

# Brief Online Focused Attention Meditation Training: Immediate Impact

Journal of Evidence-Based  
Complementary & Alternative Medicine  
1-6

© The Author(s) 2016

Reprints and permission:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/2156587216663565

cam.sagepub.com



Kathi J. Kemper, MD, MPH<sup>1</sup>, and Nisha Rao, BA<sup>1</sup>

## Abstract

**Background.** There is increasing interest in brief, online training in mind-body skills to improve resilience in health professionals. **Methods.** We analyzed data from an online training program in focused attention meditation. Resilience, relaxation, stress, positive and negative affect, and flourishing were measured before and after training using standardized scales. **Results.** The 379 participants included nurses (31%), physicians (21%), social workers and psychologists (10%), and others (38%). At baseline, participants reported high levels of stress (mean 16.7 compared with population norms of 12-14). Completing modules was associated with small but significant improvements in relaxation, resilience, stress, positive and negative affect, and flourishing ( $P < .01$  for all). **Conclusion.** Online focused attention meditation training reaches diverse health professionals and is associated with improvements in relaxation, resilience, stress, affect, and flourishing. Additional research is warranted to compare the long-term cost-effectiveness of different amounts and types of mind-body training on clinician burnout and quality of care.

## Keywords

mind-body, meditation, education, stress, burnout, relaxation response

Increasingly, health professionals report high levels of burnout or compassion fatigue, which threatens professionalism.<sup>1-8</sup> Because burnout has adverse personal and professional consequences,<sup>6,9</sup> addressing stress and burnout have become priorities in multiple health professions.<sup>10-14</sup>

Mind-body practices offer attractive strategies to help stem the tides of stress and burnout. One of the most enduring of these practices is focused attention meditation. Popularized as the Relaxation Response by Dr Herbert Benson, focused attention meditation has research dating back to the 1970s to support its use in generating a hypometabolic state associated with reduced blood pressure and pain.<sup>15-18</sup> More recent research suggests that regularly practicing focused attention meditation can reduce stress and improve cognition in healthy aging adults by altering gene expression in a number of physiologic systems.<sup>19,20</sup> Mehta et al<sup>21</sup> reported that a 12-hour training program based on Relaxation Response improved resilience, stress, and empathy in palliative care clinicians.<sup>21</sup>

Health care professionals, however, may be unwilling to commit to time-consuming training without the prospect of immediate benefit. In a national survey, nurses rated convenience as the most important factor influencing their choice of stress-management training.<sup>22</sup> Brief training is desirable, but studies have shown mixed effects of brief mind-body training on burnout, stress, and empathy.<sup>23-29</sup>

Our prior study evaluating the feasibility of online mind-body skills training showed that diverse health professionals readily enrolled in online training.<sup>30</sup> For this project, we focused on training related to focused attention. Specifically, we wanted to answer 3 questions:

1. Which health professionals and trainees enroll in online training in focused attention meditation (the Relaxation Response)?
2. What are their stress and burnout levels at the time of enrollment? That is, were participants already showing low levels of stress and burnout which might indicate that mind-body training is simply “preaching to the choir”?
3. Is completing an online module associated with any immediate changes in relaxation, resilience, stress, positive or negative affect, or overall flourishing as measured using standardized instruments?

## Methods

### Design

This was a prospective cohort study. We used data collected as part of an ongoing online elective educational program in mind-body skills training at a large Midwestern academic health center between May 1, 2014 and September 1, 2015.

<sup>1</sup> The Ohio State University, Columbus, OH, USA

### Corresponding Author:

Kathi J. Kemper, MD, MPH, Center for Integrative Health and Wellness, College of Medicine, The Ohio State University, 1581 Dodd Drive, Columbus, OH 43210, USA.

Email: kathi.kemper@osumc.edu

## Participants

There were 2 enrollment periods. From May 1 to July 31, 2014, participants were recruited by email, and recruitment targeted entering residents and graduate trainees in the health professions. Approximately 450 individuals received a direct email inviting them to participate. We did not count email “bounces.”<sup>31,32</sup> On August 1, 2014 registration was opened throughout the academic health center, and announcements about the new Continuing Medical Education–approved course were made on university websites and e-newsletters. The program was offered for free, was voluntary, and was not associated with university course credit. No deadlines were imposed on completing modules. As per institutional policy, the course was free to any Ohio State University (OSU) students, faculty, and staff, and there was a nominal charge (\$15 registration and \$25 per module) for non-OSU registrants.

