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Systematic Review: The Role of Physical Activity on The Incidence of Dysmenorrhea in Adolescents Aged 12-18 Years

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ABSTRACT

Introduction: The prevalence of dysmenorrhea in Indonesia is 54.89% for primary dysmenorrhea while 45.11% for secondary dysmenorrhea. Dysmenorrhea affects the limited activities that can be done by adolescent girls. The justification for writing this article is to find out the impact of physical activity on the prevalence of dysmenorrhea in adolescents. **Method:** The literature search process contained several online databases such as Google Scholar, ScienceDirect, Pubmed, and Garuda, and it spanned the years 2014 - 2024. The method that was applied when arranging this article is a systematic review method with PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) guidelines. Also, it uses the PECO (Population, Exposure, Comparison, Outcome) method in identifying articles to be used, and the approach used is cross-sectional. Included articles will be selected based on the NOS assessment, so 9 articles have met the criteria. **Results**: The results stated that of the 9 included articles, 8 articles revealed there was an association between the role of physical activity and the prevalence of dysmenorrhea. **Conclusion**: It may inferred that physical activity has a significant influence on adolescent girls during menstruation. Therefore, adolescents need to do physical activity to avoid the prevalence of dysmenorrhea during menstruation.

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INTRODUCTION

Menstruation is the process of shedding the uterine lining, resulting in bleeding, occurring once a month. During menstruation, many women experience abdominal pain, known as dysmenorrhea. Dysmenorrhea can be defined as an abdominal disorder originating from uterine cramps and occurring throughout the menstrual cycle (Ningrum et al., 2023). Dysmenorrhea is a type of chronic, recurring pain, usually in the form of pelvic or lower abdominal pain (Abreu-Sánchez et al., 2020). Based on its pathophysiology, dysmenorrhea is divided into two types: primary and secondary dysmenorrhea. Primary

dysmenorrhea is menstrual pain without any underlying disorder, while secondary dysmenorrhea is menstrual pain due to an underlying disease (Wang et al., 2022). Primary dysmenorrhea is common, especially among adolescents. Globally, an estimated 90% of adolescent girls experience primary dysmenorrhea, and 10-20% report that their pain is acute, severe, or bothersome (Esan et al., 2024).

The transition from childhood to adulthood, with physical and psychological development, is the meaning of adolescence (Suryana et al., 2022). The World Health Organization (WHO) states that adolescence ranges from 10 to 19 years of age. There are three classifications of adolescence: early adolescence (12 to 15 years), middle adolescence (15 to 18 years), and late adolescence (18 to 21 years) (Zahara, 2017). In early adolescence, there are changes in primary and secondary sex characteristics, marked by the development of reproductive organs or puberty (R. L. Puspitasari et al., 2014). Studies conducted globally in various countries estimate the prevalence of dysmenorrhea to range from 41% to 92% among adolescents, with the prevalence in China being 41.7% (Hu et al., 2020), Malaysia being 74.5% (Ning et al., 2020), Singapore being 83.5% (Olivia Feng Hua Ho et al., 2023), and France being 92.9% (Hadjou et al., 2021). A total of 54.89% of adolescents in Indonesia experience primary dysmenorrhea, while 45.11% experience secondary dysmenorrhea (Laili, 2019). In West Java Province, the prevalence of dysmenorrhea reached 55.14%, with 24.5% having mild, 21.28% having moderate, and 9.36% having severe symptoms (D. Puspitasari & Safitri, 2021). Research at an Islamic boarding school in Ngawi showed that 83.1% of adolescents experienced primary dysmenorrhea, with low physical activity as the primary contributing factor (Wahyuni & Zulfahmi, 2021).

