jean et al., 2022; Sarla, 2020). Additionally, yoga enhances the lubrication and joint function. The blood will flow more easily and smoothly, and the organs will function more smoothly. Yoga gradually pulls all of the muscles, starting with the ligaments, tendons, and other tissues surrounding the muscles, to improve muscle flexibility. Since women with dysmenorrhea experience long-term alterations in their sensitivity to muscle pain, yoga has an edge over other therapies for relieving dysmenorrhea discomfort. Stretching and yoga are low-intensity exercises that consistently yield the most effects (Armour et al., 2019).

## Conclusion

A review of literature studies in 15 journals found that the results of the review showed that yoga movements or poses were effective in reducing menstrual pain. The results of the review show that occurs in adolescents is moderate pain. The study's findings clarify that yoga's ability to calm the body and release endorphin hormones, which function as the body's natural analgesics, makes yoga helpful in relieving pain. Apart from that, several studies also explain that breathing techniques in yoga poses can distract pain, resulting in a decrease in pain in respondents.

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## Conflicts of interest

– No conflicts of interest are disclosed by the writers.

## References

- Abasiyanik, Z., Yigit, P., Ozdogara, A. T., Kahraman, T., Ertekin, O., & Ozakbas, S. (2020). A comparative study of the effects of yoga and clinical Pilates training on walking, cognition, respiratory functions, and quality of life in persons with multiple sclerosis: A quasi-experimental study. *Explore*, 000, 1–6. <https://doi.org/10.1016/j.explore.2020.07.013>
- Aggarwal, A., Rao, T., Palekar, T., Paranjape, P., & Singh, G. (2020). Effect of Yogasanas and Pranayama on Pain, Severity and Quality of Life in Primary Dysmenorrhea. *International Journal of Medicine and Public Health*, 10(1), 38–42. <https://doi.org/10.5530/ijmedph.2020.1.8>
- Akiyama, S., Tanaka, E., Cristeau, O., Onishi, Y., & Osuga, Y. (2017). Evaluation of the treatment patterns and economic burden of dysmenorrhea in Japanese women, using a claims database. *ClinicoEconomics and Outcomes Research*, 9, 295–306. <https://doi.org/10.2147/CEOR.S127760>
- Amru, D. E., & Selvia, A. (2022). Pengaruh Senam Yoga Terhadap Penurunan Nyeri Haid Pada Remaja Putri Di Institut Kesehatan Mitra Bunda. *Midwifery Care Journal*, 3(1), 1–6. <https://doi.org/DOI:10.31983/micajo.v3i1.8188>
- Anggasari, Y., & Windarti, Y. (2021). Acupressure Effectiveness and Yoga Exercises To Reduce Menstrual Pain. *STRADA Jurnal Ilmiah Kesehatan*, 10(2), 1443–1448. <https://doi.org/10.30994/sjik.v10i2.844>
- Aprillia, S. R., Wahyuni, S., & Widiastuti, D. (2023). THE EFFECT OF YOGA TRAINING BUTTERFLY POSE, CHILD POSE, CAT AND COW POSE ON THE INTENSITY OF PRIMARY MENSTRUAL PAIN (DYSMENORRHEA). *Journal of Applied Health Management and Technology*, 5(2), 41–49.
- Armour, M., Smith, C. A., Steel, K. A., & MacMillan, F. (2019). The effectiveness of self-care and lifestyle interventions in primary dysmenorrhea: A systematic review

