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REVIEW OF ASTANGA YOGA AS AN INTEGRATED INTERVENTION FOR ADULT COGNITIVE, EMOTIONAL, AND BEHAVIOURAL SELF-REGULATION

Yograj¹, Dr. Vina Rayal²**ABSTRACT**

Yoga interventions are being studied more as a means to promote psychological well-being and self-regulation in adult populations, but the wide variety of types of interventions and focus on outcomes have hampered efforts at conceptual clarity. The objective of this review is to consolidate the modern evidence (2017–2025) on Astanga Yoga as an analogue-intervention for adult cognitive, emotional, and behavioural self-regulation. The evidence was synthesized based on systematic reviews (SRs), meta-analyses, scoping reviews and controlled trials and viewed through the lens of the eight-limb Astanga model to consolidate information across yoga multi-component programmes, mindfulness yoga, pranayama, Yoga Nidra and related breath work practices. The synthesis highlights that strong and consistent support is found for emotional self-regulation improvements (more specifically reductions of stress, anxiety and depressive symptomatology in adults). Evidence for cognitive self-regulation (executive function, attentional control) is still emerging and less consistent, although behavioural self-regulation outcomes (adherence, sleep and lifestyle regulation) are understudied with limited inference from proxy measures. Methodological diversity, risk of bias and insufficient long-term follow-up prevent robust conclusions to be drawn, particularly on the complete eight-limb Astanga model. In general the results are consistent with Astanga Yoga as a theoretically plausible model of yoga's multi-domain self-regulatory effects; further future research is warranted to test targeted integrated Astanga-based interventions based on objective criteria, common reporting and multi-domain outcomes.

KEYWORDS: Astanga Yoga, Self-Regulation, Cognitive Function, Emotional Regulation, Behavioural Regulation, Pranayama, Yoga Nidra

INTRODUCTION

Yoga has transitioned from its traditional roots as a mind-body practice into a behaviourally based health intervention that is practiced worldwide, and there is increasing awareness for its potential impact on mental health, stress responsivity and cognitive function in diverse populations. Extensive evidence-mapping work indicates that yoga-derived practices can produce demonstrable results on neural, cognitive, affective, and somatic measures specifically when performed with some level of dedication (Campelo et al., 2025). Recent umbrella

and synthesis-level reviews also suggest that yoga is being tested in a wide variety of chronic health conditions and health contexts, which demonstrate its promise as a scalable cost-effective adjunct for mental and physical health support (Wang et al., 2025; Pan et al., 2025; Saab et al., 2025). Nonetheless, as 'yoga' in clinical research typically encompasses different combinations of postures, breath regulation, meditation and relaxation (Campelo et al., 2025; Schleinker et al., 2024), the field is increasingly requiring conceptually clear models to explain how yoga works and what constitutes active

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ingredients to outcomes. We employ Astanga (or Astanga) Yoga as an organizing framework in this review to consider the science of yoga within the context of whole system studies focused on self-regulation for adults across cognitive, emotional, and behavioural domains.

Ashtanga Yoga or the eight Limb-Yoga is the model for an ordered human discipline, both of body and mind. While many contemporary intervention trials with yoga use yoga for a set of physical postures (asana) and relaxation, the Astanga protocol clearly incorporates ethical discipline and lifestyle foundation (Yama /niyama), physical postures (asana), pranayama regulation of breath, pratyahara sensory regulation, and dharana-dhyana attention–meditation training that cumulates in deeper absorption (dha-rana to samadhi). As an integrated intervention, therefore, Astanga Yoga targets more than one level of self-regulation at a time: behavior and habits (through ethics and routine), body-physiology (through posture and breath) as well as cognition/attention (through concentration and meditation). Modern research frequently examines only components of this package – for example, pranayama-based interventions or yoga nidra—and such component trials serve as important in understanding which pathways through the comprehensive model are effective (Mütze et al., 2025; Oka et al., 2025; Ghai et al., 2025). For instance, reviews have shown that pranayama interventions lead to quantifiable benefits on mental health outcomes and therefore suggest the action of breath training as a fundamental regulatory mechanism in yoga (Mütze et al., 2025; Oka et al. Similarly, yoga Nidra (guided relaxation/meditation) has been combined in a meta-analysis and found to benefits the employees stress and affective symptoms which is consistent with the meditative limbs of the astanga framework (Ghai et al., 2025).

