

# Effectiveness of Yoga to Improve Psychological Health in Geriatry: A Systematic Review

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**Abstract:** The elderly population brings about the appearance of multi disorder, physical or psychological health. These disorders may tried to be prevented before symptoms and improve the quality of life. This study aims to estimate the effectiveness of Yoga on the psychological health in geriatrics. The research design was systematic review, four electronics databases were searched up to January 2023. The review included Randomized controlled trials (RCTs). The main outcome was psychological health. The risk of bias was evaluated with the Cochrane Risk of Bias tool. Data from the primary studies were combined using a random-effects model, and subgroup analysis was performed based on the type of exercise conducted. A total of 898 studies examined, there were five studies aged at least 60 years were included. The interventions had an average duration ranging from 6 to 12 weeks. The results indicated that significant differences were found in the effectiveness of yoga on psychological health in the elderly. Although there are various types of yoga that are given, the effect of yoga on psychological health in the elderly has a significant effect. It is necessary to adjust the type of yoga with the elderly population with various characteristics.

**Keywords:** Geriatric, mental, psychological health, sleep quality, yoga.

## Introduction

Human life expectancy has increased dramatically. This lifespan extension comes from access to better care as well as an emphasis on preventive medicine (Cherubini et al., 2012). Globally, the World Health Organization (WHO) estimates the people aged 60 years and older will double by 2050, while those aged 80 years and over will number 400 million people (Singh & Bajorek, 2014). There are age classifications to define the elderly, young old (60-75 years), old (75-85 years), and frail old (>85 years) (Ahmad et al., 2023). In Indonesia, based on Central Statistics Agency (BPS) data, the number of elderly people has increased from 81 million people (7.6%) in 2010 to 27 million (10%) in 2020. This number is projected to rise to 40

million people (13, 8%) by 2035 (Kementerian Kesehatan RI, 2022).

The increasing elderly population needs to be balanced with an increased quality of life as well (Domènech-Abella et al., 2017). According to the World Health Organization definition, “healthy aging is a process of developing and maintaining the functional ability that enables well-being in older age” (WHO, 2021). Naturally, the elderly experience a decrease in body function which is an accumulation of damage at the cellular and molecular level that occurs in a long time or also known as aging (Dumic et al., 2019). Aging is characterized by a decrease in physical and psychological abilities, and an increased risk of disease that can lead to death (Zhang et al., 2018; Dumic et al., 2019).

Problems that are quite often experienced but rarely known in the elderly are psychological

problems. This can occur due to several factors, such as socioeconomic conditions, premorbid personality, reduced social interaction or social support and loneliness experienced to realize healthy elderly according to the WHO definition, one of the preventive methods that can be applied is through yoga. Yoga practice has also been linked to enhancements in mental health and mood (Cramer *et al.*, 2013). These advantages are significant because healthy aging is not just about living longer but is also involves life satisfaction and overall ‘well-being’ (Gard *et al.*, 2014; Diener *et al.*, 2017; Voss *et al.*, 2023). Yoga has gained global attention as a popular non-pharmacological intervention because of its holistic approach and therapeutic benefits (Youkhana *et al.*, 2016; Pascoe *et al.*, 2017).

Yoga refers to harmony of body and mind and is beneficial for elderly people in general. The practice of yoga meditation can calm the mind and bring inner clarity, peace of mind, understanding, and emotional relief (Youkhana *et al.*, 2016). In addition, yoga movements are very safe for elderly individuals who experience a decline in both anatomical and physiological body functions (Bridges and Sharma, 2017; Tew *et al.*, 2017). Recently, accumulating evidences have shown that yoga has an impact on elderly’s well-being and mental health. However, to our knowledge, there has not been a systematic review made to evaluate the potential of yoga to prevent mental health problems in the elderly. Therefore, we decided to conduct a systematic review to evaluate and conclude the effectiveness of yoga to improve psychological health in geriatric.