A study conducted in Lubuk Village, Aceh, among 70 female respondents aged 11-20 years, found that approximately 30-60% experienced dysmenorrhea, and 7-15% were unable to attend school (Yuli Zuhkrina & Martina, 2023). Factors contributing to dysmenorrhea in adolescent girls include body mass index, smoking, early menarche (<11 years), prolonged menstruation, and psychological disorders (Kural et al., 2015). Pain during menstruation, or dysmenorrhea, limits the activities that adolescent girls can engage in. Students with less physical activity are more likely to experience severe dysmenorrhea than those who frequently engage in physical activity (Dwi et al., 2020). Previous research also found that adolescents who lack physical activity are 7.441 times more likely to experience dysmenorrhea than those with high levels of physical activity (Ardianto & Elisanti, 2019). Physical activity is body movement triggered by muscle contractions, which increases energy expenditure. Physical activity can increase blood supply to the reproductive organs, thereby improving circulation (Wildayani et al., 2023). Research conducted by Tri Nurfiana et al. showed that dysmenorrhea exercises are effective in reducing pain levels in dysmenorrhea sufferers. Before the exercises, the majority of respondents (73.3%) reported moderate pain. After the exercises, the majority (66.7%) experienced mild pain, with three respondents even reporting no pain at all. These results indicate that dysmenorrhea exercises can increase comfort and help respondents feel more relaxed (Nurfiana & Jama, 2021).

Studies on the effects of physical activity on dysmenorrhea have been conducted by (Ningrum et al., 2023). However, the systematic review conducted by Ningrum et al. focused on adolescent girls in general without specifying age groups, while this systematic review focuses on the 12-18 age group, which is secondary school age. The systematic review by Ningrum et al. included studies from various countries, while this systematic review focuses on research conducted in Indonesia to determine the role of physical activity on dysmenorrhea in adolescents aged 12-18 in the Indonesian population.

LITERATURE REVIEW

Dysmenorrhea, or menstrual pain, is a prevalent gynecological complaint among adolescent females, with significant implications for daily functioning, school attendance, and overall quality of life. Numerous studies have explored a wide range of determinants associated with dysmenorrhea, encompassing biological, nutritional, lifestyle, and psychosocial factors. In particular, physical activity has been consistently identified as a potential modifiable factor, with evidence suggesting that adequate levels of physical exercise may help reduce the severity of menstrual pain. Conversely, sedentary behavior, poor dietary patterns—such as frequent consumption of fast food—and micronutrient deficiencies, especially iron, calcium, magnesium, and vitamin E, have been implicated as risk factors that may exacerbate menstrual discomfort.

In recent years, research on dysmenorrhea has expanded to incorporate contextual variables such as nutritional status, stress levels, age at menarche, and body mass index, highlighting the multifactorial nature of the condition. Indonesian-based studies, alongside research from other regions, have provided insights into both localized and global perspectives, revealing similarities and differences in contributing factors. Studies conducted in various settings—ranging from high schools in Surabaya, Jakarta, Mataram, and Bengkulu, to cross-national analyses—have utilized diverse methodological approaches, from observational designs to action research, and have been published in journals indexed by national systems such as Sinta, GARUDA, and international databases like Scopus.

To synthesize these findings, a comprehensive mapping of relevant literature is presented in Table 1, detailing the authorship, publication year, study titles, journal sources, and indexation status of articles that met the inclusion criteria. This compilation provides a consolidated view of the current evidence base, serving as a reference point for identifying research gaps and informing future investigations on the relationship between physical activity, dietary patterns, and dysmenorrhea among adolescent females.

METHOD

This article was compiled using a systematic review method in accordance with the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) guidelines to identify and select articles for use using the PECO (Population, Exposure, Comparison, Outcome) method. During the literature search, researchers utilized several online databases such as Google Scholar, ScienceDirect, Pubmed, and Garuda covering the years 2014-2024. The screening process in this study consisted of two stages. In the first stage, articles were identified based on relevant titles and abstract eligibility. In the second stage, selected articles were selected based on the inclusion criteria of the systematic review.

