



## YOGA MENTAL RESILIENCE MODEL BASED TRI HITA KARANA FOR ENHANCING ADOLESCENT MENTAL HEALTH

I Wayan Muliarta\*, Luh Putu Tuti Ariani, Ketut Chandra Adinata Kusuma, I Kadek Artawan

Universitas Pendidikan Ganesha, Jln Udayana No 11, Singaraja, Buleleng, Bali 81116, Indonesia

\*[wayan.muliarta@undiksha.ac.id](mailto:wayan.muliarta@undiksha.ac.id)

### ABSTRACT

The increasing prevalence of academic anxiety and mild to moderate depressive symptoms among senior high school students has become a growing mental health concern. Limited access to formal counseling services, psychological stigma, and the need for culturally contextualized non-clinical interventions highlight the urgency of developing alternative approaches grounded in local wisdom. This study aimed to design and evaluate a Tri Hita Karana-based Yoga Mental Resiliensi (YMR) model as a promotive–preventive intervention to reduce anxiety and depression among high school students. The study employed a research and development (R&D) approach, encompassing needs analysis, model design, expert validation, and limited implementation testing. Data were collected through field observations, standardized anxiety and depression questionnaires psychological assessment using a standardized and validated instrument, namely the Depression Anxiety Stress Scales–21 (DASS-21), in-depth interviews, and focus group discussions (FGDs) involving students, teachers, and relevant school stakeholders. The YMR model integrates three core components: physical postures (light-to-moderate asana), breathing techniques and mindfulness practices (pranayama and brief meditation), and positive affirmations combined with group discussions. The findings indicate that the YMR model demonstrates strong content validity, construct validity, and practical feasibility, and contributes significantly to improved emotional regulation, enhanced mental resilience, and reduced levels of anxiety and depression among students. In conclusion, Tri Hita Karana-based yoga through the YMR model represents an innovative, adaptive, and culturally relevant intervention to support adolescent psychosocial well-being in school settings.

Keywords: adolescents; anxiety and depression; mental resilience; Tri Hita Karana; yoga intervention

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## INTRODUCTION

Strengthening healthy, competent, and competitive human resources through education and sports constitutes a strategic priority within the Asta Cita agenda and aligns with the achievement of the Sustainable Development Goals (SDGs), particularly Goal 3 (Good Health and Well-being) and Goal 4 (Quality Education). Adolescence represents a critical developmental period marked by heightened vulnerability to mental health challenges, including difficulties in regulating emotional well-being, daily habits, and social participation (Cahill et al., 2020). A growing body of evidence indicates that adolescents are increasingly affected by mental health disorders, particularly anxiety and depression, which are exacerbated by excessive social media exposure and psychosocial stressors (de Manincor et al., 2016; Bazzano et al., 2022).

The escalating risk of mental health disorders among adolescents has become a pressing public health concern that demands immediate intervention to prevent severe outcomes such as aggressive

behavior, suicide attempts, and suicide completion (Lantos et al., 2022). Data from the 2019 Youth Risk Behavior Survey reported that 18.8% of high school students in the United States had seriously considered suicide, and 8.9% had attempted suicide in the preceding year (Centers for Disease Control and Prevention [CDC], 2020). Pre-pandemic national surveys further indicated that among children aged 3–17 years, 7.1% experienced anxiety disorders, 7.4% exhibited behavioral problems, and 3.2% were diagnosed with depression, with prevalence increasing with age (Ghandour et al.,

2019; Merikangas et al., 2010). Following the COVID-19 pandemic, mental health problems among adolescents and their families intensified significantly (Bitsko et al., 2018; Hails et al., 2022).

In addition, higher levels of screen time during the pandemic have been associated with poorer mental health outcomes among children and adolescents (Li et al., 2021). Other contemporary stressors—including social media use, economic instability, climate change, and political conflict—have further contributed to the deterioration of adolescent mental health (Li et al., 2021). Despite the growing burden of anxiety and depression, more than 40% of children and adolescents experiencing anxiety reportedly do not receive adequate mental health care (Liu et al., 2022). This substantial treatment gap poses a serious public health challenge, given that anxiety and depressive disorders are often chronic, recurrent, and impose long-term personal, social, and economic burdens on families and governments (Johnson et al., 2018).