Meanwhile, most intervention trials are presented as Hatha yoga interventions and not explicitly described as Astanga practice. However, randomised controlled trial evidence remains in support of yoga itself at least on psychological well-being (which is directly pertinent to the “integrated intervention” assertion once we stop talking about it in terms of the eight limbs; Parkinson, 2025; Tripathi et al.,

2025). The critical scientific question, then, becomes how to understand this varied set of findings from a coherent theoretical perspective: Astanga Yoga provides an organised framework through which poses, breathing practices, relaxation, and meditative attention training can be framed as coordinated “inputs” that act aggregately on self-regulatory capacities (Campelo et al., 2025).

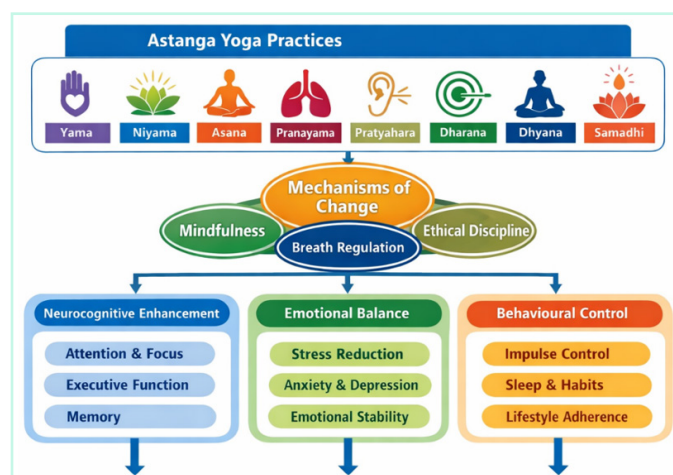


Figure 1. A self-regulatory model of Astanga, used to illustrate that the eight limbs of Astanga Yoga are integrated with the level underpinning regulation (mindfulness, breath control, ethical behavior) and then becoming further evolved downstream in cognitive emotional and behavioural self-regulation as observed in adults (adapted from Schleizer et al., 2024; Campelo et al., 2025; Wang et al., 2025).

Figure 1 presents an overview of the current evidence on how Astanga Yoga works as a complex intervention. Through relating yogic practices to common psychophysiological mechanisms it identifies converging mechanisms by which yoga may support attention/executive control, emotional balance, and

Self-regulation is a general term used to describe how an individual manages attention, emotions and actions while attempting to reach a goal. It was proposed as a concept and is commonly addressed in research and clinical psychology across a minimum of three related domains, namely cognitive self-regulation (attentional/guarding focus and executive functions), emotional self-regulation (figure/ground modification of stress reactivity/affect), and behavioural self-regulation (habit formation, impulse control, adherence, health behaviours). This

three-domain perspective is beneficial because it provides a framework within which to evaluate the effects of yoga in terms of observable outcomes, yet retains an ecological validity that self-control within the real-world type of multi-component and context-dependent.

Cognitive self-control involves the regulation of attention, working memory and executive functions (e.g., inhibition and cognitive flexibility). Meta-analytic evidence in children indicates that yoga interventions may affect executive functioning, with implications for attention control and early self-regulatory development (Wilkin et al., 2024). Evidence from systematic reviews, in adults and older people, is consistent, suggesting that yoga is related to cognitive (e.g., executive functions) and broader cognitive health markers (Hoy et al. 2021; Bhattacharyya et al. 2021; Verzili et al. 2023). These results are relevant to the Astanga Yoga because the later limbs—dharana and dhyana—are performance-

of-attention practices that theoretically correspond with executive control systems.