Article selection was conducted using inclusion and exclusion criteria that refer to PECO (population, exposure, comparison, outcome). The study population was adolescents aged 12-18 years. The exposure focused on the role of physical activity on dysmenorrhea, as measured using the International Physical Activity Questionnaire (IPAQ) and Physical Activity Level (PAL). The comparison is the incidence of dysmenorrhea in adolescents aged 12–18 years with high levels of physical activity compared to those with minimal physical activity. The identified outcome is the incidence of dysmenorrhea due to physical activity, measured using a valid and reliable instrument. The inclusion and exclusion criteria shown in Table 2 were used in article selection.

The data sources for this article were obtained from Google Scholar, ScienceDirect, Pubmed, and Garuda Indonesia from May 19 to November 12, 2024. Articles were searched for topics or abstracts using relevant keywords in both Indonesian and English, such as

dysmenorrhea (OR dysmenorrhea OR menstrual cramps), adolescent (OR adolescent), and physical activity (OR physical movement).

Table 1. Information on Articles that Meet the Criteria

Peneliti, Tahun	Judul	Jurnal, Volume	Terindeks
Ardhia, Dara, et al, 2023.	The Relationship Between Physical Activity and Fast-Food Consumption with the Incidence of Dysmenorrhea in Adolescent Girls	Jurnal Keperawatan, Volume 21, No. 2: 178-187, September 2023	Google Scholar
Wulandari, Nita Hasri, et al, 2023.	The Relationship Between Iron Intake and Physical Activity with the Incidence of Primary Dysmenorrhea in Adolescent Girls at Batik Senior and Vocational High Schools, Surakarta	Jurnal Gizi dan Kesehatan, Volume 3, No.1: 37-46, Juni 2023	GARUDA
A. Robbaniyah, et al. 2023	The Relationship Between Omega-3 Fat Intake, Calcium Intake, Magnesium Intake, Vitamin E Intake, Physical Activity, and Nutritional Status with the Degree of Primary Dysmenorrhea in Female Students at Al Mizan Senior High School, Surabaya	Jurnal Gizi Universitas Surabaya, Volume 3, No. 4: 472-481, Desember 2023	Google Scholar
Resty Hermawahyuni, S, et al. 2023	Risk Factors for the Incidence of Primary Dysmenorrhea in Female Students at PGRI 1 Vocational High School, East Jakarta	Jurnal Kesehatan Komunitas, Volume 8, No. 1: 97-101, April 2022	Sinta Ristekdikti (Sinta 3)
N. Ketut, A, et al. 2024	Age at Menarche, Frequency of Fast-Food Consumption, Nutritional Status, Academic Stress, and Physical Activity Associated with Primary Dysmenorrhea in Female Students at State Senior High School 2, Mataram	Action Research Literature, Volume 8, No. 1: 42-59, Januari 2024	Sinta Ristekdikti (Sinta 5)
F. Tiara, et al. 2021	The Relationship Between Stress Level and Physical Activity with Dysmenorrhea During the COVID-19 Pandemic	Jurnal Ilmiah Kesehatan Keperawatan, Volume 17, No. 3: 208-218, 2021	Sinta Ristekdikti (Sinta 4)
D.Wildayani, et al. (2023)	The Relationship Between Physical Activity Level and Dysmenorrhea in Young Women	Medical Journal of Malaysia, Volume 78, No. 4: 495-499, July 2023	Scopus Q3
Silvia Etika S, et al (2018)	Anemia and Light Physical Activity Affect Risk Factors for Dysmenorrhea in Adolescent Girls	Jurnal Kesehatan Masyarakat, Volume 6, No. 5: 437-444, Oktober 2018	GARUDA
P. Rachel Valetha, et al (2021)	The Correlation Between Nutrional Status and Physical Activity with Dysmenorrhea Degrees Among Females Adolescent in Bengkulu City	Advances in Biological Science Research	Google Scholar

Studies were selected independently by five researchers. The initial selection was based on searching related titles and abstracts of articles. In the second step, relevant studies

were downloaded and retrieved for further review based on the inclusion criteria, which was carried out with the agreement of all researchers. The study search process is shown in the PRISMA diagram (Figure 1). Next, the research team processed and summarized the information presented in a table: author name, study year, location, study design, sampling technique, sample size, role of activity on dysmenorrhea, test used, outcome instrument, and results of the relationship between physical activity and dysmenorrhea.