- and meta-analysis. *BMC Complementary and Alternative Medicine*, 19(22), 1–16. <https://doi.org/10.1186/s12906-019-2433-8>
- Bahrami, A., Bahrami-Taghanaki, H., Khorasanchi, Z., Timar, A., Jaberi, N., Azaryan, E., Tayefi, M., Ferns, G. A., Sadeghnia, H. R., & Ghayour-Mobarhan, M. (2020). Menstrual problems in adolescence: relationship to serum vitamins A and E, and systemic inflammation. *Archives of Gynecology and Obstetrics*, 301(1), 189–197. <https://doi.org/10.1007/s00404-019-05343-1>
- Barrientos, E. B., Cancino, C. V., Muñoz, R. M., Niño-Méndez, O. A., & Núñez-Espinosa, C. A. (2021). Effects of Hatha-Vinyasa Yoga practice on the autonomic regulation and perceived pain of older women living in high southern latitude. A pilot study. *Retos*, 39, 718–722. <https://doi.org/10.47197/retos.v0i39.81629>
- Bayraktar, M., Sincan, S., Tanriverdi, E. C., & Cayir, Y. (2020). Primary Dysmenorrhea and Yoga : A Mini-Review. *World Journal of Yoga, Physical Therapy and Rehabilitation*, 2(4), 1–3. <https://doi.org/10.33552/WJYPR.2020.02.000542>
- Boguszewski, D., Borowska, J., Szymańska, A., Adamczyk, J. G., Lewandowska, M., & Białoszewski, D. (2021). Effectiveness of kinesiotaping for the treatment of menstrual pain. *Physiotherapy Quarterly*, 28(4), 20–24. <https://doi.org/10.5114/PQ.2020.96230>
- Cahyati, N., Nurhayati, F., & Sumarlina, N. (2022). The Effect of Yoga on the Intensity of Primary Dysmenorrhea in Adolescent Girls at Insan Permai Youth Posyandu Cikancung Village Bandung. *Science Midwifery*, 10(5), 4225–4231. <https://doi.org/10.35335/midwifery.v10i5.1035>
- Cardalda, I. M., Lago, Á. E., Moldes, Á. C., & Carral, J. M. C. (2022). Effect of a pilates program on the functional and cognitive capacity of a collective of institutionalized fragile octogenaries. Pilot study. *Retos*, 45, 104–112. <https://doi.org/10.47197/retos.v45i0.91431>
- Carolin, B. T., Maesari, I., & Hisni, D. (2022). Yoga Exercise on Reduction of Menstrual Pain among Adolescent Girls. *Nursing and Health Sciences Journal (NHSJ)*, 2(1), 29–33. <https://doi.org/10.53713/nhs.v2i2.86>
- Carroquino-García, P., Jiménez-Rejano, J. J., Medrano-Sánchez, E., De La Casa-Almeida, M., Díaz-Mohedo, E., & Suarez-Serrano, C. (2019). Therapeutic Exercise in the Treatment of Primary Dysmenorrhea: A Systematic Review and Meta-Analysis. *Physical Therapy*, 99(10), 1371–1380. <https://doi.org/10.1093/ptj/pzz101>
- Chauhan, G. D., & Kodnani, A. H. (2016). A study of prevalence and impact of dysmenorrhea and its associated symptoms among adolescent girls residing in slum areas of Vadodara city, Gujarat. *International Journal of Medical Science and Public Health*, 5(3), 510–515. <https://doi.org/10.5455/ijmsph.2016.20102015145>
- Cramer, H., Lauche, R., Langhorst, J., & Dobos, G. (2016). Is one yoga style better than another? A systematic review of associations of yoga style and conclusions in randomized yoga trials. *Complementary Therapies in Medicine*, 25, 178–187. <https://doi.org/10.1016/j.ctim.2016.02.015>
- Cramer, H., Quinker, D., Pilkington, K., Mason, H., Adams, J., & Dobos, G. (2019). Associations of yoga practice, health status, and health behavior among yoga practitioners in Germany—Results of a national cross-sectional survey. *Complementary Therapies in Medicine*, 42(October 2018), 19–26. <https://doi.org/10.1016/j.ctim.2018.10.026>