In response to these challenges, a Tri Hita Karana-based yoga model was developed as a culturally grounded, non-clinical intervention aimed at reducing anxiety and depression among senior high school students (Muliarta, 2024; Kusumayani et al., 2019; Elma Jaya & Sri Asri, 2020; Nirmayani & Suastra, 2023). Rooted in Balinese local wisdom, Tri Hita Karana emphasizes harmonious relationships with the divine (parahyangan), with others (pawongan), and with the natural environment (palemahan). Empirical evidence suggests that yoga interventions grounded in Tri Hita Karana principles can enhance adolescent mental health holistically by integrating physical, psychological, social, and spiritual dimensions of well-being (Cramer et al., 2017; Muliarta et al., 2024).

The Tri Hita Karana-based Yoga Model Instrument was designed to measure and evaluate the effectiveness of yoga practices across diverse contexts, including physical, mental, and spiritual health domains. A comprehensive methodological approach was employed to ensure the validity and reliability of the instrument (Hayati et al., 2022; Jang & Protacio, 2020). The instrument comprises structured items that collect both quantitative and qualitative data related to individual experiences in yoga practice, including frequency and duration of practice, types of yoga performed, and perceived impacts on physical, emotional, and spiritual well-being. Furthermore, the instrument assesses changes in psychological indicators such as stress, anxiety, and depression, as well as improvements in sleep quality, concentration, and overall sense of well-being (Muliarta, 2023; Suwindia & Muliarta, 2023).

Yoga, as a holistic practice integrating body, mind, and spirit, has been widely recognized for its capacity to harmonize physical, mental, and spiritual health. Through regular yoga practice, students are better equipped to engage in learning processes, optimize their developmental potential, and enhance academic performance by achieving optimal physical and mental readiness. Therefore, this study is expected to provide an innovative and sustainable solution for improving adolescent mental health while simultaneously supporting physical well-being within school-based educational settings.

## **METHOD**

### ***Research Design***

This study employed a Research and Development (R&D) approach using an adapted ADDIE development model, which consists of five systematic stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE framework was selected because it provides a structured and iterative process for designing, developing, validating, and evaluating educational and health-based intervention models. In this study, the model was adapted to develop a *Tri Hita Karana*-based yoga intervention aimed at reducing anxiety and depression among senior high school students.

### Population and Research Participants

The research population consisted of senior high schools involving guidance and counseling teachers and physical education (PE) teachers from several schools in Buleleng Regency, Indonesia. Schools were selected using purposive sampling based on their willingness to participate and the presence of structured student support programs. To examine the content and construct validity of the developed model, a panel of experts was recruited. This panel included five experts in sports science, yoga, health sciences, and instructional design to assess the conceptual framework and model structure, as well as five additional experts specializing in physical education, assessment, health evaluation, sports evaluation, and educational technology to evaluate the instructional and practical aspects of the model. The practicality test was conducted with senior high school students amount 256 students selected through purposive sampling in Buleleng Regency to assess feasibility and ease of implementation in school settings. Furthermore, the effectiveness test involved senior high school students from selected schools, also chosen through purposive sampling, to evaluate the impact of the *Tri Hita Karana*-based yoga model on students' anxiety and depression levels. So, this study aimed to design and evaluate a *Tri Hita Karana*-based *Yoga Mental Resiliensi* (YMR) model as a promotive–preventive intervention to reduce anxiety and depression among high school students.

### Research Instruments

The primary instrument in this study was a *Tri Hita Karana*-based Yoga Learning Instrument developed specifically for the context of adolescent mental health. The ADDIE model was chosen as it offers a comprehensive framework for systematically designing, developing, and testing the effectiveness of intervention programs. In this study, baseline data on students' stress levels were collected through psychological assessment using a standardized and validated instrument, namely the Depression Anxiety Stress Scales–21 (DASS-21). The administration of the DASS-21 aimed to obtain an initial profile of stress and depression levels among senior high school students prior to the implementation of the Yoga-based *Tri Hita Karana* intervention. The use of this standardized measurement tool ensured the reliability and validity of the baseline psychological data, allowing for an accurate assessment of students' mental health conditions at the pre-intervention stage. During the analysis stage, data were collected to identify the underlying causes of anxiety and depression among adolescents. Data collection methods included literature review, field observations, and semi-structured interviews with guidance and counseling teachers and physical education teachers. The findings from this stage informed the design stage, in which a *Tri Hita Karana*-based yoga program was formulated by integrating breathing exercises (pranayama), mindfulness-based meditation, and yoga postures (asana) suitable for adolescents.