Table 2. Inclusion and Exclusion Criteria for Study Selection

Inclusion Criteria	Exclution Criteria
Published in Indonesian or English	Studies using systematic review, literature review, editorial, grey literature, or qualitative study methods
Sample population consists of Indonesian participants	Populations that do not include adolescents aged 12–18 years
Research conducted between 2014 – 2024	Full-text access not available

To assess risk of bias, all selected studies were evaluated using the New Castle Ottawa Scale (NOS), while the quality of cross-sectional studies was assessed using an adapted version of the New Castle Ottawa Scale (NOS). Studies were categorized as strong if they scored >7 stars, moderate if they scored 5-6 stars, and weak if they scored <5 stars. This systematic review prioritized articles with a rating of >7 stars and considered studies with 5-6 stars. Five researchers independently evaluated each study, and if there was disagreement between researchers, a majority vote was used for the final decision

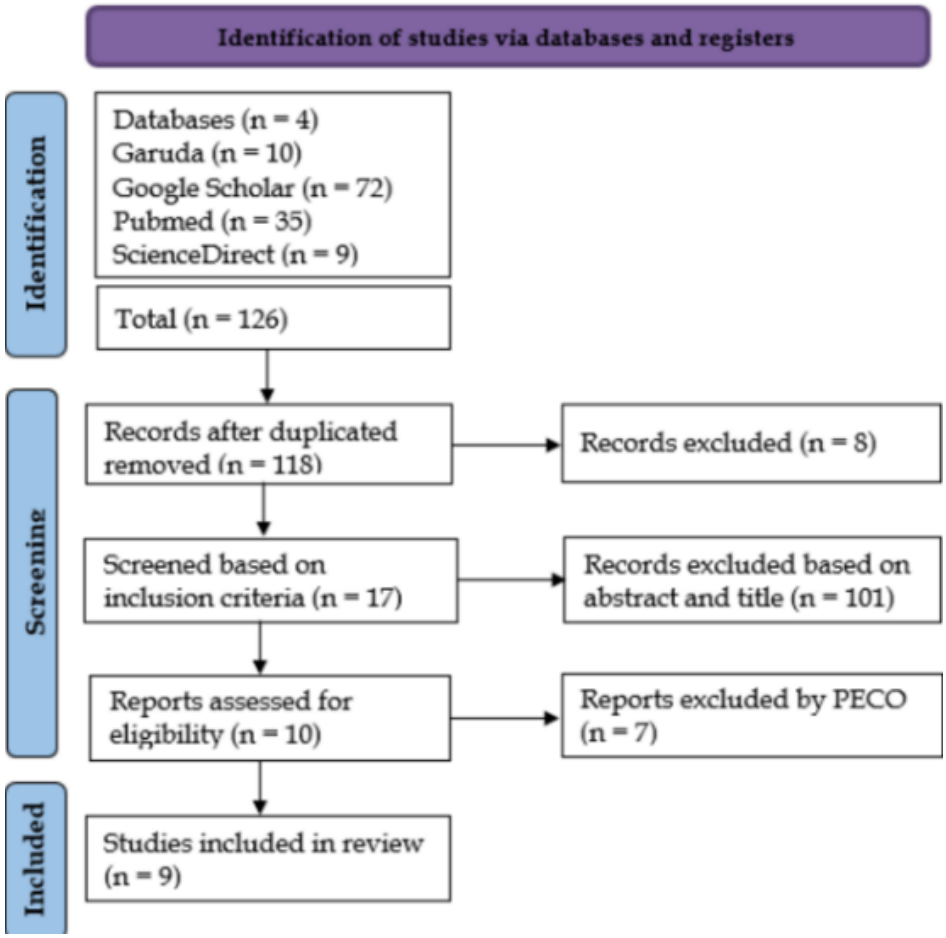

Figure 1. PRISMA Diagram of Study Selection

RESULTS AND DISCUSSION

After conducting keyword searches across four databases, 72 articles were retrieved from Google Scholar, 35 from PubMed, 10 from Garuda, and 9 from ScienceDirect. A total of 126 articles were retrieved from all databases. Eight articles were duplicated using the Mendeley application. Seventeen articles met the inclusion criteria, and 101 were excluded based on abstract content and title. Nine articles were selected and will be discussed in this systematic review (Figure 1). All articles used a cross-sectional study design.

