

# Elements of yogic practice: Perceptions of students in healthcare programs

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## ABSTRACT

**Background:** The practice of yoga has a long history as an integrated lifestyle science. Those who have practiced yoga in its full form (including all eight traditional aspects) find that it touches almost every aspect of their inter- and intra-personal lives. Despite this rich history, the West has adopted limited aspects of yoga practice. When understood narrowly as a physical fitness practice, healthful benefits of yoga may be lost, possibly promoting body-consciousness and injury instead.

**Aim:** To understand whether students in healthcare programs view yoga from a physical fitness versus holistic perspective, we explored perceptions of what constitute yoga's essential practices.

**Methods:** We assessed endorsement of the eight limbs of yoga via the acceptability of yoga survey. The sample ( $n = 498$ ) was recruited from programs in 10 healthcare professions at a Northwestern university. Participants were categorized as nonyogis, contemplators, yogis, and superyogis.

**Results:** Across all groups, findings confirmed a narrow definition of yoga as portrayed in popular media and gym-based yoga classes. Breathing and posture practices were the most commonly endorsed practices, even among the sample's most seasoned yoga practitioners. Ethical practices and daily commitments of introspection, disciplined practice, or living with purity were least commonly associated with yoga despite their foundational nature in yoga philosophy. Concentration and meditation practices were only moderately endorsed as essential practices. Super-yogis endorsed a wider variety of limbs than nonyogis, contemplators, and yogis.

**Conclusions:** We offer a rationale for these findings along with recommendations that may help augment the definition of yoga and hence maximize its benefits.


**Key words:** Defining yoga; eight limbs of yoga; yoga practice.

## INTRODUCTION

The practice of yoga has long and ancient roots that may reach back two millennia. This ancient, historically Eastern wisdom tradition of yoga is a collection of varied practices and commitments reflecting a specific way of life that reaches nearly all aspects of daily functioning. This lifestyle system is comprised of eight linked, yet distinctive practices: Ethical life choices, personal observances,

posture practices, breathing exercises, sense withdrawal, concentration practices, meditation, and absorption. The definitions of these eight limbs of yoga are shown in Table 1.

Modern yoga, as practiced in the West, has a relatively short tradition, dating to the import of yoga to the United States and Europe from India in the late 19<sup>th</sup> and early 20<sup>th</sup>

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**Table 1: The eight limbs of yoga as identified by Patanjali and augmented by modern interpretations**

Limb	Definitions and key (or sample) practices
<i>Yamas</i>	Ethical life choices – Universal moral discipline and principles that regulate intrapersonal and interpersonal action, speech, and thought; comprising the following contemporarily defined key practices <i>Ahimsa</i> – Nonharming or nonviolence, as well as compassion for self, others, and everything; not causing pain to any sentient being <i>Satya</i> – Truthfulness in all relationships and contexts to preclude lying, hypocrisy, and deception <i>Asteya</i> – Nonstealing and not taking what is not freely offered; living with a sense of abundance that eliminates the desire to take or steal from others <i>Brahmacharya</i> – Moderation to create a life that makes wise use of energy and does not succumb to the pleasure of all senses, depleting us unnecessarily <i>Aparigraha</i> – Nongreed or nonpossessiveness toward objects, relationships, actions, and other aspects of life, overcoming attachment, desire, or jealousy
<i>Niyamas</i>	Personal observances – Principles of self-discipline and spiritual observance for a purposeful life; comprising the following contemporarily defined key practices <i>Sauca</i> – Purity in action, speech, and thought as well as in environment and consumption <i>Santosa</i> – Contentment arising from nonattachment to the fruits of efforts, actions, speech, and thought <i>Tapas</i> – Disciplined use of energy resulting in a committed and regular routine of yogic practice <i>Svadhya</i> – Self-study toward a life of introspection about personal reactions, motivations, intentions, and impacts <i>Isvara pranidhana</i> – Devotion to a larger purpose to create meaning for self and others; “positive regard for a higher principle” <sup>[1]</sup>
<i>Asanas</i>	Posture practice – originally a reference to a seated posture conducive to meditation, contemporary asana practice is physical discipline to promote and facilitate mindful, internal practices; including the following examples Backbends Balancing postures Forward folds Inversions Restorative poses Seated postures Standing postures Twists
<i>Pranayama</i>	Breathing practices – Originally defined as the control or extension of prana (life energy or life force; akin to chi), pranayama is contemporarily defined as breathing practices that connect mind and body as well as of conscious and unconscious; including the following examples Balancing breath Breath retention Cleansing breath Energizing breath Natural breath Victorious breath
<i>Pratyahara</i>	Sense withdrawal – Practices that draw awareness inward, away from outer sensory perception to avoid over-stimulation and support concentration, meditation, and absorption; “pratyahara is on the sensory level what nongrasping is on the ethical level”, <sup>[1]</sup> allowing us to be drawn inward rather than distracted outward
<i>Dharana</i>	Concentration – Practices that help practitioners surrender thought in exchange for deep inner concentration a single point of focus or ekagrata (one-pointedness); dharana helps reduce mental chatter and opens the individual to deeper concentrated awareness that leads to the recognition of a self-beyond thoughts and mind-identification
<i>Dhyana</i>	Meditation – An effortless state of deep concentration and awareness that transcends even a single point of focus; not a “practice” in the true sense, dhyana is an abiding in our natural state of being and experiencing without relying on the mind as the interpreter of experience
<i>Samadhi</i>	Absorption – A state of integration or ecstasy that is beyond an ordinary state of consciousness; recognition of the interconnectedness of all sentient beings and a profound connection to a greater whole; feeling complete or integrated; experiencing a singularity or unity with everything

