

The role of physical activity, stress, and lifestyle behaviors in adolescent mental health and well-being: A systematic review

Dally Rahman^{1*}, Eval Edmizal², Naluri Denay², Jeki Haryanto², Bunga Permata Dewi², Asriandi Harahap²

¹Department of Medical-Surgical Nursing and Emergency Nursing, Faculty of Nursing, Universitas Andalas, INDONESIA.

²Coaching Department, Faculty of Sport Science, Universitas Negeri Padang, INDONESIA.

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ABSTRACT

Problem: Young people often face mental health troubles such as strain, sleep disturbances, and low existence satisfaction. Even though many research has proven that bodily activity can enhance mental fitness, it's miles nevertheless doubtful how bodily activity works collectively with different life-style elements like strain, weight-reduction plan, and social media use. **Purpose:** This study aims to summarize the effects of physical activity and related lifestyle factors on adolescent mental health.

Methods: This study utilized a systematic literature review approach, gathering and analyzing scientific articles on the effects of regular physical activity influence the risk of depression among adolescents. Articles were sourced from Scopus using search terms such as "physical activity" OR exercise OR sport) AND (depression OR "mental health") AND (adolescent* OR teenager* OR youth with a focus on studies published within the past five years located in Indonesia. After collecting relevant articles, descriptive analysis was conducted to identify consistent patterns and findings.

Results: This review discovered that better ranges of physical hobby had been linked to better mental health in youngsters. positive results protected reduced stress, better sleep excellent, higher existence pleasure, and extra resilience. then again, immoderate social media use, poor weight-reduction plan, and high strain stages were associated with worse mental fitness consequences. Environmental differences additionally played a position, with rural and concrete teens showing different patterns in physical and mental fitness. **Conclusion:** Physical activity allows improve mental health in youngsters. It reduces stress, improves sleep, and increases existence delight. on the same time, managing social media use, ingesting wholesome foods, and reducing stress are also essential. promoting healthy lifestyles can help higher mental nicely-being in young humans.

Keywords: Adolescent mental health; physical activity; lifestyle factors; stress management; sleep quality.

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Corresponding Author:

Dally Rahman

Department of Medical-Surgical Nursing and Emergency Nursing, Faculty of Nursing, Universitas Andalas, INDONESIA.

Email: dallyrahman@nrs.unand.ac.id

Introduction

Adolescence has matured between the ages of ten and nineteen. This is a vital stage in human life marked with major biological, emotional, cognitive, and social changes. This is a stage associated with independence and identity but at the same time very much susceptible to psychological stress and mental disorders. Puberty coupled with all the above-stressed factors-academic exigences, peer comparison, and changing family context-makes adolescence extremely risky for the development of emotional and behavioral conditions. Intrinsic, commonly developing disorders during that sensitive period include anxiety, depression, and various stress-related syndromes, normally found in this age group. Failure to seek proper attention in time would lead to these disorders becoming chronic into adulthood, having adverse effects in terms of individual consequences on well-being, educational attainment, job performance, and the quality of interpersonal relationships. Early diagnosis and treatment of these conditions are, therefore, very critical for a lifetime of mental wellness and adaptive behavioral functioning (Mansour & Al Sagheer, 2024; Tsagem, 2022)

The global burden of adolescent mental health issues is extensive. Consistent with the sector fitness employer, one in seven youth about 14% of people aged 10 to 19 experience a mental health situation, with depression, tension, and behavioral problems being the maximum time-honored. These conditions account for a full-size percentage of the global disease burden in this age institution and are related to detrimental results which includes faculty dropout, substance abuse, social isolation, and extended hazard of suicide. considerably, suicide stays one of the leading reasons of demise among youth international, underscoring the urgency of addressing mental fitness proactively throughout this life stage. Given those alarming data, there was a surge of hobby in figuring out modifiable chance and protecting elements that can guide the mental nicely-being of kids (Hossain et al., 2022; Kieling et al., 2024; Piao et al., 2022).