The risk of bias assessment for the nine cross-sectional studies was moderate, as shown in Table 3. Therefore, studies classified as moderate will be discussed in the systematic review as they are still considered representative. Based on the NOS assessment, six articles received 6 stars, namely research conducted by Ardhia et al. (2023), Wulandari et al. (2023), Resty et al. (2023), N. Ketut et al. (2024), F. Tiara et al. (2021), and P. Rachel et al. (2021). Three articles received 5 stars, namely research conducted by A. Robbaniyah et al. (2023), D. Wildayani et al. (2023), and Silvia Etika S. et al. (2018). This value is obtained based on the number of stars from three criteria: selection, comparability, and exposure. The results in Table 4 show that the study was conducted in junior high, senior high, and vocational high schools (SMP) in Banda Aceh, Surakarta, Surabaya, Jakarta, Mataram, South Tangerang, Padang, Pekalongan, and Bengkulu, with a total sample size of 1,076, with the smallest sample size being 49 and the largest sample size being 201. Of the nine selected articles, six used random sampling techniques and three used non-random sampling techniques.

Table 3. Results of Risk of Bias Assessment

Author(s)/ year	Study Design	Selection				Comparabi-lity	Outcome		Total
		Representa-tiveness of the sample	Sam-ple Size	Non-respon-se rate	Ascertain-ment of exposure	Based on design and analysis	Assess-ment of outcome	Statistical test	
Ardhia, Dara, dkk, 2023.	Cross-Sectional	*	*	-	**	-	*	*	6
Wulandari, Nita Hasri, dkk, 2023.	Cross-Sectional	*	*	-	**	-	*	*	6
A. Robbaniyah, dkk. 2023	Cross-Sectional	*	-	-	**	-	*	*	5
Resty Hermawahyuni, S, dkk. 2023	Cross-Sectional	*	*	-	**	-	*	*	6
N. Ketut, A, dkk. 2024	Cross-Sectional	*	*	-	**	-	*	*	6
F. Tiara, dkk. (2021)	Cross-sectional	*	*	-	**	-	*	*	6
D.Wildayani, dkk. (2023)	Cross-sectional	*	-	-	**	-	*	*	5
Silvia Etika S, dkk. (2018)	Cross-sectional	*	-	-	* *	-	*	*	5
P. Rachel Valetha, dkk (2021)	Cross-sectional	*	-	-	* *	*	*	*	6

The results in Table 3 indicate that the majority of studies fall into the moderate validity category. Table 4 shows the analysis of a relationship between physical activity and dysmenorrhea. Nine articles were obtained, eight of which consistently demonstrated a link

between physical activity and dysmenorrhea in adolescents. Research conducted by Ardhia, Dara, et al., at SMAN 8 Banda Aceh, revealed that of the 177 respondents, 163 (92%) suffered from dysmenorrhea. Respondents with moderate physical activity mostly suffered from mild dysmenorrhea (57.5%). In addition to physical activity, unhealthy behaviors such as excessive consumption of foods high in fat and sugar can trigger and increase menstrual pain (Ardhia et al., 2023). Research conducted by Wulandari and Widyaningsih at Batik Senior High School and Vocational High School in Surakarta showed that out of 192 respondents, 176 (91.7%) experienced dysmenorrhea. Of the 69 respondents who engaged in light activity, 68 (98.6%) experienced dysmenorrhea (N. H. Wulandari & Widyaningsih, 2023).