- Dwi Hareni, N., Abidin, Z., & Astuti, A. (2023). Yoga Practice on Reducing Menstrual Pain Intensity (Dysmenorrhea) in Adolescent Girls: Literature Review. *Health and Technology Journal (HTechJ)*, 1(2), 196–204. <https://doi.org/10.53713/htech.v1i2.35>
- Elbandrawy, A. M., & Elhakk, S. M. (2021). Comparison between the effects of aerobic and isometric exercises on primary dysmenorrhea. *Acta Gymnica*, 51, 1–6. <https://doi.org/10.5507/ag.2021.014>
- Fernández-Martínez, E., Onieva-Zafra, M. D., & Parra-Fernández, M. L. (2019). The impact of dysmenorrhea on quality of life among Spanish female university students. *International Journal of Environmental Research and Public Health*, 16(5), 1–12. <https://doi.org/10.3390/ijerph16050713>
- Gerancher, K. R. (2018). Dysmenorrhea and Endometriosis in the Adolescent. *The American College of Obstetricians and Gynecologists*, 132(760), 249–258.
- Goss, G. L. (2023). Dysmenorrhea in Adolescents. *The Journal for Nurse Practitioners*, 19(8). <https://doi.org/10.1016/j.nurpra.2023.104710>
- Gothe, N. P., Khan, I., Hayes, J., Erlenbach, E., & Damoiseaux, J. S. (2019). Yoga Effects on Brain Health: A Systematic Review of the Current Literature. *Brain Plasticity*, 5(1), 105–122. <https://doi.org/10.3233/bpl-190084>
- Goudar, A. (2020). Effect of yoga practices on dysmenorrhea Ashwini. *International Journal of Yogic, Human Movement and Sports Sciences*, 5(2), 151–153. <http://www.theyogicjournal.com>
- Gumenyuk, S., Sereda, I., Hulka, O., Lavrin, H., Ladyka, P., & Kuz, Y. (2021). Effect of yoga on biological age indicators of 14-15-year-old girls. *Journal of Physical Education and Sport*, 21(5), 2956–2962. <https://doi.org/10.7752/jpes.2021.s5392>
- Handayani, S. G., Ayubi, N., Komaini, A., Lesmana, H. S., Kusnanik, N. W., Herawati, L., Ardha, M. A. Al, Nurhasan, Kafrawi, F. R., Putri, D. R. S., Kusuma, D. A., & Putra, A. Y. (2023). N-3 polyunsaturated fatty acids (PUFAs) and physical exercise have the potential to reduce pain intensity in women with primary dysmenorrhea: Systematic Review. *Retos*, 48, 106–112. <https://doi.org/10.47197/retos.v48.96629>
- Hashemi, N., Babakhani, F., & Sheikhhosini, R. (2022). The Effect of Water Yoga Exercises on the Intensity and Pain Duration in Girls with Primary Dysmenorrhea. *Women's Health Bulletin*, 9(2), 61–69. <https://doi.org/10.30476/WHB.2022.92560.1144.1>
- Iacovides, S., Avidon, I., & Baker, F. C. (2015). Women with dysmenorrhoea are hypersensitive to experimentally induced forearm ischaemia during painful menstruation and during the pain-free follicular phase. *European Journal of Pain*, 19(6), 797–804.
- Jean, M., Umair, M., Muddaloor, P., Farinango, M., Ansary, A., Dakka, A., Nazir, Z., Shamim, H., Paidi, G., & Khan, S. (2022). The Effects of Yoga on Bipolar Disorder: A Systematic Review. *Cureus*, 14(8), 1–8. <https://doi.org/10.7759/cureus.27688>
- Julaecha, J., Safitri, S., & Wuryandari, A. G. (2020). Pain Reduction During Dysmenorrhea With Yoga Movement. *Jurnal Kesehatan Prima*, 14(1), 53–59. <https://doi.org/10.32807/jkp.v14i1.301>
- Kamalifard, M., Yavari, A., Asghari-Jafarabadi, M., Ghaffarilaleh, G., & Kasb-Khah, A. (2017). The effect of yoga on women's premenstrual syndrome: A randomized