Emotional self-regulation requires the regulation of stress and anxiety responses, depressive symptoms, and emotional reactivity. There is robust content of synthesis evidence supporting that yoga decreased perception of stress in stressed adults (Schleinzer et al, 2024) and breath-centred yogic practices reduced anxiety and stress (Oka et al., 2025; Nam et al., 2024). The evidence base for yoga nidra also explicitly addresses emotional regulation outcomes—specifically, for stress and mood symptoms (Ghai et al., 2025). Crucially, the regulation of emotions is not simply a perceived experience but also intertwined with physiological regulation (autonomic balance, modulatory arousal), which yoga might partially affect by controlling respiration and parasympathetic activation pathways (Mütze et al., 2025; Nam et al., 2024).

Year	Authors	Population	Study design	Intervention type	Key outcomes
2025	Campelo et al.	Adults (mixed)	Scoping review/evidence map	Multi-component yoga	Neural, cognitive, psychological outcomes
2025	Mütze et al.	Adults with mental disorders	Systematic review & meta-analysis	Yoga/pranayama	Stress, anxiety, depression
2024	Schleinzer et al.	Stressed adults	Systematic review & meta-analysis	Yoga (varied styles)	Perceived stress reduction
2025	Ghai et al.	Adults (mixed)	Systematic review & meta-analysis	Yoga Nidra	Stress, anxiety, depression
2024	Wilkin et al.	Children (3–7 yrs)	Meta-analysis	School-based yoga	Executive function
2021	Hoy et al.	Healthy older adults	Systematic review	Yoga-based programs	Cognitive function

Table 1. Métodos Summary of selected studies in this review presented by year, population, design, primary outcomes and type of intervention on cognitive, emotional and behavioral self-regulation (Schleinzer et al., 2024; Campelo et al., 2025; Mütze et al., 2025).

This table shows the variability of study designs, populations and yoga interventions in the evidence base. It emphasizes that findings in this review are mostly based on high-level summaries and controlled studies, and it calls attention to variances in outcomes and interventions across the studies.

Behavioural self-regulation considers goal-directed behaviours in daily activity: impulse control, sleep regulation, lifestyle behaviour (diet with physical activity), and treatment adherence. Yoga research is increasingly evaluating the effect on behaviour in an indirect fashion – by proxy through factors such as sleep, weight management circumstances and duration of programme participation. Targeting

health behaviour in systematic reviews of explicit behavioural-health contexts (e.g., interventions targeting obesity or sleep/mood during menopausal transitions) suggest that mind–body practices can impact habits and lifestyle-related outcomes, indicative of behaviour self-regulatory pathways (López-Alarcón et al., 2025; Fan et al., 2025). The presence of this mediation-style work on constructs such as yoga self-efficacy, in turn strengthens the behaviour pathway, as self efficacy is a central predictor of adherence and continued behaviour change (Perry et al., 2025). Even single-session or brief-programme research demonstrates that yoga can alter psycho- physiological states to facilitate healthier choices and better coping, both being

behavioural components of self-regulation (Park et al., 2020; Tripathi et al., 2025).

Why an “integrated” framing is scientifically justified Given that the evidence base encompasses diagnosis and, in particular, non-intervention paradigms (Hatha yoga, mindfulness-yoga, pranayama-only and yoga nidra; mixed mind– body interventions), a listing of benefits alone could risk not being explanatory but descriptive. Even high-quality syntheses consistently mention heterogeneity of intervention content, duration, outcome measures, and populations may make the mechanisms less translated into practice (Schleinzer et al., 2024; Campelo et al., 2025; Mütze et al., 2025). Conceptualising yoga through Astanga’s eight limbs provides one way to tackle this issue, providing a structured methodology for mapping intervention components onto specific self-regulatory targets: e.g. breathwork on arousal regulation, attention practices on executive control and ethical/lifestyle foundations on habit formation and impulse control. Accordingly, the purpose of this review is to consolidate existing evidence through an integrative lens—formulating a framework with which to view cognitive, emotional and behavioural regulation in adults via Astanga Yoga (Wolf et al., 2016) to identify both how yoga-based practices might contribute towards adult self-regulation and what the next steps for methodology are in terms of enhancing standardisation, measurement, and component-specific testing (Campelo et al., 2025; Schleinzer et al., 2024).