We are indebted to Georg Feuerstein<sup>[1]</sup> for contemporary translations and interpretations of Patanjali's eight limbs

century. Yoga as practiced in the West at the turn of the 20<sup>th</sup> century strongly emphasized meditation and self-reflection and was seen as a way to find absorption and awakening. As Western yoga moves into the 21<sup>st</sup> century, however, it is increasingly focused on physical health and fitness. Recent historical reviews of modern postural practices are compelling in their analysis and point out that many modern forms of Western yoga have become disconnected from their integrative, ancient roots in Eastern yoga.<sup>[2-4]</sup> This shift is reflected most notably in the media's portrayal of modern yoga, which is strongly biased toward presenting

yoga as a physical practice in general, and a flexibility practice in particular.<sup>[5]</sup>

Interestingly, even in the East, the physical aspects of yoga have become increasingly altered by Western influences (beginning as early as the 19<sup>th</sup> century), giving evidence to yoga as an evolving practice, no matter where it finds expression. However, despite an athletic and physical fitness influence on asana (posture) practice, Eastern yoga continues to adhere to all eight limbs. This has also been true for a quieter and less visible following of yoga in the

West.<sup>[6]</sup> Yogis who engage in more traditional expressions of yoga as a lifestyle are firmly rooted in and committed to the classic texts (e.g., Yoga Sutra by Patanjali) and embrace the concept of the eight limbs, or aspects, of yoga [Table 1]. These eight limbs are of great interest to yogis who seek to adhere to yoga as a philosophical foundation for life, rather than solely a physical practice.

Western healthcare practitioners who integrate yoga in their work have also focused largely on the physical practices of yoga.<sup>[7,8]</sup> Similarly, most modern Western yoga researchers who work to demonstrate yoga's utility as an integrative healthcare strategy have focused on physical practices, typically asana and subsets of pranayama (breath work).<sup>[9]</sup> Vast literature showing the utility of meditation and mindfulness for a variety of physical<sup>[8,10]</sup> and mental health concerns<sup>[11,12]</sup> have typically not been presented in the broader context of yogic practices, but rather are represented as independent practices in their own right. It is unclear whether restricting research to asana and pranayama is due to a limited perception of yoga or if physical practices are more easily quantified for research purposes.

Certainly, the eight limbs are increasingly embraced by yogis and healthcare providers who perceive yoga as a healing art or science. In a recent editorial in the International Journal of Yoga Therapy, Boggs<sup>[13]</sup> issued a call to yoga researchers to broaden scientific horizons beyond the physical practices of yoga. He articulated that yoga therapists (as differentiated from yoga teachers and researchers) are cognizant that yoga as a healing strategy goes beyond posture practices. Yoga therapists mindfully, and by design, integrate other limbs into therapeutic work with students and clients, including breathing practices (the fourth limb; pranayama), ethical and lifestyle commitments (the first and second limbs; yamas and niyamas), introspective and concentrative practices (the fifth and sixth limbs; pratyahara and dharana), and various forms of meditation and absorption (the seventh and eighth limbs; dhyana and samadhi).