## Materials and Methods

### Search method

For this systematic review, the authors conducted a literature search following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram. We conducted search strategy in 4 databases, namely Proquest, PubMed, Science Direct, and Google Scholar, for studies published in 2012-2022. The study search was constructed by following keywords (“Geriatry” OR “Elderly”) AND “Yoga” AND “Psychological Health”.

### Eligibility criteria

In creating this systematic review, the authors applied some exclusion and inclusion criteria. The exclusion criteria are (1) inaccessible studies; (2) studies published in languages other than English; (3) unsuitable types of articles; (4) study without a control group. The inclusion criteria were such follows: (1) study design mainly randomized control trial; (2) studies involving elderly participants (>60 years old); (3) interventions include all kinds of yoga exercise; (4) study outcomes consisted of well-being and psychological health.

### Risk of bias assessment

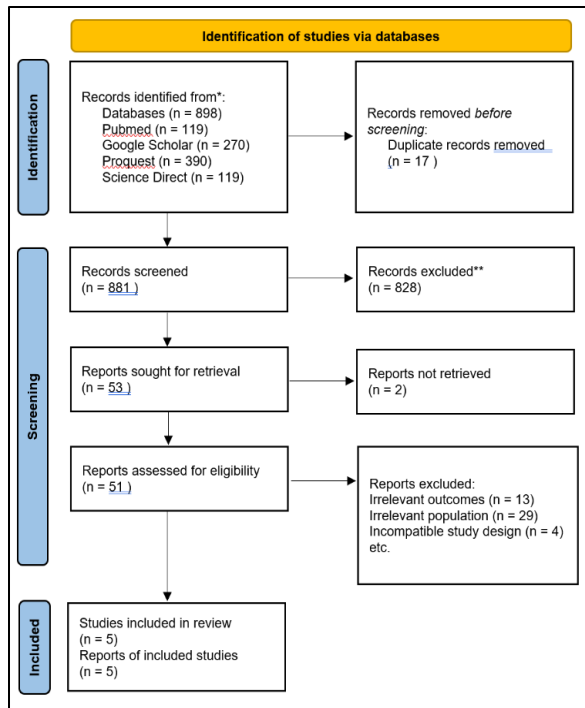
The RoB 2.0 tool (Risk of Bias Tool for Randomized Trials) provides a framework for evaluating the risk of bias in the outcomes of all type of randomized trials. The evaluation is organized into several domains that represent potential sources of bias in a trial. The RoB 2.0 tool consists of 5 main domains. The first domain addresses biases was arises from the randomized process. The second domain covers biases due to deviations from intended intervention. The third domain deals with biases caused by missing outcome data. The fourth and fifth domains focus on biases in outcome measurement and the selection of reported results. Four independent and blinded investigators performed this assessment, with conflicts being resolved through all authors’ discussion.

## Result and Discussion

### Search result

After doing searches in various databases mentioned above has resulted in a total 898 studies. After screening for duplicates, we got 881 studies left. Then we screened them based on their relevancy and got 53 studies. Full text screening conducted, a total of 51 studies. We excluded journals that had different outcomes, different populations, and different study designs. As a final result, we got 5 studies. The result of the study selection process in shown in **Figure 1**. After doing searches in various databases mentioned above has resulted in a total 898 studies. After screening for duplicates, we got 881 studies left. Then we screened them based on their relevancy and got 53 studies. Full text screening conducted, a total of 51 studies.

We excluded journals that had different outcomes, different populations, and different study designs. As a final result, we got 5 studies. The result of the study selection process is shown in **Figure 1**.



**Figure 1.** Prisma Flow Chart of Search Strategy

### Study characteristic

After screening and rechecking to find relevant studies, a total of 5 randomized control trial studies are included. The summary of included studies are shown in **Table 1**. All the studies were published between 2013 - 2022 and the subjects of studies included are geriatrics (age >65). Due to the objective of this review, we selected studies that had results regarding psychological health. The included studies were reviewed using the RoB 2.0 tool (Risk of Bias Tool for Randomized Trials). A total of 3 of the studies have low risk of bias, while the rest is some concern. The bias assessment is shown in **Figure 2**.