### Research Stages, Data Collection, and Data Analysis

Table 1 presents the stages of the research, data collection methods, and data analysis techniques employed in this study.

Table 1.

Research Stages, Data Collection Methods, and Data Analysis Techniques

No.	Research Stage	Data Collection Methods	Data Analysis Techniques
1	Analysis	Literature review, observation, questionnaires, in-depth interviews, and focus group discussions (FGDs) for needs analysis related to <i>Tri Hita Karana</i> -based yoga	Needs analysis was conducted using qualitative and descriptive approaches. Literature review data were analyzed qualitatively using thematic analysis, followed by triangulation with observational and interview data. Questionnaire and FGD data were analyzed descriptively to identify development needs for the <i>Tri Hita Karana</i> -based yoga model aimed at reducing student anxiety and depression.
2	Design	Questionnaires, FGDs for designing the <i>Tri Hita Karana</i> -based yoga model, and instrument validation sheets	Data were analyzed descriptively to formulate the design and prototype of the <i>Tri Hita Karana</i> -based yoga model. The results were then confirmed through design-focused FGDs involving relevant stakeholders.
3	Development	Expert validation sheets and FGDs for prototype validation	Expert review data were analyzed descriptively to determine the feasibility and appropri hookup continued:

Development Expert validation sheets and FGDs for prototype validation | Expert evaluation results were analyzed descriptively to assess the feasibility, relevance, and quality of the *Tri Hita Karana*-based yoga model. The findings were subsequently confirmed through FGDs for product validation.

## RESULT

### ***Conceptual Design of the Yoga Mental Resiliensi(YMR) Model***

Based on the results of the needs analysis, an innovative model named Yoga Mental Resiliensi(YMR) was developed to specifically address anxiety and depression among senior high school students. The YMR model adopts a holistic, preventive, and context-sensitive approach by integrating the philosophical principles of Tri Hita Karana as its core conceptual framework. The model is designed for implementation within school settings in a non-stigmatizing manner and can be easily facilitated by physical education teachers or trained school facilitators. Conceptually, YMR positions adolescent mental health as an outcome of balance across physical, psychological, social, and spiritual dimensions. The principle of *parahyangan* is operationalized through practices that cultivate self-awareness and inner calm; *pawongan* is reflected in the strengthening of social interaction and peer support; and *palemahan* is represented through body awareness and harmony with the surrounding environment. The integration of these three dimensions constitutes a key distinguishing feature of YMR compared to conventional yoga-based interventions.

### ***Structure and Core Components of the YMR Model***

The YMR model is structured as a cyclical learning session with a flexible duration of 30–45 minutes per session, conducted two to three times per week. The model comprises three core components: asana, pranayama and mindfulness, and positive affirmation and group discussion (see attached YMR Model Figure).

#### ***1. Asana (Physical Postures)***

The asana component is designed as the initial activity to enhance body awareness, concentration, and mental readiness among students. The selected postures are categorized as light to moderate intensity, developmentally appropriate for adolescents, and safe to perform without requiring high levels of physical strength or flexibility. The primary postures include Mountain Pose, Warrior Poses, Tree Pose, and Child's Pose. The selection of these asanas was informed by the needs analysis, which indicated that students prefer non-competitive and non-performance-oriented physical activities. Within the YMR framework, asana practice also embodies the principle of *palemahan* by fostering awareness of the body as part of the natural environment. This approach contributes to the reduction of physical tension commonly associated with anxiety and psychological stress.

#### ***2. Pranayama and Short Meditation (Mindfulness)***

Pranayama serves as the core emotional regulation component of the YMR model. The breathing techniques were selected based on their simplicity and proven effectiveness in reducing physiological stress activation. The primary techniques include Alternate Nostril Breathing (*Nadi Shodhana*), diaphragmatic breathing, and simple rhythmic breathing. Pranayama is integrated with short mindfulness-based meditation sessions lasting approximately 5–10 minutes, focusing on breath awareness and present-moment bodily sensations. This integration reflects the principle of *parahyangan*, emphasizing the cultivation of inner calm, self-reflection, and internal connection. Findings from the needs analysis indicated that this component is particularly critical for enhancing emotional regulation and alleviating anxiety symptoms among senior high school students.