The aim of this study is to better understand the current perception of yoga among students enrolled in healthcare programs. These students are an important group to study as they are in the unique position of becoming a potential gateway to yoga for others in their (emerging) roles as healthcare providers and researchers. The current study explored these students' breadth of perspective on yoga, focusing in particular on their level of endorsement of the eight limbs of yoga as an essential part of yoga. Based on their data, a typical definition of yoga as perceived by aspiring health professionals can be framed. Understanding this definition is important as it likely influences providers' use of yoga as a viable self-care

practice and their perception of yoga as a feasible and efficacious healthcare practice for their patients.

## METHODS

### Participants

The sample was recruited by E-mailing all currently matriculated students ( $n = 1585$ ) from 10 healthcare programs in three colleges at a Northwestern United States private university. E-mail and online methods were chosen based on literature demonstrating that for college students, such study solicitation methods produce comparable response rates and higher quality data than do conventional methods.<sup>[14,15]</sup> Based on 513 hits on the survey website, 498 usable protocols were obtained, for a response rate of approximately 30%. Sample characteristics were comparable to population demographics, with no statistically significant differences in age, gender, or ethnicity. Descriptive details about the sample are shown in Table 2.

### Materials

The acceptability of yoga survey was developed for purposes of a larger yoga perceptions study.<sup>[16,17]</sup> Development and piloting were accomplished using the online survey version with a convenience sample of volunteers obtained through word-of-mouth. The final survey consists of five sets of questions, some open-ended and some with

**Table 2: Demographic characteristics of survey participants (n=468)**

Demographic variable	Number	Percentage
Health profession		
Audiology	11	2.3
Dental health science	23	4.9
Health administration	14	3.0
Occupational therapy	44	9.4
Optometry	110	23.5
Pharmacy	58	12.3
Physical therapy	55	11.8
Physician assistant	29	6.2
Psychology	92	19.7
Speech and language	32	6.9
Gender		
Females	381	81.4
Males	85	18.2
Missing	2	0.4
Race/Ethnicity*		
African American	5	1.1
Alaska Native/Native American	14	3.0
Asian/Pacific Islander	84	17.9
Caucasian	385	82.3
Hispanic	19	4.1
	<b>Mean</b>	<b>SD</b>
Age		
Years	28.7	5.9

\*Respondents were asked to identify all that applied, thus totals can add to more than 100%. SD = Standard deviation

discrete response choices. Questions assess five domains, namely, engagement in yoga practice, facilitators of yoga practice, barriers to yoga practice, yoga acceptability as supplemental treatment for health concerns, endorsement of elements of yoga, and participant characteristics. The instrument was administered through SurveyMonkey.com. A copy of the survey is available from the corresponding author.

The current study focuses on the survey section exploring endorsement of yoga elements. Participants were asked to indicate for each of 31 items whether the item is an element of yoga, via the following question: “To what degree do you consider the following practices to be a part of yoga?” Participants rated 31 items on a 3-point scale, offering the following response options: Not a part of yoga, might be a part of yoga, or essential practice of yoga. The items were developed based on the central concepts within each of the eight limbs of yoga and are listed in Table 2.

## Procedure

Following approval by the university’s Institutional Review Board and in accordance with the Helsinki Declaration, all students enrolled in 10 healthcare programs received a link to the online survey via a solicitation E-mail sent to their university E-mail account. Once potential respondents arrived at the website, they were presented with informed consent information. If they consented, they were directed to the protocol, which took 10–15 min to complete. Using a separate survey link, participants were invited to enter into a drawing for a chance to win one of 10 prizes (gift certificates to bookstores or coffee shops, with one grand prize valued at \$100). Data were not linked in any way to personal information collected for the drawing. The survey link was functional for 4 weeks during which time students received two reminder E-mails.

## RESULTS

### Data preparation

#### *Dichotomization of data*

Due to being highly skewed, responses to the yoga elements questions were dichotomized into essential versus nonessential. Essential included any rating indicating a given item was an essential practice of yoga; not essential included any rating that indicated the items was either not a part of yoga or only possibly a part of yoga.