Study	Risk of bias domains					Overall
	D1	D2	D3	D4	D5	
Ganesh, S. et.al, 2021	+	+	+	+	+	+
Welford P. et.al, 2022	+	+	+	+	-	-
Tew, G.A. et al, 2017	+	+	+	+	+	+
Bonura, et.al., 2014	+	+	-	+	+	-
Seguin, F. et.al, 2020	+	+	+	+	+	+

Domains:  
 D1: Bias arising from the randomization process.  
 D2: Bias due to deviations from intended intervention.  
 D3: Bias due to missing outcome data.  
 D4: Bias in measurement of the outcome.  
 D5: Bias in selection of the reported result.

Judgement  
 + Some concerns  
 - Low

**Figure 2.** Risk Bias Assessment

### Discussion

Aging is a phenomenon experienced by everyone that is accompanied by a progressive loss of physiological integrity that can lead to a declining state of health (Dumic et al., 2019). Complementary and Alternative Medicine (CAM) therapy are used by elderly for self-care. Many CAM users apply this approach, at least in part, to manage psychological or stress-related disorders. Yoga is one of the most frequently utilized mind-body practices to enhance psychological conditions, well-being, and mental health (Bonura & Tenenbaum, 2014; Chen et al., 2016; Zou et al., 2017; Zou et al., 2018). Here, we review the effectiveness of Yoga to improve psychological health in geriatrics.

Result from the studies obtained that overall, across all five journals, yoga can improve psychological health in elderly people. This is included well-being, mental health, and sleep quality index. Three journals discussed the effectiveness of yoga on well-being, one journal discussed the effectiveness of yoga on well-being and mental health, and one journal discussed the effectiveness of yoga on sleep quality index.

### Relationship between yoga and geriatric well-being

Of the 5 inclusion studies, there are 3 studies that have aspects of well-being as a result of research regarding psychological health. Based on Tew et al study, yoga had positive effect on the well-being of elderly individuals. Tew et al. conducted a random assignment of 52 physically inactive elderly participants (mean age = 74.8 years; SD 7.2) to a 12-week yoga program. The adapted yoga regimen, referred to as British Wheel of Yoga (BWY) Gentle Years Yoga, was deemed viable and potentially advantageous for enhancing mental and social well-being. In this study, Warwick-Edinburgh

Mental Well-being Scale (WEMWBS) were used to assess mental well-being. Three months after the yoga intervention, the yoga group exhibited

better mental well-being compared to the control group (Tew *et al.*, 2017).

**Table 1.** Summary of Studies Collected

Author	Year	Country	Study Design	Mean age (SD)	Yoga type	Duration	Study Outcome	
							Yoga	Control
Ganesh <i>et al.</i> ,	2021	India	RCT	IG : 62.6 years (3.9) CG : 65.5 years (3.4)	Yoga	12 weeks	Psychological discomfort (1.34 ± 2.86) Sleep total (13.15 ± 7.64) Habitual sleep efficiency (0.04 ± 0.20)	Psychological discomfort (4.21 ± 2.67) Sleep Total (19.77 ± 9.55) Habitual sleep efficiency (0.29 ± 0.65)
Welford <i>et al.</i> ,	2022	Sweden	RCT	IG : 72.1 years (5.5) CG : 72.1 years (5.1)	Hatha Yoga	12 weeks	Well-Being (25.7 ± 6.0)	Well-Being (24.2 ± 4.9)
Tew, G.A <i>et al.</i> ,	2017	UK	RCT	IG : 73.8 years (6.5) CG : 75.7 years (7.9)	Yoga	12 weeks	Mental Well-Being (WEMWBS) (56 ± 9) EQ-VAS (83 ± 11)	Mental Well-Being (WEMWBS) (52 ± 8) EQ-VAS (63 ± 17)
Bonura, <i>et al.</i> ,	2014	Florida	RCT	IG : 77,04 years (7.28)	Chair Yoga	6 weeks	Comparison Well- Being between yoga and control grup (0,49)	
Seguin, F. <i>et al.</i> ,	2020	New York	RCT	IG : 66 years (7.3) CG : 65 years (4.0)	Yoga	12 weeks	Well-Being (70.5 ± 17.0) Emotional health limitations (66.7 ± 41.2) Social functioning (76.4 ± 24.6)	Well-Being (76.0 ± 15.0) Emotional health limitations (81.5 ± 30.7) Social functioning (76.4 ± 23.8)