## Registration Data

During registration, participants were asked to note their profession. Data on age, race, and ethnicity were not requested because they were not relevant for teaching purposes. Profession was categorized in 2 ways: (1) health professionals were grouped by trainee status—trainee (students, residents, and fellows) versus practicing professional and (2) health professionals were categorized by profession as nurses (clinical nurse specialists, advanced practice nurses, and other nurses), physicians, social workers and psychologists (including licensed professional counselors), and others (including dietitians, researchers, dentists, radiology and laboratory technicians, physical and occupational therapists, and others).

## Curriculum

The curriculum (<http://mind-bodyhealth.osu.edu>) was described to potential participants as a way to help health professionals become more personally resilient and to be more effective in helping patients manage stress. The focused attention training included three 1-hour modules: (1) Introduction to Stress, Resilience, and the Relaxation Response, (2) Clinical Effects of the Relaxation Response, and (3) Physiologic Effects of the Relaxation Response. Participants were allowed to complete the modules in any order. For this project, we focused on participants who enrolled in any of the 3 modules and completed at least one of the embedded self-reflection exercises.

## Module Organization, Content, and Self-Reflection

Each module begins with a brief case to engage diverse clinicians' interest in learning the subsequent content. For example, one case concerns “Robin” a second-year medical student whose initial enthusiasm has waned as fall has given way to winter. She has heard that burnout is common in health professionals and wonders if she has become burned out.

The initial case is followed by a multiple choice question (eg, which of the following is true about burnout among health professionals?) and its answer, immediately followed by 1 to 3 self-reflection exercises. Self-reflection questions were included to engage learners and help them reflect on qualities that might be affected by mind-body training. The self-reflection opportunities were standardized instruments (see below). For each standardized instrument, scores were automatically calculated within the web-based program, provided immediately to participants, and stored on the project servers. Only

data from those who completed all items on at least one self-reflection measure were included in this analysis, but participants were not required to complete all of the questions in the self-reflection exercises if they did not wish to do so.

Modules also included clinically relevant didactic information about focused attention meditation with hyperlinks to peer-reviewed research. Summary tables described the physiologic, cognitive, and clinical effects of practicing the Relaxation Response. To assist in clinical application, modules offered tips for teaching patients and resources such as books, articles, and websites. Each module included links to free, downloadable audio recordings of guided Relaxation Response practices to support experiential learning. Audio recordings were paired with printed directions for guided practices; there were also links to YouTube videos of the Relaxation Response to support experiential learning for both auditory and visual learners. The length of the practice recordings varied from 5 to 20 minutes. Following the links to recordings, resources, and tips for teaching these skills to others, some of the self-reflection questions (standard instruments) were repeated. Thus, there were approximately 30 to 45 minutes of didactic and experiential learning between the pre- and posttraining self-reflection questions. Each module concluded with a standard module evaluation and 10 multiple choice questions. Continuing Medical Education credit was available only to those who completed the evaluation and answered at least 7 of the 10 questions correctly.

## Measures

To avoid repetition, each of the three modules used different, standardized measures. The Introduction to Stress, Resilience and the Relaxation Response included 3 measures used only at the beginning of the module and 3 numeric rating scales used at both the beginning and the end of the module. The 3 measures used only at the beginning of this module were the (1) Smith's 6-item Brief Resilience Scale<sup>33</sup>; (2) 10-item Perceived Stress Scale, which has good internal reliability and population average scores ranging from 12 to 14<sup>34,35</sup>; and (3) Maslach Burnout Inventory, which has 3 subscales (Emotional Exhaustion, Depersonalization/Cynicism, and Personal Accomplishment) with standard cutoff scores for high risk of burnout among health professionals.<sup>34,35</sup> At the beginning and end of this introductory module, participants were asked to rate their (1) Relaxation, (2) Resilience, and (3) Stress on a numeric rating scale ranging from 0 (not at all) to 10 (extremely). For these items, higher scores were more desirable for Relaxation and Resilience, while lower scores were more desirable for Stress.