#### *Respondent categorization*

To be able to compare groups, we categorized participants into a yoga practitioner grouping based on self-reported

yoga practice as conceptualized from a readiness-for-change perspective. Those who responded that they were active practitioners, were categorized as Yogis ( $n = 137$ ; 29.3%); those who were not actively practicing but revealed an intention to start, were categorized as contemplators ( $n = 131$ ; 28.0%); and those with neither an active practice, nor an intention to start, were categorized as non-yogis ( $n = 200$ ; 42.7%). We further created a sub-group of Yogis dubbed super-yogis ( $n = 51$ ; 10.9%); these were regular practitioners who had practiced for more than 6 months at least weekly in a yoga studio. We conceptualized this group of respondents as the most adept yogis in the study given their regular practice in a traditional setting.

## Main analyses

For each yoga element, we calculated the percentage of individuals who defined the item as an essential yoga practice. We found that the most strongly endorsed items were breathing practices, asanas, and mind-body integration (across limbs), and introspective practices (related to pratyahara and dhyana). Table 3 and Figure 1 show all rated elements for all groups. Table 3 shows the items in the order in which they were administered; Figure 1 shows them sorted from most highly to least highly endorsed, based on averages across the four groups. Figure 2 shows the information averaged into the eight limbs of yoga, clearly revealing that breathing (fourth limb) and asana practices (third limb) were seen as essential by the largest proportion of respondents regardless of yoga practitioner status. Ethical practices (first limb) were endorsed by the smallest number of individuals, even among the most experienced yogis.

To assess whether statistically significant differences could be detected between groups, Chi-square analyses for each item compared super-yogis’ percentage of endorsement to that of all other respondents combined. We found significant differences between super-yogis and all others on 15 items, namely, all ethical practices (first limb), most lifestyle practices (second limb), and a few items in introspective (fifth limb) and meditative aspects (seventh limb) [Table 3], all in the direction of greater endorsement by the super-yogis.

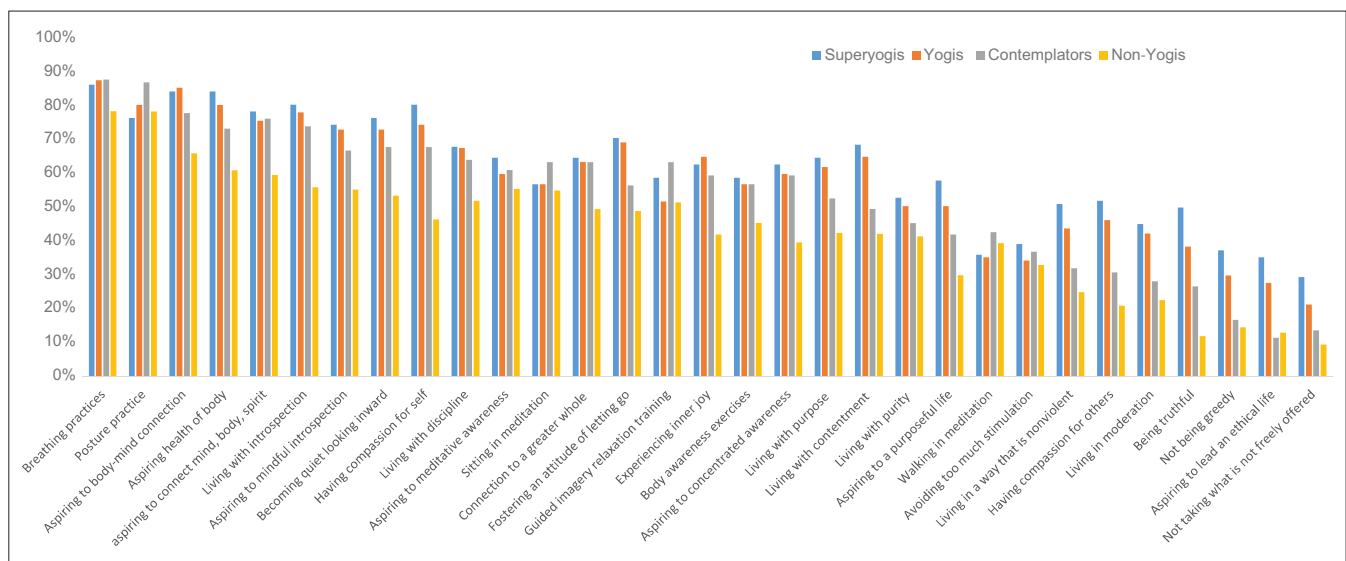
## DISCUSSION

Findings revealed that, among the students sampled from programs in ten different healthcare professions, the definition of yoga focused on practices most commonly mentioned in popular media, research studies, and yoga classes, as taught in gyms or athletic clubs. Specifically, breathing and asana emerged as the most commonly endorsed practices associated with yoga. These findings