One of the most widely studied and modifiable determinants of intellectual fitness is bodily interest (PA). extensive empirical evidence helps the role of normal physical hobby in lowering symptoms of despair, anxiety, and perceived strain amongst children (Costa et al., 2021; Wright et al., 2023). The advantages of physical activity are mediated thru various interrelated physiological and mental mechanisms. Biologically, exercising promotes the discharge of neurotransmitters together with endorphins, serotonin, and dopamine, which can be related to improved mood and pressure regulation. furthermore, ordinary physical hobby can reduce systemic irritation, a physiological technique more and more implicated within the etiology of temper problems. Psychologically, engaging in physical activity may enhance self-esteem, foster a sense of mastery and competence, and create opportunities for meaningful social interactions especially when performed in group or team-based settings (Burini et al., 2020; Suneson et al., 2021).

Beyond bodily interest, other life-style factors have additionally been recognized as critical participants to adolescent mental health. Persistent stress, regularly springing up from educational expectations, peer conflicts, and own family-related demanding situations, has been shown to impair mind feature, mainly in regions responsible for emotion regulation and executive functioning (Harrison, 2025). prolonged publicity to strain can lead to dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, contributing to the improvement of mood and tension problems. furthermore, stress might also interact with different lifestyle behaviors, which include sleep styles and nutritional conduct, exacerbating intellectual health symptoms.

Dietary habits have likewise emerged as a significant predictor of psychological well-being in adolescence (Mateo-Orcajada et al., 2024). Diets characterized by high consumption of processed foods, sugar-sweetened liquids, and saturated fats and low consumption of culmination, veggies, and omega-3 fatty acids had been related to greater prevalence of depressive and tension signs. dietary inadequacies may additionally affect neurotransmitter synthesis, neuroplasticity, and inflammatory processes, thereby influencing temper and cognition. Conversely, adherence to balanced dietary styles, along with the Mediterranean food plan, has been related to progressed intellectual health outcomes in adolescent populations.

any other an increasing number of influential factor is social media utilization, which has turn out to be deeply embedded in adolescent each day existence. even as social media can provide avenues for social support and self-expression, immoderate or maladaptive use has been connected to adverse mental consequences (Pouwels et al., 2021). research shows that high use of social media engagement are related to accelerated exposure to cyberbullying, poor social comparison, disrupted sleep, and decreased self-esteem all of which are risk factors for anxiety and depression (Lam et al., 2022). Moreover, time spent on social media often displaces other beneficial activities such as physical activity and face-to-face interactions.

Regardless of growing evidence highlighting the significance of those man or woman life-style factors, there remains a notable hole within the literature regarding their mixed and interactive consequences on adolescent intellectual fitness. most existing studies look at every issue in isolation, presenting limited insight into the complex and multifaceted nature of adolescent well-being. for example, few investigations have explored whether or not the protective effects of physical interest can buffer the negative effect of negative diet, excessive stress tiers, or immoderate social media use. expertise those interactions is vital for the improvement of more nuanced, integrative interventions aimed at promoting holistic adolescent mental health. Given this context, a systematic literature review (SLR) is both timely and warranted. This review aims to synthesize current empirical findings regarding the relationship between physical activity, stress, diet, and social media use, and their respective and joint effects on adolescent mental health. By integrating diverse strands of literature, the review seeks to identify consistent patterns, highlight gaps in knowledge, and provide evidence-based recommendations for future research and policy development.

The central research question guiding this review is: How do physical activity and other lifestyle factors namely stress, diet, and social media use individually and collectively influence mental health and well-being in adolescents? By addressing this question, the present review contributes to a more comprehensive understanding of the lifestyle determinants of adolescent mental health and supports the

development of targeted, multi-component strategies to foster resilience and psychological well-being in young people.

Method

The method used in this study is a systematic literature study that collects and analyzes various scientific sources. The data collection process is carried out by searching for articles from Scopus, the search string used were ("physical activity" OR exercise OR sport) AND (depression OR "mental health") AND (adolescent* OR teenager* OR youth) which includes original article published in the last five years, studies evaluating the effects of regular physical activity influence the risk of depression among adolescents. After collection, articles that met those criteria were analyzed descriptively to identify consistent patterns and findings regarding the effects of regular physical activity influence the risk of depression among adolescents. Figure 1 illustrates the article selection process employed in this study.