- controlled clinical trial. *International Journal of Women's Health and Reproduction Sciences*, 5(3), 205–211. <https://doi.org/10.15296/ijwhr.2017.37>
- Kanchibhotla, D., Subramanian, S., & Singh, D. (2023). Management of dysmenorrhea through yoga: A narrative review. *Frontiers in Pain Research*, 4(March), 1–8. <https://doi.org/10.3389/fpain.2023.1107669>
- Kirca, N., & Celik, A. S. (2021). The effect of yoga on pain level in primary dysmenorrhea. *Health Care for Women International*, 44(5), 601–620. <https://doi.org/10.1080/07399332.2021.1958818>
- Kulsum, U., & Astuti, D. (2020). The Menstrual Cycle and Nutritional Status. *Advances in Health Sciences Research*, 27(ICoSHEET 2019), 199–202. <http://creativecommons.org/licenses/by-nc/4.0/>
- Martín-Moya, R., & González-Fernández, F. T. (2022). Test for the improvement and evaluation of change of direction in team sports: A systematic review. *Journal of Physical Education and Sport*, 22(7), 1716–1722. <https://doi.org/10.7752/jpes.2022.07215>
- Mesa, M. M. L., Fernández, C. C., & Santos, D. F. (2023). Physical activity of body and mind. Pilates and yoga. Effects on vitality and mental health. Systematic review and meta-analysis. *Retos*, 50, 180–204.
- More, T. S., Chopkar, D. S. K., & Shinde, D. P. (2019). EFFECT OF YOGA THERAPY ON PRIMARY DYSMENORRHEA IN ADOLESCENT FEMALES” – A LITERARY REVIEW. *World Journal of Pharmaceutical Research*, 8(4), 550–558. <https://doi.org/10.20959/wjpr20194-14530>
- Murtiningsih, Oyoh, Awaliyah, S. N., & Praghlapati, A. (2021). The Effect of Multiple Treatment Action: Yoga and Chamomile on Dismenore and Adolescent Anxiety. *Malaysian Journal of Medicine and Health Sciences*, 17(2), 22–27.
- Nuryaningsih, & Rosyati, H. (2022). Effect of Yoga on Dysmenorrhea in 6 Grade Elementary School Students at Rusunawa Health Center : A Quasi-Experimental Study. *Journal of Medical Sciences*, 10(B), 2230–2235. <https://doi.org/10.3889/oamjms.2022.10915>
- Nwaezuke, C. A., & Gbonjubola, Y. T. (2022). Aerobic exercise as a non-medicinal option in the management of primary dysmenorrhea: A critical review. *Adesh University Journal of Medical Sciences & Research*, 4(1), 3–9. [https://doi.org/10.25259/aujmsr\\_45\\_2021](https://doi.org/10.25259/aujmsr_45_2021)
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *International Journal of Surgery*, 88, 1–9. <https://doi.org/10.1016/j.ijsu.2021.105906>
- Prabhu, S., Nagrale, S., Shyam, A., & Sancheti, P. (2019). EFFECT OF YOGASANAS ON MENSTRUAL CRAMPS IN YOUNG ADULT FEMALES WITH PRIMARY DYSMENORRHEA. *International Journal of Physiotherapy and Research*, 7(4), 3129–3134. <https://doi.org/10.16965/ijpr.2019.140>
- Prastiwi, S., Hidajaturrokhmah, N. Y., & Anggraeni, S. (2021). The Effectiveness of Abdominal Stretching Exercises and Dysmenorrhea Gymnastics Against Dysmenorrhea Pain Intensity in Adolescent Girls: Literature Review. *Health Scientific Journal*, 2(2), 34–41. <https://doi.org/10.55700/oaahsj.v2i2.17>
- Rafique, N., & Mona, H. A. (2018). Prevalence of primary dysmenorrhea and its relationship with body mass index. *Journal of Obstetrics and Gynaecology Research*, 44(9), 1773–1778.
- Rahmawati, A. F., Prasetya, H., & Murti, B. (2022). Meta-Analysis the Effect of Acupressure in Lowering Pain of Dysmenorrhea. *Indonesian Journal of Medicine*, 7(1), 51–60. <https://doi.org/10.26911/theijmed.2022.07.01.06>
- Sa'adah, U., Kholisotin, Munir, Z., FR, H., & Wahid, A. H. (2019). THE EFFECT OF HATHA YOGA ON DYSMENORRHOEA PAIN IN ADOLESCENT PRINCIPLE. *Journal of Maternity Care and Reproductive Health*, 2(2), 144–153.
- Safitri, M., Jayanti, R. D., & Frety, E. E. (2023). Comparison of the effectiveness of giving warm compresses and cold compresses in handling dysmenorrhea: Systematic review. *World Journal of Advanced Research and Reviews*, 18(3), 585–590. <https://doi.org/10.30574/wjarr.2023.18.3.1096>
- Salman, M., Umar, M., Shahid, H., Haq, K., Asif, S., & Talha, M. (2022). The Effect of Yoga on Pain and Quality of Life in Primary Dysmenorrhea: A Cross Sectional Survey. *Pakistan Journal of Health Sciences*, 3(7), 161–165. <https://doi.org/10.54393/pjhs.v3i07.466>
- Samy, A., Zaki, S. S., Metwally, A. A., Mahmoud, D. S. E., Elzahaby, I. M., Amin, A. H., Eissa, A. I., Abbas, A. M., Hussein, A. H., Talaat, B., & Ali, A. S. (2019). The Effect of Zumba Exercise on Reducing Menstrual Pain in Young Women with Primary Dysmenorrhea: A Randomized Controlled Trial. *Journal of Pediatric and Adolescent Gynecology*, 32(5), 1–5. <https://doi.org/10.1016/j.jpjag.2019.06.001>
- Sari, K., Nasifah, I., & Trisna, A. (2018). PENGARUH SENAM YOGA TERHADAP NYERI HAID REMAJA PUTRI. *Jurnal Kebidanan*, 10(02), 103–115.
- Sari, L. T. (2018). EFFECTIVENESS OF YOGA MOVEMENT “SURYANAMASKAR” OF DYSMENORRHOEA PAIN REDUCTION OF ADOLESCENT Levi. *Jurnal Ners Dan Kebidanan*, 5(1), 69–73. <https://doi.org/10.26699/jnk.v5i1.ART.p069>
- Sarla, G. S. (2020). The Therapeutic Effects of Yoga on Health and Related Diseases: An Analytical Review. *Journal of Scientific Research in Medical and Biological Sciences*, 1(2), 109–115. <https://doi.org/10.47631/jsrmb.v1i2.133>
- Sereda, I., Lavrin, H., Kucher, T., Grygus, I., Napierała, M., Muszkieta, R., Zukow, W., Smoleńska, O., Ostrowska, M., Hagner-Derengowska, M., & Kałużny, K. (2021). Effect of yoga exercises on the senior schoolchildren's biological age during physical education. *Journal of Physical Education and Sport*, 21(5), 2782–2789. <https://doi.org/10.7752/jpes.2021.s5370>
- Singh, M., Rajoura, O. P., & Honnakamble, R. A. (2019). Menstrual patterns and problems in association with body mass index among adolescent school girls. *Journal of Family Medicine and Primary Care*, 8(9), 2885–2888. <https://doi.org/10.4103/jfmprc.jfmprc>
- Tellhed, U., Daukantaitė, D., Maddux, R. E., Svensson, T., & Melander, O. (2019). Yogic Breathing and Mindfulness as Stress Coping Mediate Positive Health Outcomes of Yoga. *Mindfulness*, 10(12), 2703–2715. <https://doi.org/10.1007/s12671-019-01225-4>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K.,

- Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hem, S., & Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467–473. <https://doi.org/10.7326/M18-0850>
- Ulaa, M. A., Triwijayanti, R., Fadlilah, M., Ningrum, W. A. C., Trilia, Yelisni, I., & Rahmania, A. (2020). Application of Mind-Body Practice: Yoga for Reducing Long Pain Primary Dysmenorrhea. *Advances in Health Sciences Research*, *27*(ICoSHEET 2019), 395–399. <http://creativecommons.org/licenses/by-nc/4.0>
- Varghese, L., Prakash, P. J., & Viswanath, L. (2019). A study to identify the menstrual problems and related practices among adolescent girls in selected higher secondary school in thiruvananthapuram, Kerala, India. *Journal of South Asian Federation of Obstetrics and Gynaecology*, *11*(1), 13–16. <https://doi.org/10.5005/jp-journals-10006-1642>
- Vergeer, I., Bennie, J. A., Charity, M. J., Harvey, J. T., van Uffelen, J. G. Z., Biddle, S. J. H., & Eime, R. M. (2017). Participation trends in holistic movement practices: A 10-year comparison of yoga/Pilates and t'ai chi/qigong use among a national sample of 195,926 Australians. *BMC Complementary and Alternative Medicine*, *17*(296), 1–13. <https://doi.org/10.1186/s12906-017-1800-6>
- Wal, P., Gupta, D., Wal, A., Pandey, S. S., & Krishnan, K. (2023). A Wholistic Approach to Non-Pharmacological Intervention for Primary Dysmenorrhea. *Current Women's Health Reviews*, *20*(1), 1–14. <https://doi.org/10.2174/1573404819666230109105829>
- Widiastini, L. P., Sumawati, N. M. R., & Udayani, N. P. M. Y. (2023). Comparison of Pranayama Yoga and Surya Namaskar Yoga Towards Dysmenorrhea in Adolescent Girl. *Jurnal Aisyah: Jurnal Ilmu Kesehatan*, *8*(1), 195–200. <https://doi.org/10.30604/jika.v8i1.1573>
- Zaid, N. S. N., Muhamad, A. S., Kuan, G., & Zon, E. M. (2022). The effect of isometric exercise on the intensity and duration of pain among physically inactive young females with primary dysmenorrhea. *Journal of Physical Education and Sport*, *22*(11), 2777–2783. <https://doi.org/10.7752/jpes.2022.11352>

#### Datos de los autores:

Jihan Faira Zanada	jihanfaira.2022@student.uny.ac.id	Autor/a
Hendra Setyawan	hendra777setyawan@uny.ac.id	Autor/a
Nugroho Susanto	nugrohosusanto@fik.unp.ac.id	Autor/a
Ridho Bahtra	ridhobahtra@fik.unp.ac.id	Autor/a
Tiok Wijanarko	tiokwijanarko@fip.unp.ac.id	Autor/a
Khoiril Anam	khoiril.ikor@mail.unnes.ac.id	Autor/a
Gema Fitriady	gema.fitriady.fik@um.ac.id	Autor/a
José Vicente García-Jiménez	jvgjimenez@um.es	Autor/a
Ratko Pavlovic	pavlovicratko@yahoo.com	Autor/a
Agnieszka Magdalena Nowak	eszka.nowak@awf.edu.pl	Autor/a
MHS Proofreading	+62 85750966821	Traductor/a