The module on Clinical Effects of the Relaxation Response included the 20-item version of the Positive and Negative Affect Schedule. This scale consists of 10 positive (eg, inspired, attentive, active) and 10 negative (eg, ashamed, nervous, distressed) adjectives and asks participants to rate themselves on a 5-point Likert-type scale (1 = very slightly or not at all to 5 = extremely).<sup>36</sup> Higher scores on the negative affect portion of the scale are associated with higher stress and more physical complaints, while higher scores on the positive affect subscale are associated with social well-being and greater physical activity.<sup>37</sup> Negative affect is also associated with a sense of professional overload (burnout), while positive affect is strongly correlated with resilience.<sup>38</sup>

The module on Physiologic Effects included Diener's 8-item Flourishing scale; each item has a 7-point Likert-type scale, and total scores range from 8 to 56.<sup>39</sup> The Flourishing scale has good psychometric properties and demonstrates strong positive correlations with other measures of psychological well-being.<sup>39</sup>

## Expectations

Participants were told that changes were not necessarily expected with a single practice session, but that by developing the habit of self-reflection in conjunction with regular mind-body practice, they might observe changes over time, as they would if they engaged in regular weight lifting.

## Data Management and Analysis

Data were extracted from the project servers, cleaned in Microsoft Excel (Office 365, Version 15.0.4753.1003), and analyzed in R (Version 3.2.2; The R Foundation for Statistical Computing) using simple descriptive statistics, paired *t* tests, and analyses of variance.

## Ethical Approvals

The project was approved by the OSU Office of Research Institutional Review Board as part of a larger evaluation of the impact of our overall health educational program, Skills Training in Integrative Therapies for Caring Health Professionals.

## Results

Between May 1, 2014 and September 1, 2015, 379 health professionals enrolled in one or more modules on focused attention meditation and fully completed at least one self-reflection exercise; 364 (96%) participated in the module titled “Introduction to Stress, Resilience, and the Relaxation Response,” 158 (42%) participated in “Clinical Effects of the Relaxation Response,” and 140 (37%) participated in “Physiologic Effects of the Relaxation Response.”

The majority of participants were women (85%) and from OSU (78%); 16% were trainees in the health professions. A variety of health professionals enrolled, most commonly nurses (31%), physicians (21%), and counselors/social workers/psychologists (10%); other health professionals who participated included chaplains, dentists, dietitians, exercise physiologists, laboratory and radiology technicians, massage therapists, pharmacists, physical and occupational therapists, recreation and respiratory therapists, health coaches, volunteers, administrators, health researchers, and human resources staff (38%) (Table 1).

At the beginning of the “Introduction to Stress, Resilience, and the Relaxation Response” module, among the 357 participants who completed all items on the Perceived Stress Scale, average scores were high ( $16.7 \pm 6.4$ ); of the 294 who answered all burnout questions, 60% met one or more criteria for burnout. Among the 246 participants who completed both before and after numeric rating scales, scores improved modestly but significantly for relaxation, resilience, and stress ( $P < .01$  for each) (Table 2).

Among the 158 participants who completed before and after scales for the “Clinical Effects of the Relaxation Response” module, scores improved significantly for both Positive and Negative Affect ( $P < .01$  for both). For the 140 participants who completed before and after scales for the “Physiologic

**Table 1.** Participants Who Completed Self-Reflection Exercises for Focused Attention Training.

Professional Group	n (%)
Number of enrollees	379
Gender (% male)	55 (15)
From OSU	297 (78)
Trainees (%)	61 (16)
Profession	
Nurse, MA, APN	116 (31)
Physician	81 (21)
Social worker, psychologist, or licensed counselor	39 (10)
Other <sup>a</sup>	143 (38)

Abbreviations: APN = Advanced Practice Nurses; MA = medical assistant; OSU = Ohio State University.