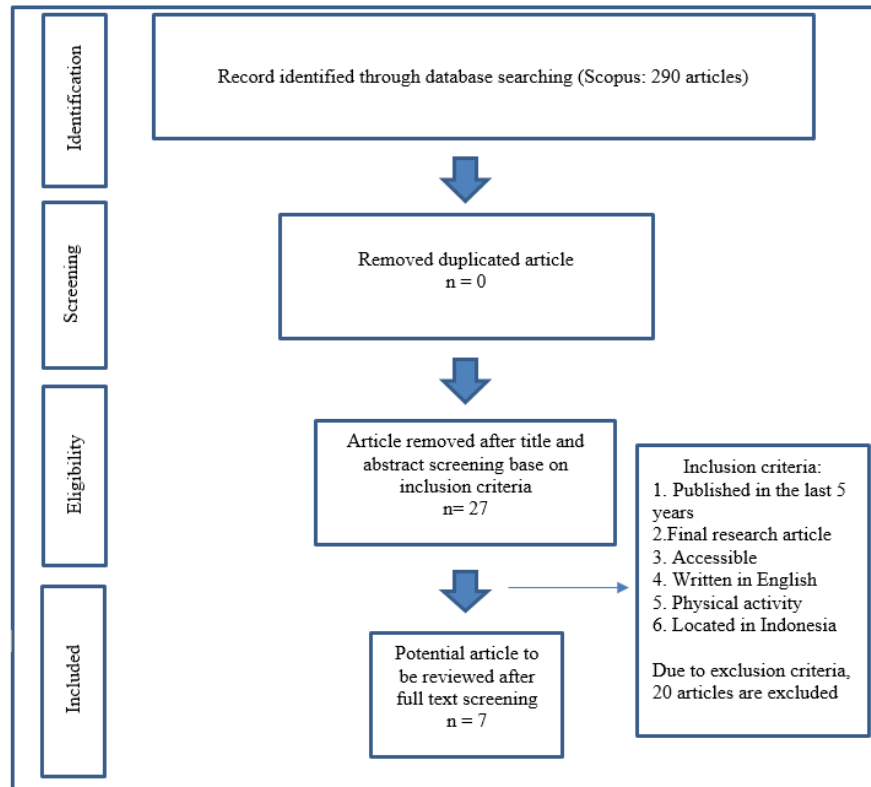


Figure 1. PRISMA flowchart of the study selection process

Results

Table 1 presents a critical appraisal analysis of seven selected article journals.

Table 1. Literature Review Summary of Results

Researchers	Article Title	Research Results
(Fizi et al., 2024)	The effect of intensity of social media use and physical activity on adolescent mental health	The study discovered that immoderate social media use negatively influences adolescent intellectual health, while better ranges of physical activity have a tremendous impact. collectively, social media use and physical activity accounted for 53.4% of the variance in mental health consequences among adolescents aged 16–19. those findings spotlight the significance of regulating social media usage and promoting physical activity to assist adolescent intellectual well-being.
(Yuliastrid et al., 2024)	A cross-sectional study exploring sport participation,	The study found that higher sport participation among university students was linked to lower

	perceived stress, and its association with life satisfaction among university students	stress and greater life satisfaction, with male students being more active and less stressed. Sport participation positively predicted life satisfaction, while stress negatively impacted it.
(Chaeroni et al., 2021)	physical fitness and mental health in urban and rural areas	The study found enormous variations in bodily fitness and intellectual fitness between rural and urban adolescents in West Sumatra, Indonesia. Rural young people proven higher bodily health ranges, while city teens showed higher mental fitness rankings. those findings endorse that environmental and way of life elements can also in another way have an effect on physical and intellectual properly-being, indicating the want for further studies regarding extra applicable variables to higher recognize these disparities.
(Marheni et al., 2023)	Development of mental education through sports to enhance adolescent personal resilience	The study found that mental education delivered through sports activities significantly improved personal resilience among high school students. A clear difference was observed between pre-test and post-test scores, with an average increase of 50.4 points, indicating the positive impact of physical education-based interventions on adolescent mental strength. These findings suggest that integrating mental education into school sports programs can effectively support the development of resilience in youth.
(Hertanto et al., 2023)	Correlation between dietary patterns and physical activity towards depression level during pandemic among students of SMAN 1 Manyar Gresik, Indonesia	The study found that there is a significant relationship between nutritional styles and physical activity with depression ranges among excessive college college students at some point of the pandemic. in particular, frequent consumption of certain food types and inadequate macronutrient consumption had been associated with higher melancholy levels. The findings highlight the significance of ingesting minimally processed ingredients and attractive in moderate to excessive-intensity bodily hobby to aid adolescent intellectual health and decrease the hazard of despair.
(Dewi et al., 2024)	Relationship between physical activity, stress levels, and sleep quality in adolescents	The study found out that both bodily activity levels and strain substantially have an impact on sleep fine among teens. better degrees of physical activity had been associated with higher sleep best, at the same time as multiplied stress levels were connected to poorer sleep effects. these findings underscore the importance of promoting ordinary physical hobby and pressure management techniques to enhance sleep fine in teenagers during their developmental years.
(Triwahyuningsih et al., 2024)	Role of stress and physical activity on primary dysmenorrhea: A cross-sectional study	The examine discovered that stress degrees and physical activity have huge impacts on number one dysmenorrhea pain among younger girls. better stress levels were strongly associated with accelerated dysmenorrhea pain, whilst higher physical activity tiers were related to a reduction in pain. The findings recommend that