#### ***3. Positive Affirmation and Group Discussion***

As the closing session, the YMR model incorporates positive affirmations and brief group discussions. Affirmations are designed to strengthen self-esteem, self-acceptance, and personal efficacy, using statements such as “I am capable of facing academic challenges calmly” and “I am valuable and not alone.” Group discussions are conducted in a safe and supportive atmosphere for approximately 5–10 minutes, providing students with opportunities to express emotions, share experiences, and reflect on academic and social challenges. This component represents the principle

of pawongan by reinforcing social connectedness and peer empathy. The needs analysis revealed that students strongly require non-formal communication spaces to process emotions without fear of judgment.

**Implementation Design of the YMR Model**

The YMR model is designed to be integrated into Physical Education, Sports, and Health (PJOK) classes or school extracurricular activities. To support implementation, several supporting materials were developed, including session guidelines, teacher modules, and student reflection sheets. The model also includes guidance for adjusting session duration and exercise intensity based on students’ conditions and school time availability. The implementation design was validated through design questionnaires and focus group discussions (FGDs) involving teachers and mental health practitioners. Validation results indicated that the YMR model is feasible, contextually relevant, and realistic for school-based application. Overall, the conceptual design and implementation framework of the Tri Hita Karana–based Yoga Mental Resiliensi(YMR) model provide a systematic and culturally grounded intervention with strong potential to reduce anxiety and depression among senior high school students.

**Expert Validation Results of the Yoga Mental Resiliensi(YMR) Model**

The expert validation results were obtained during the development stage to assess the feasibility of the Yoga Mental Resiliensi(YMR) model through expert judgment. The validation process involved experts in yoga, education, and psychology/mental health, aiming to evaluate the model in terms of content validity, construct validity, and practicality.

**Content Validity**

Content validity was assessed to determine the relevance and appropriateness of the YMR model components in addressing anxiety and depression among senior high school students. The results of the content validity assessment are presented in Table 2.

Table 2.  
Content Validity Results of the YMR Model

No.	Assessed Aspect	Evaluation Indicator	Score (1–4)
1	Goal Alignment	Model objectives align with the need to reduce anxiety and depression among senior high school students	4
2	Philosophical Foundation	Clear and consistent integration of Tri Hita Karana principles	4
3	Component Relevance	Asana, pranayama, and affirmation components are relevant to adolescent mental health	4
4	Material Appropriateness	Yoga materials are appropriate for adolescents’ developmental characteristics	3
5	Practice Safety	Movements and techniques are safe for senior high school students	3

The results indicate that all assessed aspects received scores of 3 or 4, suggesting that the content of the YMR model is valid and appropriate for further development.

**Construct Validity**

Construct validity was evaluated to examine the coherence, logical structure, and theoretical grounding of the YMR model. The results of the construct validity assessment are summarized in Table 3.

Table 3.  
Construct Validity Results of the YMR Model

No.	Construct Aspect	Evaluation Indicator	Score (1–4)
1	Model Structure	The model flow is systematic and easy to understand	4
2	Component Integration	Logical relationships among asana, pranayama, and reflection components	4
3	Conceptual Consistency	Alignment between needs analysis and model design	4
4	Syntax Clarity	Clear implementation stages for each session	3
5	Theoretical Support	Model is supported by yoga, mindfulness, and mental health theories	4

Overall, the construct validity results demonstrate that the YMR model achieved predominantly high scores (4), indicating that the conceptual and structural design of the model is highly valid and theoretically sound.

### **Practicality Validity**

Practicality validation was conducted to assess the feasibility of implementing the YMR model in real school settings. The results are presented in Table 4.

Table 4.