<sup>a</sup>Other included therapists, administrators, technicians, volunteers, human resources, staff, and others.

Effects of the Relaxation Response” module, scores improved modestly but significantly on the Flourishing scale ( $P < .01$ ).

## Discussion

This study had 3 major findings. First, focused attention meditation training appeals to diverse health professionals. Second, those who participated did not report low levels of stress and burnout at baseline, suggesting that the training was not “preaching to the choir.” Third, even brief, online training was associated with small but significant improvements in factors related to burnout and resilience in health professionals.

A large and diverse sample enrolled in the online training within a short time frame, highlighting the public health relevance of online strategies to promote resilience in health professionals. Our findings on the benefits of online focused attention meditation training corroborate a recent study of online mindful training for nurses, showing significant reductions in stress following training.<sup>40</sup> Demonstrating that online training may be comparable to more expensive in-person training is important.<sup>41</sup> As health care undergoes rapid change, there is likely to be an increased need for convenient, affordable, nonstigmatizing training to protect and promote clinicians’ health, build resilience, prevent burnout, and improve the quality of care.<sup>42</sup> Other strategies, such as duty hour restriction, have not proven particularly effective in preventing burnout.<sup>43</sup> Although a combination of web-based training and in-person training may be most effective in improving mindfulness measures, web-based training is more convenient and may be more accessible to health professionals.<sup>22,44,45</sup> Simulation technologies that combine the richness of in-person training with the convenience of online training may also be an effective modality for mindfulness training<sup>46</sup>; further studies will need to examine the effectiveness of different formats and combinations of electronic and in-person training.

Our results support earlier studies suggesting that even brief training can lead to small but significant benefits for health professionals.<sup>28,47,48</sup> A study by Sood et al<sup>28</sup> from Mayo Clinic found that a brief intervention consisting of a

**Table 2.** Self-Reflection Scores.

Module/Scale	Beginning Mean $\pm$ SD	Ending Mean $\pm$ SD	P
<b>Introduction to Stress, Resilience, and Relaxation Response (n = 364)</b>			
Brief Resilience Scale (n = 364)	20.7 $\pm$ 3.7	Measured before only	
Perceived Stress Scale (normal range: 12-14) (n = 357)	16.7 $\pm$ 6.4	Measured before only	
<b>Maslach Burnout Inventory (n = 294)</b>			
Emotional Exhaustion (scores >26 are considered high)	22.1 $\pm$ 12.4	Measured before only	
Depersonalization (scores >9 are considered high)	7.8 $\pm$ 6.2	Measured before only	
Personal Accomplishment (scores <34 are considered low)	35.1 $\pm$ 7.4	Measured before only	
Percentage exceeding threshold in any of 3 MBI subscales	60	Measured before only	
<b>Numeric Rating Scales (0-10), n = 246</b>			
Relaxation	5.5 $\pm$ 2.0	6.9 $\pm$ 1.9	<.01
Resilience	6.3 $\pm$ 2.1	6.9 $\pm$ 1.8	<.01
Stress	4.6 $\pm$ 2.2	3.1 $\pm$ 2.1	<.01
<b>Clinical effects of the relaxation response (n = 158)</b>			
PANAS, Positive Affect	32.2 $\pm$ 8.0	34.4 $\pm$ 8.0	<.01
PANAS, Negative Affect	14.1 $\pm$ 5.2	12.0 $\pm$ 3.6	<.01
<b>Physiologic effects of the relaxation response (n = 140)</b>			
Flourishing	49.0 $\pm$ 5.0	50.8 $\pm$ 4.6	<.01

Abbreviations: MBI = Maslach Burnout Inventory; PANAS = Positive and Negative Affect Schedule.

