

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,200

Open access books available

168,000

International authors and editors

185M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Chapter

Positive Psychology and Healthy Lifestyles for Health and Happiness

Liana Lianov

Abstract

Positive psychology in combination with a healthy lifestyle has the potential to enhance health and well-being at a level beyond that achieved by healthy lifestyle habits alone—a state of health termed positive health by Martin Seligman, the founder of the positive psychology field. This chapter covers how positive psychology interventions and positive emotions with healthy physical habits play a vital role in health. The mechanism is twofold: 1. positive emotions as powerful drivers of behavior change and 2. direct physiologic benefits of positive emotions. Health professionals need to consider how to integrate this science and practice of positive psychology into their patient assessments and recommendations. An overview will be provided about the scientific studies that show the reinforcing, reciprocal relationship between positive psychology activities and physical healthy lifestyles. Strategies to apply in clinical practices outside of behavioral health and research recommendations are reviewed. Future research is needed to transform these research-informed approaches into evidence-based practice and address a major research gap on how different cultures and populations form positive psychology interventions.

Keywords: positive psychology, positive health, health care, total well-being, lifestyle medicine, positive psychology interventions

1. Introduction

Positive psychology is the scientific study of human flourishing and the strengths and virtues that enable individuals, communities, and organizations to thrive and stated more broadly. The field studies conditions and processes contribute to optimal functioning [1]. Positive psychology-based interventions impact physical health as well as mental and emotional health, and hence, they align with and advance the objectives of health and medical practitioners, who seek to impact health and quality of life.

The relevance and importance of positive psychology approaches to health care are especially highlighted for practitioners of lifestyle medicine, which uses lifestyle interventions to, not only prevent diseases, but also treat chronic diseases and, in some cases, reverse these conditions. By combining healthy lifestyle and positive psychology in the health care, we can promote positive health—a state of health over and above what can be achieved when we address solely traditional risk factors, such as eating patterns, physical activity, and sleep [2]. In this chapter, we will review how

positive psychology approaches and interventions impact health and how they can be incorporated in health care for achieving positive health. Although consensus on terminology is not yet well-established, we'll refer to positive health, flourishing and thriving interchangeably in this chapter as a state of total well-being, including physical, mental, emotional, social, and spiritual health that allows an individual to remain in a healthy state even during traumatic times. This construct is more inclusive than the term happiness, and it highlights the reinforcing, reciprocal nature of positive emotions, healthy lifestyles, and physical health. By contrast, well-being is a broad term used variably in the literature to describe positive physical and emotional states.

2. The essential link between healthy lifestyles and positive psychology

Achieving positive health relies on both physical health habits and positive mindsets and activities. Health practitioners can prescribe these positive psychology interventions along with traditional healthy habits, including a predominantly plant-based diet, physical activity, restorative sleep avoidance of risky substances, and managing stress.

Positive activities represent a pillar of a total healthy lifestyle prescription and also lead to positive emotions, the key driver for healthy behavior changes. Hence, positive psychology has an essential role in helping individuals achieve and sustain healthy behaviors. Moreover, positive psychology-based activities have direct physiologic benefits, such as boosts in the parasympathetic nervous system.

The reinforcing nature between healthy lifestyles and positive emotions produces a powerful effect. As positive emotions are experienced in association with the health behaviors, individuals are more likely to repeat the healthy behaviors in a nonconscious manner. The more we do healthy behaviors, the more likely we are to achieve positive health. A number of studies are reviewed here showing the link between key healthy lifestyle behaviors and boosts in mood, treatment depression, and increased happiness.

Many questions remain about how to apply positive psychology interventions for which the evidence has been built within behavioral health settings into primary care and medical specialty health care settings. The evidence base for these traditional healthcare settings is being built by a few leading researchers, including Judith Moskowitz at Northwestern University in Chicago, Illinois. Her team is looking at the feasibility and impact in settings, such as oncology clinics. Other researchers and practitioners are asking how can health practitioners prescribe these interventions for different populations of patients? What is the appropriate "dosing" and timing of these prescriptions? In the meantime, the healthcare field can be "research-informed" and benefit by acknowledging the role of a positive activities as part of a healthy lifestyle and starting discussions with patients about this element of health that encompasses total well-being and positive health and encouraging patients to explore what positive activities work for them, giving them a sense of vitality.

In addition to promoting quality of life, positive health, and increasing longevity among patients, these activities can boost the well-being of health practitioners. By personally practicing a total healthy lifestyle with positive psychology activities, practitioners can achieve personal well-being and produce a better work-life balance, especially in the context of a workplace environment that prioritizes a culture of well-being, practitioners can help prevent burnout, serve as effective role models for their patients, and develop effective and satisfying medical practices.