Several studies have consistently shown that physical activity plays a role in the occurrence of dysmenorrhea among adolescents. Research by Robbaniyah and Soeyono Dewi in Surabaya found that among 49 respondents with dysmenorrhea, 43% experienced severe pain, and 47% had low levels of physical activity. In addition to physical activity, omega-3 fatty acid and calcium intake were also associated with dysmenorrhea incidence (Robbaniyah & Soeyono Dewi, 2023). Similarly, a study by N. Ketut A. et al. in a public high school in Mataram reported that out of 110 respondents, 96.3% experienced primary dysmenorrhea, with the largest group (44.5%) engaging in moderate physical activity. Of these, 26 students (23.6%) still suffered from primary dysmenorrhea. Other contributing factors identified included fast-food consumption, nutritional intake, age at menarche, and academic stress (Ketut et al., 2024). In South Tangerang, Tiara et al. reported that 83.6% of 128 respondents engaged in moderate-intensity physical activity, yet stress levels also significantly influenced dysmenorrhea occurrence (Fadjriyaty & Samaria, 2021). Stress, in turn, can trigger endocrine disturbances that contribute to menstrual discomfort (Ilmi et al., 2017).

Evidence from Padang supports these findings: Wildayani et al. observed that 24 out of 39 students at SMP Negeri 16 experienced dysmenorrhea due to low physical activity. They noted that regular activity in the three days before menstruation can increase pelvic blood flow and delay pain onset by preventing prostaglandin buildup (Wildayani et al., 2023). In Pekalongan, Silvia et al. found that 52.5% of 80 students had very low physical activity, and this group was more likely to suffer from dysmenorrhea than those with slightly higher activity levels, largely because they spent most of their time studying and rarely exercised. Magnesium and calcium intake, as well as hemoglobin levels, were also linked to dysmenorrhea risk (Etika Sari et al., 2018). Similarly, in Bengkulu City, Rachel Valetha Sari et al. found that 46% of 100 adolescents engaged in light physical activity, with 43% experiencing mild dysmenorrhea. Their analysis revealed a weak but significant association between physical activity level and dysmenorrhea severity (Rachel Valetha Sari et al., 2021).

The majority of studies included in this systematic review were rated moderate in validity, receiving a 6-star rating. Eight of the nine articles found physical activity to be effective in reducing dysmenorrhea. In addition to physical activity, other factors associated with dysmenorrhea pain identified in the included articles included fast food consumption, high-fat and high-sugar foods, omega-3 fatty acid intake, calcium intake, nutritional intake, age at menarche, academic stress, hemoglobin levels, and magnesium intake. The studies included in this systematic review were conducted on high school adolescents, while a study of college students found several underlying factors contributing to low physical activity in adolescent girls, including laziness, fatigue, lack of exercise equipment, and the impact of technology that makes it easier to meet basic needs, leading to a decrease in

physical activity intensity (Adinda Aprilia et al., 2022; Putri & Nency, 2021). Unbeknownst to many, the COVID-19 pandemic in 2020-2021 also led to a decrease in physical activity due to online learning and working from home (Septiyani & Simamora, 2022).

Physical activities such as exercise, gymnastics, and yoga during menstruation can reduce symptoms of dysmenorrhea (Huang et al., 2022). This occurs because exercise accelerates the excretion of excess substances and prostaglandins from the uterus, thereby reducing the duration of pain (Bavil et al., 2018). This is consistent with research conducted by Ida Nuriah and Siti Kamilah, which showed that light aerobic exercise can minimize the severity of menstrual pain in adolescent girls (Nuriah & Kamilah, 2021).

Physical activity is important for adolescent girls because it increases oxygen and blood flow to the uterus, which increases the production of endorphins in the brain. These endorphins create a feeling of well-being, which indirectly reduces the intensity of dysmenorrhea (W. T. Wulandari & Wulandari, 2023). This is also supported by Sri Mulyati's theory that endorphins can reduce stress that can trigger primary dysmenorrhea through activation of the sympathetic nervous system that controls uterine contractions (Mulyati & Sasnitiari, 2019).