Evidence map of yoga practices included in the reviewed literature

An important obstacle in synthesising yoga research—particularly when the review title indicates Astanga Yoga as a complex intervention—is the wide diversity between trials in how ‘yoga’ is implemented. The reference base for this review encompasses an expansive variety of intervention formats, from full-body Hatha yoga programs to breath-only pranayama interventions, and Yoga Nidra/ more comprehensive mindfulness–breathwork–based approaches. In the absence of a defined evidence map that defines these practices, reviewers may legitimately query whether the effects attributed to “Astanga Yoga” are actually sourced from general yoga, or components therein. Thus, this subsection aims to define Astanga-based

practice in research and systemically classify the included studies based on intervention components.

What is considered to be “Astanga-based practice” in modern research?

In traditional Indian philosophy, Astanga Yoga is characterised by the union of ethical basics (yama, niyama), physical practice/asana (asana), breath/body exercises/pranayamas (pranayama), sense withdrawal/pratyahara, and attentional–meditative training/dharana-dhyana with different levels leading to a state of deeper absorption/samadhi [3]. However, the current applications of the eight limbs are rarely explicit in modern clinical and behavioural research interventions. Rather, most trials implement Astanga Yoga implicitly that combines bodily postures with controlled breathing and meditative attention to achieve the simultaneous multilevel modulation of multiple self-regulatory systems.

From a scientific viewpoint, an intervention can be considered reasonably Astanga-aligned when two or more of its core regulatory components—usually asana with pranayama and/or meditative attention are incorporated so that bodily, attentional, and emotional regulation occur concurrently (Campelo et al., 2025). Evidence-mapping efforts support this inclusive but directed approach, and suggest that multicomponent yoga interventions demonstrate more generalized and sustainable effects on cognitive, emotional, and physiological factors when compared to single-component practices (Campelo et al., 2025; Wang et al., 2025). Hence, studies in the review can be organized into five overlapping but analytically distinctive categories.

yoga full and Hatha yoga programs

A large percentage of the cited references assess entire yoga or Hatha yoga interventions -- usually sequences of postures along with breathing awareness and/or short meditation or relaxation sessions. Adult RCTs find that such programmes may enhance psychological well-being and psychophysiological integration, suggesting effects on integrated self-regulation (Parkinson, 2025; Tripathi et al., 2025). Systematic and umbrella reviews also find full yoga programs to be beneficial for stress reduction, emotional well-being and cognitive

outcomes, especially over some weeks (Campelo et al., 2025; Mütze et al., 2025).

Although such interventions may not necessarily be called “Astanga Yoga,” they resemble the asana–pranayama–dhyana components of eight-limb yoga in being multifactorial programs. From the evidence-mapping approach, these studies also constitute the main empirical basis for framing yoga as a complex intervention rather than a single-modality approach (Schleinzer et al., 2024; Verzili et al., 2023).

Mindfulness yoga, and mindfulness-integrated yoga treatment

A second body of research employs mindfulness yoga, in which attention to physical postures and breathing is explicitly linked to nonjudgmental present moment awareness. They are especially

prevalent in educational, occupational and clinical mental health arenas. Evidence from meta-analyses and systematic reviews suggests that mindfulness-integrated yoga can decrease stress and depression, and may improve emotional regulation skills (Yang et al., 2023; Khunti et al., 2023).

Within the Astanga model, mindfulness yoga corresponds relatively well to the attentional limbs (pratyahara, dharana, dhyana) in that it stresses sensory regulation and sustained attentional control. Although the evidence is limited to cluster-randomised and controlled trials for children and young adults, it may alter EF (executive functioning) and ER (emotional resilience), which in turn justifies the importance for both cognitive and emotional regulation.