**Table 3: Percentage of participants endorsing each item as essential part of yoga, by group**

Limb	Survey item	Yogis (n=137) (%)		Contemplators (n=131) (%)	Non-Yogis (n=200) (%)	Overall (n=468) (%)
		"Super" Yogis (n=51)	All Yogis (n=137)			
Yamas	Aspiring to lead an ethical life	35.3***	27.7	11.5	13.0	16.9
	Living in a way that is nonviolent	51.0***	43.8	32.1	25.0	32.5
	Having compassion for others	52.0***	46.3	30.8	21.0	31.1
	Having compassion for self	80.4***	74.5	67.9	46.5	60.7
	Being truthful	50.0***	38.5	26.7	12.0	23.8
	Not taking what is not freely offered	29.4***	21.3	13.7	9.5	14.2
	Living in moderation	45.1**	42.3	28.2	22.6	30.0
	Not being greedy	37.3***	29.9	16.8	14.6	19.7
Niyamas	Aspiring to lead a purposeful life	58.0**	50.4	42.0	30.0	39.3
	Living with purity (eating healthy food; keeping house clean)	52.9	50.4	45.4	41.5	45.2
	Living with contentment (not overreacting or getting attached)	68.6**	65.0	49.6	42.2	51.0
	Living with discipline (regular routine of sports or meditation)	68.0	67.6	64.1	52.0	60.0
	Living with introspection (attention to thoughts, feelings)	80.4*	78.1	74.0	56.0	67.5
Asana	Living with purpose or intention (creating meaning)	64.7*	62.0	52.7	42.5	51.1
	Aspiring to a life that honors health and wellness of the body	84.3*	80.3	73.3	61.0	70.1
	Posture (physical poses) practice	76.5	80.3	87.0	78.4	81.4
	Aspiring to a life in which body and mind connect	84.3	85.4	77.9	66.0	75.0
Pranayama	Breathing practices	86.3	87.6	87.8	78.5	83.8
Pratyahara	Aspiring to a life of mindful introspection	74.5	73.0	66.9	55.3	63.7
	Becoming quiet and looking inward	76.5*	73.0	67.9	53.5	63.2
	Avoiding too much stimulation	39.2	34.3	36.9	33.0	34.5
Dharana	Aspiring to a life of concentrated awareness	62.7	59.9	59.5	39.7	51.2
	Practices such as guided imagery or relaxation training	58.8	51.8	63.4	51.5	54.9
	Practices such as body scans or body awareness exercises	58.8	56.9	56.9	45.5	52.0
Dhyana	Aspiring to a life of meditative awareness	64.7	59.9	61.1	55.5	58.3
	Fostering an attitude of letting go	70.6*	69.3	56.5	49.0	57.1
	Sitting in meditation	56.9	56.9	63.4	55.0	57.9
	Walking in meditation	36.0	35.3	42.7	39.5	39.2
Samadhi	Aspiring to a life that connects body, mind, and spirit	78.4	75.7	76.3	59.6	69.0
	Experiencing a connection to a greater whole	64.7	63.5	63.4	49.5	57.5
	Experiencing inner joy	62.7	65.0	59.5	42.0	53.6

Items were subjected to a Chi-square analysis comparing super-yogis to all other respondents combined. \*\*\*Significant difference at the 0.001 level, \*\*At the 0.01 level, \*At the 0.05 level



**Figure 1: Rank order of yoga practices**

suggest the practitioners we sampled perceive and practice yoga in a limited way, overemphasizing asana and pranayama that could reflect a body-centric culture. In our discussion of findings, we will follow a model proposed

by Gard *et al.*,<sup>[18]</sup> grouping the limbs as self-regulation practices into ethics (yamas and niyamas), postures (asana), breath-regulation (pranayama) and meditation (pratyahara, dharana, dhyana, and samadhi).