This systematic review found one study that stated there was no association between physical activity and primary dysmenorrhea. This study was conducted by Hermawahyuni et al. at a vocational high school in East Jakarta. The study's findings stated that of a total of 201 respondents, 115 respondents (57.2%) experienced primary dysmenorrhea. The majority of these respondents, namely 111 respondents (55.2%), engaged in light physical activity. The lack of association between physical activity and the incidence of dysmenorrhea in this study is due to the respondents' views, many of whom still believe that dysmenorrhea is normal. In addition, other more dominant factors, such as family history, age of menarche, and fast-food habits, may also be the main causes of dysmenorrhea in this study (Resty Hermawahyuni et al., 2022). This is in line with research conducted by Nora Maulina and Khairunnisa, which found no association between physical activity and dysmenorrhea. The lack of association between physical activity and dysmenorrhea may be due to the subjective nature of pain responses in each individual, leading to variations in how each individual perceives and responds to pain (Khairunnisa & Maulina, 2017). Factors such as nutritional status and family history can also influence the occurrence of dysmenorrhea (Hayati & Agustin, 2020).

Every study has limitations, and the studies included in this systematic review were no different. This limitation includes the possibility of selection bias due to the lack of descriptions of non-response rates. Furthermore, the majority of studies failed to control for confounding during study design or analysis, as evidenced by the absence of multivariate analyses.

CONCLUSION

This systematic review demonstrates a relationship between physical activity and the incidence of dysmenorrhea in adolescents aged 12-18 in Indonesia. This finding is further supported by several studies demonstrating a link between the two variables. The reviewed studies demonstrate that adolescents who regularly engage in physical activity, particularly at moderate to high intensity, experience a significant reduction in the incidence and severity of dysmenorrhea. Conversely, low levels of physical activity can potentially increase the risk of dysmenorrhea. In addition to intensity, the type of physical activity, duration, and consistency also play a significant role.

Table 4. Included Studies to Examine the Role of Physical Activity on the Incidence of Dysmenorrhea in Indonesia

Author(s) / Year	Location	Study Design	Sampling Tecnique	Sample Size	Role of Physical Activity in Dysmenorrhea Incidence	Statistical Test Used	Outcome Instrument	Exposure Instrument	Results: Relationship between Physical Activity and Dysmenorrhea Incidence
Ardhia, Dara, dkk. (2023)	SMAN 8 Banda Aceh	Cross-Sectional	Proportional Sampling	177 students	There were 42 respondents (57.5%) experiencing mild dysmenorrhea with moderate physical activity	Uji Chi Square	Numeric Scale Rating	International Physical Activity Questionnaire (IPAQ),	The Chi-square test showed a p-value = 0.000 (<0.05), indicating a significant relationship between physical activity and dysmenorrhea.
Wulandari, Nita Hasri, dkk. (2023)	SMA and SMK Batik Surakarta	Cross-Sectional	Simple random sampling	192 students aged 16–18	A total of 98.6% of respondents with low physical activity experienced dysmenorrhea, while 1.4% of those with low activity did not.	Uji Chi Square	WaLLID (Working Ability, Location, Intensity, Days of Pain, Dysmenorrhea)	International Physical Activity Questionnaire (IPAQ),	The Chi-square test showed a p-value = 0.003 (<0.05), indicating a significant relationship between physical activity and dysmenorrhea incidence.
A. Robbaniyah, dkk. (2023)	SMA Islam Al-Mizan Surabaya	Cross-Sectional	Purposive sampling	49 students	There was a negative relationship between physical activity and primary dysmenorrhea: the higher the level of physical activity, the lower the severity of dysmenorrhea.	Uji Rank Spearman	Numeric Rating Scale	International Physical Activity Questionnaire (IPAQ),	Spearman's test showed p = 0.00 (<0.05), indicating a significant correlation between physical activity and the degree of primary dysmenorrhea.
Resty Hermawahyuni, S, dkk. (2023)	SMK PGRI 1 Jakarta Timur	Cross-Sectional	Proportional stratified random sampling	201 students	No relationship was found between physical activity and dysmenorrhea.	Uji Chi Square	Menstrual Symptoms Questionnaire (MSQ)	International Physical Activity Questionnaire (IPAQ),	The Chi-square test showed p = 0.565 (>0.05), indicating no correlation between physical activity and primary dysmenorrhea incidence.