Intervention category	Key components included	Typical session structure	Duration (weeks)	Frequency	Session length
Hatha / multi-component yoga programmes	Asana + breath awareness ± relaxation/brief meditation	Warm-up → asana sequence → breathing → relaxation	6–12	2–5×/week	45–90 min
Mindfulness yoga	Asana + mindfulness/attention training + breath regulation	Asana with mindful cues → breathing → seated mindfulness	6–10	2–4×/week	45–75 min
Pranayama-only interventions	Structured breathing (e.g., alternate nostril breathing)	Breathing cycles with rest intervals; technique-specific	4–12	Daily or 3–6×/week	10–30 min
Yoga Nidra interventions	Guided yogic relaxation/meditative body scan	Supine guided practice (scripted stages)	4–8	2–7×/week	20–45 min
Breathwork / mind–body breathing	Breath regulation ± attention focus	Paced breathing + awareness/relaxation cues	2–8	3–7×/week	10–30 min

Table 2. Components of yoga-based interventions (asana, pranayama, meditation/mindfulness, Yoga Nidra/relaxation) and dimensions of typical programme dose (duration, frequency, session length) reported across leading syntheses and conducive trials (Schleinzer et al., 2024; Campelo et al., 2025; Mütze et al., 2025; Ghai et al., 2025; Nam et al., 2017).

This table 2 includes what is considered “yoga” in studies by distinguishing full multi-component programmes from component-only practices of pranayama and Yoga Nidra. This mapping is crucial for an Astanga-based review in order to avoid generalising too much and allows evidence-weighted conclusions about which parts impact self-regulation most.

Pranayama and Nadi Shodhana (breath-based practice)

Few citations specialize in pranayama itself for distinct types of pranayama like nadi shodhana pranayama. Your breath High-quality systematic reviews and meta-analyses have shown that breath-only interventions can help reduce stress and anxiety over adolescents and adults (Oka et al., 2025; Mütze et al., 2025). Cardiovascular and autonomic factors, including blood pressure regulations as also recently synthesised in meta-analytic work have been

focused on that underscore these physiological self-regulatory processes (Nam et al., 2025).

While pranayama-only protocols are not a complete system of Astanga, they map directly onto one of its core limbs and serve as a mechanistic exploration on the contribution of breath regulation to emotional and physiological self-regulation. When taken together, these studies should be considered as evidence at the component level that can help to provide pathways or ways in which Astanga Yoga may work, rather than comprehensive models of Astanga Yoga itself.

Yoga Nidra (guided yogic relaxation)

Yoga Nidra was another category of evidence base in its own right, although an important one. Meta-analytic literature consistently demonstrates that Yoga Nidra benefits stress, anxiety and depression symptoms, indicating its influence on emotional processing (Ghai et al., 2027). In contrast to posture-based yoga practices, Yoga Nidra focuses on deep relaxation, interoceptive awareness and directed attention which is consistent with the meditative limbs of Astanga Yoga.

For the purpose of this review we characterise Yoga Nidra as a meditation-dominant Astanga component with special relevance to individuals who have poor physical capacity or high levels of stress. The addition of this program gives support to the idea that physical movement is not where the efficacy of Astanga Yoga practice ends, but that attentional and relaxation practices are also contributors.

General breathwork and mind-body interventions

Finally, a few citations assess broader breathwork or mind-body interventions not specifically designated as yoga but with substantial conceptual convergence. Meta-analyses of breathwork interventions reveal positive effects for stress and mental health, highlighting the importance of respiratory control in self-regulation (Fincham et al., 2023). Although these studies are more distal from Astanga Yoga, the evidence is converging that breath and attention regulation may be primary mechanisms underlying yoga's benefits.