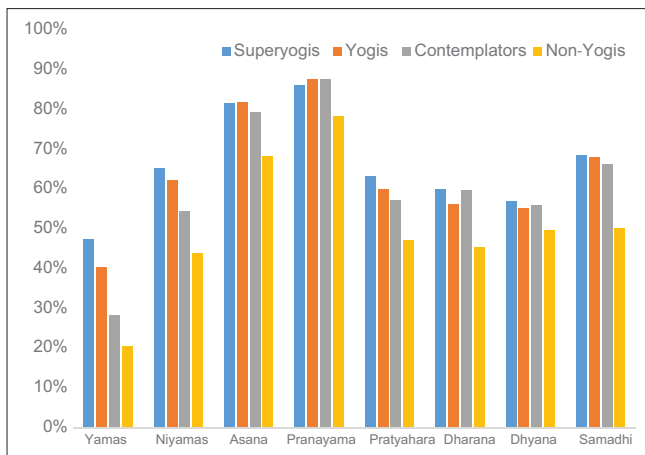


Figure 2: Ratings sorted by the eight limbs of yoga

### Ethics: Yamas and niyamas

Although the super-yogis endorsed a broader spectrum of the limbs than did Yogis, Contemplators, or non-yogis, the ethical practices (yamas) were the least endorsed aspect of yoga for this group. This finding stands in contrast to the historical context in which the yamas were considered to be the foundation of yoga practice, meant to facilitate the other limbs. The yamas are guidelines for living an ethical life and skillful practice. Increased awareness of yamas may be conducive to fewer yoga-related injuries, at least, some of which may be related to unskillful application of will and overexertion. For example, a careful case review<sup>[19]</sup> recently identified intense pranayama and Bikram yoga to be the physical practices most commonly associated with injuries. Yoga injuries most commonly reported affect the musculoskeletal system, especially the lower back, knees, and wrists,<sup>[20]</sup> in part due to excessive stretching and too much tension or compression in joints. Tendon and cartilage tears have been reported and attributed to over or inappropriate effort, such as overstraining of the neck, poor alignment in inversions, and dehydration.<sup>[21]</sup> Less common, but also reported, are injuries to the visual and nervous system.<sup>[19]</sup>

Thus, injuries appear to occur most commonly when practitioners push themselves beyond their body's abilities or lack healthful alignment. In such circumstances, if the yamas are considered, they may be directly related to the prevention of injuries. For example, the yamas encourage taking care within each posture (ahimsa), being truthful about the body's abilities (satya), not pushing the body beyond its limits (asteya), practicing moderation within each posture (brahmacharya), and being unattached to the acquisition of extreme versions of a posture (aparigraha). Therefore, without the yamas, Western yogis may overlook many of the health-promoting elements of yoga and be more at risk of injury. Greater focus on the yamas as expressed in practice that is nonviolent, self-compassionate, moderate,

and nonattached to results may translate into fewer negative outcomes and potentially increased skillfulness in life outside of the yoga practice. Both improved safety of physical practice and life enhancing skills are particularly important when considering the increased integration of yoga into healthcare settings.

The niyamas serve to improve behavior and enhance an individual's intrapersonal attitudes and skills. Discipline (tapas) and self-study (svadhyaya) were the most endorsed niyamas and svadhyaya was endorsed as the most essential by all groups. Among the super-yogis, the most endorsed practices were self-study (svadhyaya), discipline (tapas), and contentment (santosha). These results indicate that focusing on intrapersonal growth is both understood and promoted as an aspect of yoga, by practitioners and nonpractitioners.

The least endorsed niyama was the practice of living with purity or cleanliness (saucha). Our study presented two aspects of this niyama, namely adhering to a diet of healthy foods and existing in a clean environment. Ample research exists about the benefits of healthful foods<sup>[22-24]</sup> and clean, organized environments.<sup>[25-28]</sup> Yet Americans are bombarded with advertisement for fast and nutritionally deficient food and inundated with a culture of consumerism, leading to cluttered environments.<sup>[29]</sup> Not surprisingly, fewer than half of our sample associated the importance of healthful foods and clean environments with yogic practice.