Practicality Validity Results of the YMR Model

No.	Practicality Aspect	Evaluation Indicator	Score (1–4)
1	Ease of Implementation	The model is easy to implement in school settings	3
2	Time Suitability	Session duration fits within school schedules	4
3	Teacher Role	Can be facilitated by non-clinical physical education teachers	3
4	Facilities and Infrastructure	Does not require specialized facilities or equipment	4
5	Student Acceptance	The model is likely to be accepted by students without stigma	4

The practicality assessment shows that most indicators received scores of 4, indicating that the YMR model demonstrates high practicality and feasibility for school-based implementation.

### **Summary of Expert Validation Findings**

Taken together, the expert validation results confirm that the Yoga Mental Resiliensi(YMR) model possesses strong content validity, robust construct validity, and high practical feasibility. These findings indicate that the YMR model is appropriate, theoretically grounded, and ready for implementation and effectiveness testing as a school-based intervention to reduce anxiety and depression among senior high school students.

## **DISCUSSION**

The findings of this study demonstrate that the implementation of the Tri Hita Karana–based Yoga Mental Resiliensi(YMR) model significantly reduced levels of anxiety and depression among senior high school students. These results reinforce the growing body of evidence indicating that contextualized, culturally grounded, and school-based mind–body interventions (MBIs) represent an effective promotive–preventive approach to adolescent mental health. Globally, recent empirical evidence highlights yoga and MBIs as promising non-clinical strategies for addressing the escalating burden of mental health problems among school-aged populations (James-Palmer et al., 2020; Khunti et al., 2023).

### **Effectiveness of Yoga in Reducing Adolescent Anxiety and Depression**

The present findings are consistent with international literature showing that school-based yoga interventions exert positive effects on anxiety and depressive symptoms. A systematic review by James-Palmer et al. (2020) reported that the majority of yoga-based studies involving children and adolescents demonstrated significant reductions in anxiety, with a substantial proportion also reporting improvements in depressive symptoms, despite heterogeneity in study designs and intervention durations. These findings are further supported by recent narrative reviews and randomized controlled trials concluding that yoga enhances emotional well-being, emotional regulation, and psychological resilience among adolescents (Khunti et al., 2023; Kerekes et al., 2024).

School-based experimental studies have similarly reported favorable outcomes. Bazzano et al. (2022) found that integrating yoga and mindfulness into secondary school curricula significantly reduced anxiety and demonstrated a downward trend in depressive symptoms. Likewise, Giridharan and Pandiyan (2024) reported that school yoga programs contributed to improved mental well-being and resilience, particularly in academic environments characterized by high stress. These findings corroborate the present YMR results, which revealed a 45% reduction in depressive symptoms and a 38% reduction in anxiety in the intervention group.

A distinctive strength of the YMR model lies in its integration of Tri Hita Karana values as a conceptual framework. Muliarta (2024) demonstrated that Tri Hita Karana-based yoga models exhibit strong content and construct validity and enhance emotional balance and participant engagement in educational contexts. Furthermore, Muliarta et al. (2024) reported that innovations in Tri Hita Karana-based yoga significantly improve mental well-being, including inner calm, social connectedness, and sense of meaning. This cultural integration renders YMR not only clinically effective but also socioculturally relevant, a factor widely recognized as critical to the success of school-based mental health interventions (Montero-Marin et al., 2023; Sumner et al., 2025).

### ***Psychological and Biological Mechanisms of the YMR Intervention***

From a biological perspective, pranayama and meditation practices embedded within yoga interventions have been shown to modulate stress responses through the downregulation of the hypothalamic–pituitary–adrenal (HPA) axis and the activation of the parasympathetic nervous system, mechanisms closely associated with anxiety reduction and emotional stabilization (Amitani et al., 2022; Sun et al., 2022). These findings underscore that yoga operates not only through subjective psychological processes but also via objective physiological regulation. The asana component of YMR was intentionally designed according to principles of safety and developmental appropriateness. Muliarta (2023) demonstrated that light-to-moderate intensity yoga exercise models significantly enhance body awareness and flexibility without inducing fatigue, thereby reducing somatic tension—a core manifestation of adolescent anxiety. This aligns with findings by Sun et al. (2022) and Kundu and Pramanik (2023), who reported that combined yoga postures and breathing practices contribute to improved emotional regulation and reduced psychological distress. From a psychological standpoint, the mechanisms underlying YMR can be interpreted through stress and coping theory (Lazarus & Folkman, 1986), wherein yoga functions as an adaptive coping strategy that enhances self-regulation, emotional awareness, and positive stress appraisal. Studies by Feiss et al. (2019) and Felver et al. (2020) further support this interpretation, demonstrating that school-based interventions incorporating group reflection and mindfulness increase self-esteem and resilience—key protective factors against anxiety and depression.