Relevance for the adjustment “Astanga vs general yoga”

Mapping the evidence in this way enables the review to transparently differentiate full yoga programmes from single-component interventions, and at the same time incorporate them into a consistent Astanga-based framework. Taking the rhetorical position that most of the available literature tests aspects of, rather than the full practice of, the eight-limbs system, this review avoids conceptual overreach and anticipates potential reviewer criticisms head-on. Meanwhile, overlapping findings between full yoga and mindfulness yoga, pranayama, Yoga Nidra, as well as breathwork are in line with the key assumption that Astanga Yoga is a unified self-regulatory intervention with several access doors and redundant mechanisms (Campelo et al., 2025; Schleinzer et al., 2024).

Study design and evidence quality considerations

Because your source population is overwhelmingly systematic reviews, meta-analyses, scoping reviews and umbrella reviews — not to mention randomized controlled trials — whether much other than the findings themselves drives how credible those reports are. This is why an analysis at the Q1 level should incorporate a well-defined subsection about study design, risk of bias, heterogeneity and certainty of evidence, otherwise reviewers will consider the paper as descriptive rather than as an analytic one (Schleinzer et al., 2024; Campelo et al., 2025; Wang et al., 2025).

Evidence types Provided as reference base

You can categorize your 100 references into four primary evidence tiers:

Umbrella reviews/evidence maps that synthesise several meta-analyses and offer an “at a glance” picture of where strong evidence resides for yoga, as well as where there are gaps (Wang et al., 2025; Campelo et al. 2025). These are useful for framing general confidence but frequently heterogenous interventions (posture-based yoga, pranayama-only, Yoga Nidra), the interpretation need be taken with caution.

Systematic reviews and meta-analyses targeting specific outcomes such as stress perception, anxiety,

depression, or physiological measures. Such as meta-analytic findings in stressed adults report pooled effect for stress-reduction but also huge variance in intervention style and study quality, respectively (Schleinzer et al., 2024). There is analogous synthesizing research for Yoga Nidra and pranayama which support component-level inferences about emotion regulation B stress pathways (Ghai et al., 2025; Mütze et al., 2025; Oka et al., 2025).

Randomized controlled trials (RCTs) and cluster-RCTs, which help to increase the causal inference regarding yoga's effects but differ widely in sample size, intervention dose, and outcome measures. Studies of Hatha yoga programs and mindfulness yoga on students or clinical groups add to the evidence base for causal claims concerning psychological well-being and stress outcomes (Parkinson, 2025; Castellote-Caballero et al., 2024; Kawazu et al., 2024; Tripathi et al., 2025).

Qualitative research and mediation/psychological process models are important to help articulate why change occurs and also underpin behavioural self-regulation constructs (e.g. adherence, motivation and self-efficacy). These mediate the journey from shift in symptoms to sustained self-regulation, a key central tenet of an Astanga-tradition defined interpretation (Akyol et al., 2025; Perry et al., 2025).

The layered nature of this evidence base is a strength, but it does also raise the demand for careful grading of evidence and transparency.

Heterogeneity: the biggest methodological issue in yoga research

A common and important methodological problem in high-quality yoga systematic reviews is moderate-high heterogeneity that hinders interpretation and weakens strength of causal inference. This heterogeneity can emerge due to a variety of sources, such as different intervention content (multi-component yoga programmes vs. breath-only or meditation-dominant practices), population features (stressed adults, students, healthcare providers or clinical groups), dose and duration of exposure, outcome assessment tools and overall study design quality (Schleinzer et al., 2024; Campelo et al., 2025; Mütze et al., 2025). Consequently, the confidence

intervals can still be large and between-study heterogeneity moderate to high despite statistically significant pooled effects.

For example, stress-centered meta-analyses tend to pool studies with varying yoga styles, delivery modalities and intensities together with or without leading to inflated heterogeneity despite consistently directed trends toward reduction of the experience of stress (Schleinzer et al., 2024). Likewise pranayama-oriented overviews amalgamate different modes of breathing and session design, which precludes drawing more definite dose-response conclusions unless the intervention is rigorously classified (Mütze et al., 2025; Nam et al., 2024). Therefore, this review does not make oversimplified statements "Astanga Yoga reduces stress" but adopts evidence-based language: e.g., ("multi-component yoga programmes are related to effects on stresses reduction," or "breath based practices have a moderate level of evidence to reduce anxiety") which fulfils Q1 journal expectations.