### Postures and breathing practices: Asana and pranayama

Postures (asanas) and breath work (pranayama) are the limbs of yoga that focus most directly on the physical body. In Patanjali's Yoga Sutras, asanas were mentioned only to describe how to prepare the individual for the practice of sitting in meditation.<sup>[30]</sup> Pranayama is the practice of working with breath to control how energy circulates throughout the body. Asanas are the most advertised and promoted of the limbs in popular media related to yoga (e.g., Yoga Journal). Expectedly, asanas (postures) and pranayama (breathing) were the limbs most commonly endorsed by our sample. This was not surprising and reflects how yoga is promoted and portrayed in the United States. Historically, yoga embodied all aspects of the human experience conducive to health and wellbeing. If the asanas become the sole or primary focus of yoga practice, other integral aspects that support and vitalize the practice may be neglected, thus leading practitioners to miss the most important part of yoga – namely, the integration of mind, body, and spirit.

### Meditation: Pratyahara, dharana, dhyana, and samadhi

The more advanced limbs of yoga focus on skills to connect the mind and spirit and rely on the prior limbs to move

towards self-regulation.<sup>[18]</sup> Pratyahara supports calming the mind through withdrawal of the senses, which allows practitioners to turn their attention inward. Three-quarters of our participants, regardless of depth of yoga practice, endorsed mindfulness, introspection, and internal awareness as essential aspects of practice. Interestingly, fewer than half endorsed sensory withdrawal as a part of a yoga practice. This finding is understandable, given that in modern society, individuals are engulfed with external stimulation, even in some yoga classes, in the form of advertisements and media (music, sound bites, etc.). Avoiding stimulation may not be perceived as essential to self-awareness and runs counter to Western culture.

Dharana (concentration) and dhyana (meditation) are limbs aimed toward creating a sustained meditation practice. Meditation is an essential part of yoga practice that creates lasting positive changes on the brain and its functioning.<sup>[31-34]</sup> For example, longtime meditators create high-amplitude gamma synchrony, thus evidencing greater concentration.<sup>[35]</sup> The attentional stability of dharana supports cognitive flexibility, capacity to withstand stressors, and ultimately enhanced self-regulation by practicing how to focus the mind on a single object of meditation, (i.e., breath, body part, mantra, or external object).<sup>[18]</sup> In our sample, approximately 60% of respondents identified dharana as important. Attentional awareness and exercises, such as body scans and relaxation training, were recognized by a large portion of respondents, though to a lesser degree than more conventional Western yogic practices of postures and breathing. Dhyana is an essential yogic skill through which the mind is opened to stillness, awareness, and insight because the individual is able become absorbed in the object of focus with concentrative ease and complete awareness. The majority of practitioners identified the aspect of dhyana involving the practice of letting go as essential; however, fewer perceived sitting (roughly 50–60%) or walking meditation (roughly 30–40%) as essential practices.

The final limb of yoga is samadhi (absorption). Gard *et al.*<sup>[18]</sup> describe samadhi as integration, the result of absorbing the richness and complexity of yogic philosophy. Samadhi translates to inner joy and wisdom; it ultimately implies the connection or integration of body, mind, and spirit. Super-yogis in our sample rated each aspect of samadhi as more essential than any other group. This finding suggests that with increasing levels of practice, the benefits of yoga become more integrated and spiritual. It is interesting to note that samadhi, the highest limb of yoga, was rated as the third most essential limb across all groups. It is possible that because of their goal-oriented nature, Western practitioners' emphasize their expected end result of yoga, (i.e., physical fitness and flexibility), while overlooking some of the other limbs.

## Implications

Yoga is a holistic philosophy of mind, body, and spirit that encourages practitioners to lead ethical and balanced lives. Through combined commitment to all eight limbs, yoga practice yields a full spectrum of well-documented emotional, interpersonal, and health benefits.<sup>[36-38]</sup> It may best be understood as a holistic lifestyle choice, not a fragmented practice of physical exercise or breathing. As we engage in teaching, promotion, marketing, and outreach to help more people find this beneficial practice, it will be important to represent the whole of yoga, and teach yoga as a comprehensive lifestyle that reaches beyond the conventional portrayal of postures and breathing leading to awakening.

### *Implications for teaching*

Results indicate that even the most practiced yogis are not utilizing the yamas and niyamas. This suggests that these limbs of yoga may not be the focus of modern day classes. Therefore, yoga teachers are encouraged to teach the philosophical underpinnings of yoga to help prevent injuries, reduce misunderstandings about yoga and therefore maximize physical, emotional, interpersonal, and spiritual benefits.