90-minute in-person training session and 2 phone calls produced improvements in perceived stress and anxiety. We were surprised to see significant improvements given that 60% of our participants met criteria for burnout at enrollment and that each module specified that no immediate improvement was expected. However, our earlier studies also demonstrated improvements immediately following brief, online training in other mind-body skills such as mindfulness, guided imagery, and heart-centered meditation.<sup>49-52</sup> The short-term improvements in relaxation, resilience, stress, affect, and flourishing observed in the current study may plausibly translate into long-term improvements. For example, in another study, participants who completed brief, online mind-body training demonstrated lower stress, greater mindfulness, and greater confidence in providing calm, compassionate care than nonparticipants 3 months after training.<sup>31</sup>

Although this study offers several unique and important observations that support and extend the findings of earlier studies, it also has several limitations and raises additional questions. Our sample was large, but it was conducted at one academic institution in the Midwest and needs to be replicated in other settings. Though some literature suggests that those who enroll in elective mind-body skills training are similar at baseline to those who do not, participation in our study was voluntary, and results may not be comparable to those found in a randomized controlled trial<sup>53</sup>; our results cannot be generalized to mandated or required programs. This study examined immediate effects using standard instruments, but questions remain about the duration of the observed impacts and whether additional training, booster training, or support groups might be valuable. What is the long-term uptake, impact, and cost-effectiveness of different types, formats (online vs in-person), and dosages (number of hours) of training among various groups of health professionals? Although we observed statistically significant changes in measures related to burnout and

resilience, these changes were small and of unknown relevance to actual burnout and quality of patient care. These questions are important and will require additional prospective, controlled trials.

Despite its limitations, this study suggests that online training in focused attention meditation is attractive to diverse health professionals, and that even brief training can improve relaxation, resilience, stress, affect, and flourishing (at least in the short term) in highly stressed clinicians.

### Acknowledgments

We are grateful to the Deans of Medicine, Nursing, and Social Work; the residency directors for Pediatrics, Family Medicine, Hematology and Oncology; and the PhD program in Dietetics for informing their students and faculty about the online course.

### Author Contributions

KJK conceived of the project, created the online curriculum, and drafted the manuscript. NR analyzed the data and revised the manuscript.

### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was funded in part by an internal Ohio State University College of Medicine Alumni gift of \$1000.

### Ethical Approval

This project was approved by the Ohio State University Office of Research Institutional Review Board: 2013B0611.