3. Positive psychology and healthy lifestyles: what the science shows

Research exploring the impact of healthy lifestyle practices on mental and emotional well-being and vice versa is growing. We'll cite a few examples. Research suggests that healthy nutrition can impact mood. An association between depressive symptoms and poor nutrition has been found in several studies, with the mediating role of gut microbiota posited as one mechanism of action. In a study by Jacka and colleagues [3], moderately to severely depressed individuals were randomly assigned to two groups—those who ate a Mediterranean style eating pattern with social support and those who received social support only. A depression remission rate of 32% occurred among the participants in the dietary and social support intervention group as compared with only 8% of the participants who received the social support only.

The research team of Parletta [4] observed reductions in depression when study participants adhered to the Mediterranean style eating pattern and consumed a variety of nuts and vegetables. These studies suggest that diets high in plants are essential in treating depression and decreasing negative affect. Additional studies show that predominantly plant-based diet can increase positive affect [5–8].

A large epidemiologic study of over 80,000 individuals in the United Kingdom demonstrated a dose-response relationship between consuming fruits and vegetables and happiness even after controlling for numerous confounding factors known to influence emotional well-being [7]. In a longitudinal study, participants who consumed eight or more servings of fruits and vegetables every day had the highest levels of subjective well-being [9]. Although more research is needed, these kinds of studies provide initial evidence that nutritional interventions should be considered essential when looking at achieving not only physical health, but also mental and emotional health.

Regular physical activity has also long been strongly associated with better mood and preventing and treating depression [10–13]. In fact, exercise is comparable to antidepressant medications for relieving depression [14]. Some of the mechanisms by which physical activity can be mood enhancing include boost in endorphins and other neurotransmitters, regulation of the hypothalamic-pituitary-adrenal axis, increased neurogenesis psychological distraction, and improved self-efficacy [15–17]. Even a walk as short as 10–15 min has been shown to be sufficient to boost positive effect [18].

Higher intensity aerobic exercise and resistance exercise may confer additional mood enhancing benefits [19, 20]. More research is needed to better understand the influence of different forms of exercise and different dosing and durations on mental health and the achievement of total well-being or positive health.

Sleep is another pillar of a total healthy lifestyle with 7–9 h of high-quality sleep per night recommended [21]. Lack of sleep has been shown to make individuals be more sensitive to negativity [22]. Sleep-deprived individuals were more than twice as likely to remember words with negative connotations in a memory task. Chronic insomnia can be a predictor of depression in subsequent years [23, 24] showed that sleep deprivation is also associated with anxiety disorders. Hence, getting adequate sleep is an important intervention for addressing mood disorders.

The reinforcing reciprocal link between these healthy activities and mood has been demonstrated by additional studies that show healthy lifestyles boost mood and positive emotions are associated with greater achievement and adherence to healthy activities. Positive effect drives positive lifestyle choices [25, 26].

Positive emotions can be fostered through a variety of positive psychology interventions, such as savoring, expressing gratitude supporting others, nurturing a sense of meaning and purpose. Moreover, positive emotions experienced during healthy activities prompt engagement in healthy eating and physical activity [26] and have been associated with increased utilization of preventive services [27]. Positive emotions can even forecast behavioral engagement and healthy lifestyle practices 15 months later [28, 29].

The upward spiral theory describes this reinforcing phenomenon through which pleasant intrinsic and natural emotions increase motivation and positive health behaviors by activating thought action repertoires that lead to exploring new things, building on an individual's physical, psychological, and social resources [26, 30, 31]. For example, when an individual experiences positive emotions by engaging in physical activities, he is driven to go back and re-engage in those activities over and over again. This upward, reinforcing nature is enhanced by associated benefits, called vantage resources. A happier person, for example, may be able to make more friends and expand social connections. These social supports further drive healthy, positive behaviors that increase health and happiness. Hence, an upward, outward spiral of health and happiness occurs.

Positive psychology-based activities, when prescribed in healthcare and counseling settings, have been used for managing stress and lessen negative emotions. Advancing the integration of positive psychology into health care is also essential for boosting positive emotions to enhance health and well-being. Proposed mechanisms of action for positive affect and happiness leading to improved health and longevity include improved cardiovascular health, better endocrine regulation, lower inflammation, bolstered immune system, and increased telomere length [32].

Medical practitioners can prescribe activities such as hobbies that produce a sense of flow, mindfulness practices, meaningful activities such as volunteering acts of kindness and social connection.