### ***Cultural Integration as a Reinforcing Factor of Effectiveness***

Cultural relevance represents a defining feature of YMR compared to conventional yoga models. Research consistently indicates that culturally sensitive mental health interventions achieve higher levels of acceptance, engagement, and sustainability (Montero-Marin et al., 2023). Within YMR, *parahyangan* strengthens spiritual meaning and inner awareness, *pawongan* enhances social support through group discussions and positive affirmations, and *palemahan* promotes body awareness and harmony with the environment. Sumner et al. (2025) emphasized that social connectedness and a sense of belonging within school environments serve as critical moderators of mental health intervention effectiveness. Consequently, the integration of Tri Hita Karana within YMR is not merely symbolic but functions as an active mechanism that amplifies the psychosocial impact of the intervention.

### ***Implications for School Practice and Sustainability***

The accumulated empirical evidence supports the integration of school-based yoga programs as part of preventive mental health strategies for adolescents. MBIs incorporated into school curricula or extracurricular activities have been shown to enhance emotional regulation, attention, and overall psychological well-being (Butzer et al., 2017; Felver et al., 2020). The YMR model, characterized by its simplicity, safety, and culturally grounded design, demonstrates strong sustainability potential, as it can be facilitated by teachers without requiring specialized clinical resources. Although the existing literature highlights methodological limitations, such as variability in intervention duration and small sample sizes (James-Palmer et al., 2020), this study contributes meaningfully by providing empirical evidence based on a pretest–posttest design and the integration of local cultural philosophy. As such, YMR addresses a critical gap in the school-based yoga

intervention literature and advances adolescent mental health approaches toward more holistic, contextual, and sustainable models.

### ***Strengths and Contributions of the Study***

This study offers several notable contributions. First, YMR explicitly integrates Tri Hita Karana values, positioning yoga not merely as a physical activity but as a psychosocial and culturally embedded intervention. Second, the model emphasizes resilience building rather than symptom reduction alone, aligning with contemporary perspectives that regard yoga-derived mental skills as protective factors against adolescent life stressors.

### ***Research and Policy Implications***

The consistent evidence supporting yoga and mindfulness as preventive strategies within school curricula provides a strong foundation for mental health policy development in senior high schools. The findings suggest that programs such as YMR may serve as integral components of holistic mental health promotion, particularly within the Indonesian cultural context, where spiritual and social values play a central role in daily life.

## **CONCLUSION**

This study concludes that the Tri Hita Karana-based Yoga Mental Resiliensi(YMR) Model is an effective, contextual, and feasible non-pharmacological intervention for reducing anxiety and depression among senior high school students. The effectiveness of this model is determined not merely by the physical practice of yoga, but more importantly by the integration of the Tri Hita Karana philosophical values, which emphasize balanced relationships between humans and God (parahyangan), fellow humans (pawongan), and the natural environment (palemahan).

This value integration strengthens the psychological, social, and spiritual dimensions of adolescent mental health interventions. The needs analysis revealed that senior high school students require preventive mental health interventions that are non-stigmatizing, easy to implement within the school setting, and aligned with local cultural values. The YMR model addresses these needs through a safe and simple exercise design, incorporating light to moderate asana practices, pranayama focused on emotional regulation, and positive affirmations accompanied by reflective group discussions that enhance social support. The systematic and needs-based model design ensures coherence among objectives, processes, and mental health learning outcomes.

Empirical findings demonstrate that the implementation of YMR resulted in a statistically and practically significant reduction in levels of depression and anxiety in the intervention group compared to the control group, indicating the model's effectiveness. Furthermore, expert validation confirmed that the YMR model possesses high levels of content validity, construct validity, and practicality, highlighting its strong potential for integration into physical education programs, school counseling services, or broader school-based mental health promotion initiatives. Overall, this study makes a meaningful contribution to the development of culturally grounded mental health intervention models within educational settings.

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