## References

1. Brazeau CM, Schroeder R, Rovi S, Boyd L. Relationships between medical student burnout, empathy, and professionalism climate. *Acad Med.* 2010;85(10 suppl):S33-S36.
2. Poghosyan L, Clarke SP, Finlayson M, Aiken LH. Nurse burnout and quality of care: cross-national investigation in six countries. *Res Nurs Health.* 2010;33:288-298.
3. Shanafelt T, Dyrbye L. Oncologist burnout: causes, consequences, and responses. *J Clin Oncol.* 2012;30:1235-1241.
4. Verdon M, Merlani P, Perneger T, Ricou B. Burnout in a surgical ICU team. *Intensive Care Med.* 2008;34:152-156.
5. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med.* 2002;136:358-367.
6. Rosen IM, Gimotty PA, Shea JA, Bellini LM. Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy, and burnout among interns. *Acad Med.* 2006;81:82-85.
7. Dyrbye LN, Thomas MR, Massie FS, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med.* 2008;149:334-341.
8. Pantaleoni JL, Augustine EM, Sourkes BM, Bachrach LK. Burnout in pediatric residents over a 2-year period: a longitudinal study. *Acad Pediatr.* 2014;14:167-172.
9. Prins JT, Gazendam-Donofrio SM, Tubben BJ, van der Heijden FM, van de Wiel HB, Hoekstra-Weebers JE. Burnout in medical residents: a review. *Med Educ.* 2007;41:788-800.
10. Gabbe SG, Webb LE, Moore DE Jr, Mandel LS, Melville JL, Spickard WA Jr. Can mentors prevent and reduce burnout in new chairs of departments of obstetrics and gynecology: results from a prospective, randomized pilot study. *Am J Obstet Gynecol.* 2008;198:653.e1-653.e7.
11. Linzer M, Visser MR, Oort FJ, Smets EM, McMurray JE, de Haes HC. Predicting and preventing physician burnout: results from the United States and the Netherlands. *Am J Med.* 2001;111:170-175.
12. McAllister M. Resilience: a personal attribute, social process and key professional resource for the enhancement of the nursing role. *Prof Infirm.* 2013;66:55-62.
13. Zwack J, Schweitzer J. If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians. *Acad Med.* 2013;88:382-389.
14. Epstein RM, Krasner MS. Physician resilience: what it means, why it matters, and how to promote it. *Acad Med.* 2013;88:301-303.
15. Benson H, Klemchuk HP, Graham JR. The usefulness of the relaxation response in the therapy of headache. *Headache.* 1974;14:49-52.
16. Beary JF, Benson H. A simple psychophysiological technique which elicits the hypometabolic changes of the relaxation response. *Psychosom Med.* 1974;36:115-120.
17. Benson H, Rosner BA, Marzetta BR, Klemchuk HM. Decreased blood-pressure in pharmacologically treated hypertensive patients who regularly elicited the relaxation response. *Lancet.* 1974;1:289-291.
18. Benson H, Beary JF, Carol MP. The relaxation response. *Psychiatry.* 1974;37:37-46.
19. Galvin JA, Benson H, Deckro GR, Fricchione GL, Dusek JA. The relaxation response: reducing stress and improving cognition in healthy aging adults. *Complement Ther Clin Pract.* 2006;12:186-191.
20. Dusek JA, Otu HH, Wohlhueter AL, et al. Genomic counter-stress changes induced by the relaxation response. *PLoS One.* 2008;3(7):e2576.
21. Mehta DH, Perez GK, Traeger L, et al. Building resiliency in a palliative care team: a pilot study. *J Pain Symptom Manage.* 2016;51:604-608.
22. Kemper KJ, Bulla S, Krueger D, Ott M, McCool J, Gardiner P. Nurses' experiences, expectations, and preferences for mind-body practices to reduce stress. *BMC Complement Altern Med.* 2011;11:26.
23. Zeidan F, Gordon NS, Merchant J, Goolkasian P. The effects of brief mindfulness meditation training on experimentally induced pain. *J Pain.* 2010;11:199-209.
24. Zeidan F, Johnson SK, Diamond BJ, David Z, Goolkasian P. Mindfulness meditation improves cognition: Evidence of brief mental training. *Conscious Cogn.* 2010;19:597-605.
25. Tan LB, Lo BC, Macrae CN. Brief mindfulness meditation improves mental state attribution and empathizing. *PLoS One.* 2014;9(10):e110510.
26. Creswell JD, Pacilio LE, Lindsay EK, Brown KW. Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology.* 2014;44:1-12.
27. Sood A, Prasad K, Schroeder D, Varkey P. Stress management and resilience training among Department of Medicine faculty: a pilot randomized clinical trial. *J Gen Intern Med.* 2011;26:858-861.
28. Sood A, Sharma V, Schroeder DR, Gorman B. Stress Management and Resiliency Training (SMART) program among Department of Radiology faculty: a pilot randomized clinical trial. *Explore (NY).* 2014;10:358-363.
29. Kashani K, Carrera P, De Moraes AG, Sood A, Onigkeit JA, Ramar K. Stress and burnout among critical care fellows: preliminary evaluation of an educational intervention. *Med Educ Online.* 2015;20:27840.
30. Kemper KJ, Khirallah M. Acute effects of online mind-body skills training on resilience, mindfulness, and empathy. *J Evid Based Complementary Altern Med.* 2015;20:247-253.
31. Kemper KJ, Lynn J, Mahan JD. What is the impact of online training in mind-body skills? *J Evid Based Complementary Altern Med.* 2015;20:275-282.
32. Kemper KJ, Gascon G, Mahan JD. Two new scales for integrative medical education and research: confidence in providing Calm, Compassionate Care Scale (CCCS) and Self-efficacy in Providing Non-Drug Therapies (SEND) to relieve common symptoms. *Eur J Integr Med.* 2015;7:389-395. doi:10.1016/j.eujim.2014.10.010.
33. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The Brief Resilience Scale: assessing the ability to bounce back. *Int J Behav Med.* 2008;15:194-200.
34. Cohen S, Janicki-Deverts D. Who's stressed? Distributions of psychological stress in the United States in probability samples