Author(s) / Year	Location	Study Design	Sampling Tecnique	Sample Size	Role of Physical Activity in Dysmenorrhea Incidence	Statistical Test Used	Outcome Instrument	Exposure Instrument	Results: Relationship between Physical Activity and Dysmenorrhea Incidence
N. Ketut, A, dkk. (2024)	SMA Negeri 2 Mataram	Cross-Sectional	Proportionate stratified random sampling	110 students aged 16–18	Of 110 respondents, 18 with low physical activity reported moderate primary dysmenorrhea, while 12 respondents (10.9%) with high activity reported moderate dysmenorrhea.	Spearman's rank test	WaLLID (Working Ability, Location, Intensity Days of Pain, Dysmenorrhea	International Physical Activity Questionnaire (IPAQ),	Spearman's test showed p = 0.001 (<0.05), indicating a significant correlation between physical activity and primary dysmenorrhea.
F. Tiara, dkk. (2021)	SMA Negeri 4 Tangerang Selatan	Cross-Sectional	Consecutive sampling	128 students	A weak relationship was found between physical activity and dysmenorrhea severity. Higher frequency of physical activity correlated with lower dysmenorrhea scores.	Spearman's test	Numeric Rating Scale	International Physical Activity Questionnaire (IPAQ),	Spearman's test showed p = 0.039 (<0.05), indicating a significant correlation between physical activity and dysmenorrhea.
D.Wildayani, dkk. (2023)	SMP Negeri 16 Padang	Cross-Sectional	Proportional Random Sampling	39 students	Among 24 respondents with low physical activity, 75% experienced dysmenorrhea, while 15 respondents with high activity reported no dysmenorrhea.	Uji Chi Square	Visual Analog Scale	International Physical Activity Questionnaire (IPAQ),	The Chi-square test showed p = 0.000 (<0.05), indicating a significant relationship between low exercise habits and primary dysmenorrhea.
Silvia Etika S, dkk (2018)	SMA Negeri 4 Pekalongan	Cross-Sectional	Purposive Sampling	80 students	Adolescents with very low physical activity were 4.3 times more likely to experience dysmenorrhea compared to those with light activity levels.	Uji Chi Square	Numeric Rating Scale	Physical Activity Level (PAL)	The Chi-square test showed p = 0.019 (<0.05), indicating a significant relationship between low physical activity and dysmenorrhea incidence.
Author(s) / Year	Location	Study Design	Sampling Tecnique	Sample Size	Role of Physical Activity in Dysmenorrhea Incidence	Statistical Test Used	Outcome Instrument	Exposure Instrument	Results: Relationship between Physical Activity

									and Dysmenorrhea Incidence
P. Rachel Valetha, dkk (2021)	Bengkulu City	Cross-Sectional	Puriposive Random Sampling	100 female adolescents	Among 46 respondents with low physical activity, 24 had moderate dysmenorrhea, while 21 with high activity reported mild dysmenorrhea.	Spearman's test	Dysmenorrhea Index Value	Physical Activity Level (PAL)	The Chi-square test showed p = 0.000 (<0.05), indicating a significant relationship between physical activity and dysmenorrhea severity.

It can be concluded that physical activity plays a crucial role in preventing dysmenorrhea in adolescents, and that adolescents with low physical activity should be encouraged to increase it. Further systematic review research is recommended to conduct multivariate analyses to clearly demonstrate the role of physical activity in reducing dysmenorrhea pain levels.

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