Note : CG = control group, EQ-VAS = EuroQol Visual Analogue Scale, IG = intervention group, RCT = randomized controlled trial, WEMWBS = Warwick Edinburgh Mental Well-being Scal

In Seguin-Fowler, *et al* study, they use the RAND 36-item short form survey as a measure of quality of life, which includes well-being. The results of this journal also state the same thing that yoga can improve well-being. Participants in the intervention group reported enhancements in well-being across all domains of quality of life (QoL), with improvements noted ( $p=0.16$ ) (Seguin-Fowler *et al.*, 2020). Meanwhile, Welford *et al* conducted measurements using the Satisfaction with Life Scale in geriatrics (mean

age = 72.1 years; SD 5.5) to assess pre- and post-intervention well-being. This study showed a notable disparity in the well-being scores between the yoga group and the control group (Welford *et al.*, 2022).

### Relationship between yoga and geriatric mental health

Based on Bonura and Tenenbaum (2014) study, the Analysis of Covariance (ANCOVA) results confirmed the findings from the Repeated

Measures Analysis of Variance (RM ANOVA), revealing significant differences between group ( $p < 0.01$ ) in anxiety, well-being, depression, and anger at both the posttest and follow-up. In addition, significant differences were found in self-efficacy for daily living and general self-efficacy at the posttest. At the follow-up, group differences in self-efficacy were significant at the  $p < 0.05$  level. This study indicates the results of yoga intervention for elderly could reduce anxiety, depression, and anger, and increased self-efficacy for daily living, general self-efficacy, and well-being as well as perceptions of self-control. Yoga is potentially to improve psychological health in elderly.

Yoga in practice is not just doing a few movements, but also related to peace of mind. Mindfulness distinguishes yoga from other activities, even if the physical movements are similar. Yoga classes teach physical exercises such as focusing on the sensation of breathing or standing still, with the aim of teaching cognitive skills like controlling thoughts and actions, and maintaining present-moment awareness (Bonura & Tenenbaum, 2014).

### **Relationship between yoga and sleep quality in geriatric**

Based on the research of Ganesh *et al.* that there was a significant relationship between yoga intervention and sleep quality in the elderly ( $p = 0.0001$ ). Sleep Quality Index (SQI) are used to measure the quality of sleep. The average sleep of the elderly is shorter than adults. Sleep quality can also directly affect a person's psychological health. Individuals experiencing sleep problems are significantly more likely to have clinically significant depression and anxiety, with likelihoods of 10 times and 17 times higher, respectively, compared to those without sleep issues (Baglioni *et al.*, 2011; Scott *et al.*, 2021). In this study, yoga was found to enhance sleep quality by decreasing sleep disturbances, improving daytime functioning, and reducing reliance on sleep medication (Shree Ganesh *et al.*, 2021).

### **Strength and limitation of review**

Included studies also shared some strengths and limitations. The strengths of this review lies in its low risk of bias. In addition, the inclusion journal was used no later than 2014,

showing the novelty and relevance of this idea. There were limitations on this review. Some journals not only have yoga interventions, but also have other interventions. However, this does not affect the assessment because both interventions have their own influence and in this case the researcher only took the effect of providing yoga intervention.

### **Conclusion**

Based on the five studies that we have analyzed, all the results showed that yoga has a significant effectiveness on the psychological health in the elderly, especially on well-being, mental health, and sleep quality, despite the different types of yoga provided. Future research should adjust the type of yoga with the elderly population with various characteristics.

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