- from 1983, 2006, and 2009. *J Appl Soc Psychol.* 2012;42:1320-1334.
35. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav.* 1983;24:385-396.
  36. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol.* 1988;54:1063-1070.
  37. Watson D. Intraindividual and interindividual analyses of positive and negative affect: their relation to health complaints, perceived stress, and daily activities. *J Pers Soc Psychol.* 1988;54:1020-1030.
  38. Montero-Marin J, Tops M, Manzanera R, Piva Demarzo MM, Alvarez de Mon M, Garcia-Campayo J. Mindfulness, resilience, and burnout subtypes in primary care physicians: the possible mediating role of positive and negative affect. *Front Psychol.* 2015;6:1895.
  39. Diener E, Wirtz D, Tov W, et al. New well-being measures: short scales to assess flourishing and positive and negative feelings. *Soc Indic Res.* 2010;97:143-156.
  40. Spadaro KC, Hunker DF. Exploring The effects of an online asynchronous mindfulness meditation intervention with nursing students on stress, mood, and cognition: a descriptive study. *Nurse Educ Today.* 2016;39:163-169.
  41. Wolever RQ, Bobinet KJ, McCabe K, et al. Effective and viable mind-body stress reduction in the workplace: a randomized controlled trial. *J Occup Health Psychol.* 2012;17:246-258.
  42. West CP, Dyrbye LN, Rabatin JT, et al. Intervention to promote physician well-being, job satisfaction, and professionalism: a randomized clinical trial. *JAMA Intern Med.* 2014;174:527-533.
  43. Oakley SH, Estanol MV, Westermann LB, Crisp CC, Kleeman SD, Pauls RN. Resident burnout after the 2011 accreditation council for graduate medical education duty-hour restrictions: a cross-sectional survey study. *Obstet Gynecol.* 2014;123(suppl 1):117S-118S.
  44. Allexandre D, Bernstein AM, Walker E, Hunter J, Roizen MF, Morledge TJ. A web-based mindfulness stress management program in a corporate call center: a randomized clinical trial to evaluate the added benefit of onsite group support. *J Occup Environ Med.* 2016;58:254-264.
  45. Pflugeisen BM, Drummond D, Ebersole D, Mundell K, Chen D. Brief video-module administered mindfulness program for physicians: a pilot study. *Explore (NY).* 2016;12:50-54.
  46. Hoch DB, Watson AJ, Linton DA, et al. The feasibility and impact of delivering a mind-body intervention in a virtual world. *PLoS One.* 2012;7(3):e33843.
  47. Fortney L, Luchterhand C, Zakletskaia L, Zgierska A, Rakel D. Abbreviated mindfulness intervention for job satisfaction, quality of life, and compassion in primary care clinicians: a pilot study. *Ann Fam Med.* 2013;11:412-420.
  48. Chesak SS, Bhagra A, Schroeder DR, Foy DA, Cutshall SM, Sood A. Enhancing resilience among new nurses: feasibility and efficacy of a pilot intervention. *Ochsner J.* 2015;15:38-44.
  49. Kemper KJ. Brief online mindfulness training: immediate impact [published online Mar 21, 2016]. *J Evid Based Complementary Altern Med.* 2016. doi:10.1177/2156587216639199.
  50. Rao N, Kemper KJ. The feasibility and effectiveness of online guided imagery training for health professionals [published online February 14, 2016]. *J Evid Based Complementary Altern Med.* doi:10.1177/2156587216631903.
  51. Kemper KJ, Khirallah M. Acute effects of online mind-body skills training on resilience, mindfulness, and empathy [published online March 17, 2016]. *J Evid Based Complementary Altern Med.* 2015;20:247-253.
  52. Rao N, Kemper KJ. Online training in specific meditation practices improves gratitude, well-being, self-compassion, and confidence in providing compassionate care among health professionals [published online April 6, 2016]. *J Evid Based Complementary Altern Med.* doi:10.1177/2156587216642102.
  53. Kemper KJ, Mo X, Lynn J. Preaching to the choir: comparing health professionals who enroll in mind-body skills training versus herbs and dietary supplements training. *J Evid Based Complementary Altern Med.* 2015;20:98-103.