coping with stress and inspiring physical activity can be effective techniques for assuaging dysmenorrhea ache in adolescent ladies and young girls.

Discussion

This systematic review consolidates proof on the interplay among physical activity and lifestyle-related elements together with stress, food regimen, and social media usage in influencing adolescent mental fitness. across the research examined, a clear pattern emerged: physical activity serves as a consistent shielding element, while terrible weight loss plan, high stress, and excessive social media usage constitute significant risk factors.

Multiple studies reviewed affirmed that adolescents engaging in regular physical activity exhibited fewer symptoms of depression, anxiety, and stress. This aligns with the biopsychosocial model suggesting that exercise benefits mental health through neurochemical mechanisms (e.g., endorphin release), social engagement, and improved self-image (Gilbert & Simos, 2022). Furthermore, higher physical activity was frequently associated with increased life satisfaction, better sleep quality, and reduced psychological distress.

Nutritional patterns additionally discovered a strong affiliation with adolescent mental health. Diets wealthy in entire foods, culmination, and greens had been positively correlated with emotional properly-being, while diets high in processed ingredients, sugars, and bad fat were linked to improved despair and tension signs (Li et al., 2022). These findings underscore the nutritional psychiatry perspective, highlighting that brain function and emotional regulation are directly impacted by dietary intake.

Stress, as predicted, become consistently connected with poorer intellectual health outcomes. adolescents experiencing persistent stress pronounced heightened levels of tension, despair, and sleep disturbances. curiously, a few studies mentioned that bodily lively adolescents displayed lower strain stages, suggesting that exercising might also act as a moderator, buffering the adverse mental effects of strain (Varma et al., 2021).

Social media use presented a more complex and context-dependent relationship. While some adolescents use social media for social support and identity exploration, excessive use was linked with psychological distress, lower self-esteem, and disrupted sleep patterns (Landa-Blanco et al., 2024; Yang et al., 2021). The studies emphasized the importance of usage intensity and content exposure in shaping these outcomes.

substantially, the combined effects of those factors have been underscored in studies that used multivariate models. for instance, the synergistic effect of low bodily activity and excessive social media utilization caused markedly poorer intellectual health consequences as compared to both thing on my own. further, adolescents with negative nutritional habits and excessive stress reported greater intense psychological symptoms except mitigated by using normal bodily interest.

The overview highlights the multifactorial nature of adolescent intellectual fitness. at the same time as physical activity continuously promotes psychological well-being, its effects are pleasant understood within the context of other life-style behaviors. Holistic interventions concentrated on physical activity, nutritional conduct, strain management, and accountable media use are vital in promoting adolescent intellectual fitness. future research must focus on longitudinal and intervention studies to higher capture causal pathways and test the efficacy of combined way of life interventions.

Conclusion

This review finds that exercise enhances mental health outcomes in teenagers and college students, such as less stress, greater life satisfaction, better sleep, greater resilience, and less dysmenorrhea pain. Conversely, unhealthy lifestyle habits such as excessive social media use and diet quality undermine mental health. The findings suggest the integration of physical education, health promotion, and stress management for enhancing adolescent well-being. Physical activity can be implemented in schools and university coursework to enhance fitness and promote mental and social development. Experimental and longitudinal designs need to be used to investigate causality and assess the long-term effectiveness of interventions of this kind.

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