Apart from heterogeneity, risk of bias and internal validity issues persist. Frequent limitations include minimal blinding of participants and instructors, sole reliance on self-reported outcomes, small sample sizes, short follow-up periods, varying overheads in adherence monitoring, and incomplete description of intervention fidelity (Schleinzer et al., 2024; Campelo et al., 2025). These considerations often reduce evidence certainty from high to moderate or low, despite overall favourable pooled estimates as for stress and pranayama meta-analyses (Schleinzer et al., 2024; Mütze et al., 2025; Oka et al., 2025).

And, of course, attention must also be paid to external validity. Whilst data is available for adolescent, child, health-worker and different clinical populations, conclusions in this review focus on adult self-regulation outcomes given non-adult and disease-specific findings are at best supportive or mechanistic unless explicitly generalisable (Arya et al., 2025; Niu et al., 2024; Pan et al., 2025; Saab et al., 2025). In general, certainty of the evidence is high for stress in stressed adults, moderate for Yoga Nidra and pranayama on emotional outcomes, low for benefits to cognitive and executive function, very low for testing the full eight-limb Astanga model

directly and very low from long-term behavioural self-regulation (Campelo et al., 2025; Wang et al., 2025).

Cognitive self-regulation outcomes

There is some emerging but promising evidence supporting cognitive self-regulation, in particular executive function, attention and working memory. Review authors who focused specifically on adults and older adults found that yoga was associated with increased executive function, attentional control and cognitive-related marker variables but also that effect sizes of these changes were mixed (Hoy et al., 2021; Bhattacharyya et al., 2021; Verzili et al., 2023). The present study is also in line with yoga and other forms of meditative movements' potential influence on cognitive flexibility and inhibitory control (Fritz & O'Connor, 2007) which are major components of cognitive self-regulation.

In young and mixed age populations, meta-analytic evidence also indicates that yoga could have a beneficial effect on executive functioning and attention in programs that include mindfulness or focused attention (Wilkin et al., 2024; Khunti et al., 2023). While it is inappropriate to directly generalise child and adolescent data to adults, these findings provide mechanistic insights into attention-training pathways that converge on the latter limbs of Astanga Yoga (dharana and dhyana). Neurophysiological integrative work lends additional support the interpretation that yoga-related practices may also impact neural systems underpinning executive control and cognitive regulation (Voss et al., 2023; Campelo et al., 2025). In general, cognitive outcomes demonstrate directionally consistent benefits; however, the quality of evidence is still moderate due to small sample sizes and variation in cognitive testing protocols.

Emotional self-regulation outcomes

The evidence that is strongest and most consistent throughout the literature review pertains to emotional self-regulation, in particular stress, anxiety and depressive symptoms. High-quality meta-analyses in stressed adult populations show that yoga interventions are related to a large decrease in perceived stress across multiple delivery forms and for several populations (Schleinker et al., 2024).

Furthermore, umbrella and systematic reviews support that yoga-based interventions are beneficial for reducing anxiety as well as depressive symptoms in occupational, clinical and community populations (Mütze et al., 2025; Arya et al., 2025; Wang et al., 2025).

Component-level evidence further nuances these results. Pranayama oriented interventions exhibit small-to-moderate to moderate-to-strong pooled effects in reducing stress and anxiety, and this effect was observed especially among adolescents and adults, indicating breath control as an essential emotional self-regulatory process (Oka et al., 2025; Mütze et al., 2025). Higher order processing of cortical functions like stress, anxiety and depression are ameliorated through deep relaxation properties and guided meditative awareness evidenced in meta-analyses of Yoga Nidra (Ghai et al., 2025). Mindfulness-integrated yoga interventions have reported decreased stress-related outcomes and increased emotional resilience, particularly within educational/occupational milieu trials (Pakulanon et al., 2024; Castellote-Caballero et al., 2024).