### *Implications for promotion and marketing*

Findings about the body-centrism of Western yoga practice suggest that media images of yoga need to change to reduce misunderstandings about yoga. It will be important to modify media and general cultural expressions of the typical yoga practice and yogi to include all aspects of yoga practice. Media messages need to increase awareness of the full philosophical context of yoga in existing yoga communities, among potential future yogis, among health professionals, and in other relevant settings. With the emphasis on the physical practice, yoga in its entirety is not accessible. Even avid practitioners, the super-yogis in our study, only endorsed certain aspects of yoga, ignoring the full range of foundational limbs. Solely focusing on physical practice may limit access to yoga due to the intimidating and inaccessible nature of certain postures. For individual contemplating practice, this may lead them to conclude that yoga is not for them.<sup>[16]</sup> However, yoga, when presented in its entirety, can be practiced by everyone; the problem lies in potential practitioners not knowing that the other limbs exist. It is possible that promoting yoga in its full form may make it more acceptable and accessible to those who do not identify with its physical aspects, thus broadening its utilization.

### *Implications for outreach*

The *BhagavadGita*, a major text of yoga philosophy, promotes karma yoga (altruism and service offered to

others) as a means of reaching enlightenment.<sup>[39]</sup> Karma yoga is understood as the personal responsibility or duty of a yogi. Conversely, Western yoga is predominantly advertised as a practice accessible only to a privileged and select demographic. To be sensitive and beneficial to all people, karma yogis must embrace all eight limbs when introducing yoga to new populations. Outreach and re-education about yoga may help increase access to yoga, especially for populations who have been discouraged by its popular image or who have not had the resources to find their way to classes. Correcting misperceptions of yoga may assist in the effort to increase affordable access to sustainable and effective healthcare in the form of yoga classes, yoga therapy, and yoga interventions for individual and collective audiences with needs for health promotion and human connections, including economically disadvantaged and medically underserved populations.

### **Implications for health professionals**

Relatedly, by promoting yoga within medical settings, health professionals can give patients access to a mechanism by which to change unhelpful lifestyle practices and enhance wellbeing. Health professionals who suggest yoga to their patients must understand what they are promoting to avoid limited, and therefore potentially harmful, practices of the aspects of yoga.<sup>[40-41]</sup> For example, if they are simply promoting pure posture practice, it may be difficult to distinguish this from other physical exercise programs. The uniqueness of yoga does not derive from asana; it is embedded in the holistic practice of ethics, postures, breath, mindfulness, and meditation. If health professionals recommend yoga as a treatment complement, they will promote the greatest benefits when they endorse yoga holistically, as a life path, not as an exercise routine. Conversely, if health professionals have a limited understanding of the entirety of the healing system of yoga, they may underutilize it as a complementary or alternative treatment approach for the full spectrum of health concerns for which yoga is appropriate.<sup>[17]</sup>

### **Future research**

This study might catalyze further research on the impact of distinct limbs of yoga. More critically, such research might inspire an exploration of the dangers of practicing unidimensional yoga, including a better understanding of the physical risks associated with practicing yoga without appropriate restraint, self-compassion, and skills of proprioception and introspection.

### **Study limitations**

The study has two major limitations that need to be considered in understanding and interpreting its results.

First, we relied on a convenience sample in a single United States location. Second, our sample was not representative of the United States cultural diversity. The study sample paralleled the typical yoga student demographic (young adult, female, Caucasian, and educated).<sup>[42-44]</sup> To expand yoga's cultural relevance, future work will need to explore if findings can be generalized to other regions and underrepresented groups.

### **CONCLUSIONS**

Yoga has well-documented emotional, mental health, and physical health benefits. It is one of the oldest and most comprehensive systems promoting psychological, physical, social, and spiritual growth. For those who practice yoga, the benefits often speak for themselves; a growing body of research evidence further underscores yoga's utility. Results of this study indicate that definitions of yoga remain somewhat narrow in scope and even active practitioners of yoga often fail to grasp the full range of practices available. Ongoing education and promotion of the entire philosophy will be crucial to support the accurate dissemination of yoga. We hope these findings encourage teachers and others who promote yoga to disseminate an integrated lifestyle system rather than discrete practices. Through this shift in definition, those who study yoga in its entirety may find benefits beyond those expected or promoted by mainstream media, for "If we are true Yogis for just 1 day, we will be transformed and want more of it."<sup>[30]</sup>

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### **Conflicts of interest**

There are no conflicts of interest.

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