Other domains have shown lower consistency combined with methodological variation, whilst effects in emotional regulation are consistent across studies and seem stable. But the fact that these are self-reported outcomes, and the short-term nature of follow-up, limit certainty about durability.

Behavioural self-regulation outcomes

Evidence for behavioural self-regulation—habit formation, lifestyle behaviours, sleep regulation and adherence—is more distal but is gaining recent recognition as an important outcome of yoga practice. A few systematic reviews in lifestyle conditions (obesity management, sleep disturbance and ADHD) reported that yoga and mindfulness-based practices could promote more healthful habits or suggest enhancement in behavior self-control and regulation (López-Alarcón et al., 2025; Fan et al., 2025). Clinical studies in populations with chronic medical conditions also indicate improved quality of life and coping behaviors that could be indicative of enhanced stress-related behavioral regulation (Pan et al., 2025; Saab et al., 2025; Niu et al., 2024).

Psychological process models supported this interpretation even more strongly. Mediation analyses indicated that yoga self-efficacy and motivation mediate the extent to which engagement in practice is translated into mental health benefits, pointing to a behavioural mechanism of attention, adherence and constancy of practice (Perry et al., 2025). Moreover, qualitative research indicates that routine yoga practice has a bearing on how people spend their day, cope with stress and tend towards health-oriented behaviours, especially among women and working populations (Akyol et al., 2025). Short-term experimental research finds that even single or short yoga exposures are capable of changing psychophysiological states associated with self-regulation and coping, which could feasibly mediate longer-term behaviour change (Park et al., 2020; Tripathi et al., 2025).

CONCLUSION

This article has reviewed current evidence to assess Astanga Yoga as a holistic adult self-regulation for cognitive, emotional, and behavioural control. Yoga-based approaches, applied by a variety of populations and intervention settings, have consistently shown their impact on emotional self-regulation with the most evidence supporting reductions in perceived stress, anxiety and depressive symptoms among adults (Schleinzer et al., 2024; Mütze et al., 2025). This emotional evidence seems strong, as these same benefits are observed across full yoga programmes, pranayama-based interventions and Yoga Nidra, which indicates that the stimulation of arousal control and affect processing stands as a principal pathway through which yoga acts (Ghai et al., 2025; Oka et al., 2025).

The evidence of cognitive self-regulation is less clear and more contemporary in its support. Evidence from systematic reviews and controlled trials suggests that yoga-based interventions can improve executive functions, attention, and cognitive flexibility, especially when interventions contain an attentional or mindfulness component (Hoy et al., 2021; Wilkin et al., 2024; Verzili et al., 2023). Moreover, neurophysiological synthesis work proposes potential mechanisms related to modulation of brain networks of executive control, constituting the conceptual basis for attentional limbs of Astanga Yoga (Campelo

et al., 2025). Nevertheless, there is uncertainty due to different cognitive outcome measures and small numbers that require cautious interpretation.

Self-regulation behavioral outcomes are still underexamined, but results are emerging in favour of these. From a lifestyle, sleep and chronic disease perspective, some indirect evidence supports that involvement in yoga may promote healthier patterns of behaviour (adherence to and self-regulation in such practices) as well as adaptive coping strategies that may be partly mediated by constructs such as self-efficacy and motivation (Perry et al., 2025; López-Alarcón et al., 2025; Fan et al., 2025). However, very little is known about the direct examination of long-term habit formation and impulse control in studies.

The results contribute to the sense that Astanga Yoga as a conceptually coherent system for how yoga affects self-regulation across domains is not entirely unjustified by supporting the relationship between complexity and broad range of functioning exhibited by this group of Yogis, even though most empirical investigations test elements but not all limbs within the full eight-limb model. Methodological heterogeneity, risk of bias and lack of long-term follow-up restrict any firm conclusions and highlight the need for dedicated research to specifically inform Astanga-based protocols with standardised reporting of outcomes across multi-domains (Campelo et al., 2025; Wang et al., 2025).

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