Although further research is needed about how prescribing these kinds of activities in a healthcare setting can impact ultimate outcomes, integration of a few these practices into medical practice warrants attention.

4. Key positive psychology interventions

One framework posited by the founder of the field of positive psychology Martin Seligman is the PERMA framework—P for positive emotions, E for engagement, R for relationships, M for meaning, and A for accomplishment [33]. These five elements in the PERMA model summarize different kinds of positive psychology-based activities that can be prescribed for achieving well-being and happiness. In addition, mindfulness, which is commonly defined as paying attention to present moment experience with an attitude of acceptance or nonjudgement [34], can also be prescribed for patients who are interested.

Mindfulness practice of self-regulation, attention to the immediate experience, and an orientation of nonjudgmental openness [35] can have a number of positive health effects. The mindfulness-based stress reduction (MBSR) program developed by Jon Kabat Zin [36] has been widely studied, particularly in reducing stress resulting from chronic pain. Mindfulness is an umbrella term that refers to a variety of practices that promote control one's attention and breath, including various meditation practices.

In addition to triggering beneficial physiologic effects, such as lowering blood pressure, mindfulness practices have been associated with improvements in a variety of mental health disorders, including anxiety and depression, managing physical pain, supporting substance use recovery, reducing stress in general, and promoting well-being [37–39].

When recommending mindfulness, as with any positive psychology-based interventions, practitioners need to keep in mind the patient's preferences, culture, and spiritual and religious beliefs. In some cases, negative outcomes have been reported, such as worsening depression, especially among people with a history of substance use or psychiatric illness [40].

4.1 PERMA

P—positive emotions can be triggered through activities such as gratitude practice, acts of kindness, forgiveness, and savoring. These activities not only boost positive emotions, but also positive thoughts, positive behaviors, and need satisfaction [41]. Engaging in such activities serves as a protective factor to reduce the impact of stressors and risk factors, such as rumination and loneliness and allow for adaptive coping.

E—engagement, also termed flow, occurs when one is engaged in a task with a balance of the perceived challenge and the personal skills in conducting that activity. Individuals who achieve this flow state have reported some of the highest levels of happiness [41]. This flow experience is intense involvement in the activity moment-to-moment with the potential to function at once fullest capacity [42, 43]. Examples of being in flow are creating art, playing a musical instrument, working on crafts, gardening, doing physical activity.

R—relationships and social connections represent the element of PERMA with the most robust longitudinal studies showing the link between relationships social connections and health and well-being [44]. Even short moments of connection with strangers can lead to positive interactions, called micro-moments of connectivity, which have been associated with positive health benefits [45]. Social support has been shown to help individuals maintain a healthy body mass index, control their blood sugar, decrease depressive symptoms, mitigate post-traumatic stress disorder, and improve their overall mental wellbeing. The Harvard development study [44], a cohort study of over eight decades, concluded that the single most important factor in physical health, happiness, and longevity is social connections.

M—meaning is the element in the PERMA model with significant health and well-being benefits. Research shows that having a purpose in life has a positive influence on biological, psychological, and behavioral outcomes and has a protective role in heart disease [46]. In fact, those with a higher sense of purpose use preventive healthcare services more regularly and experience fewer nights spent in the hospital [27]. Higher levels of meaning had been associated with decreased likelihood of negative health outcomes and increased positive health outcomes [46].

A—accomplishment is an essential human need. Individuals strive for goals and those who experience feelings of accomplishment by using their skills and realizing their goals feel successful and contribute to their overall sense of well-being [33].

Meaningful self-directed goals that can be feasibly achieved and provide that sense of accomplishment are essential for the overall approach to flourishing and well-being. Health care can facilitate positive psychology interventions by asking questions during the medical encounter about the patient's activities that boost their positive

emotions, their social connections, and their sense of meaning. Practitioners can demonstrate the essential role of positive psychology-based activities on one's health by showing that they are taking these interventions just as seriously as prescribing medications.

5. Positive psychology in health care

During the clinical encounter, the practitioner can start a dialog about positive activities and ask the patients to consider exploring resources and trying different ones to see what best aligns with their interests and situation. Practitioners who would like to fully integrate positive psychology approaches into their practice for facilitating positive health might consider a structured redesign of their practice to include formal positive psychology assessments and prescriptions. A number of validated assessments of positive emotions and life satisfaction, such as the Satisfaction with Life Scale developed by Ed Diener [47], can be used. While standard of practice includes routine assessments of depression, anxiety, and stress, the emotional and mental health assessments can be expanded to also assess positive affect.

After an assessment of negative and positive emotions, the practitioner can include in the treatment or health maintenance plan, not only recommendations for a healthy diet, physical activity, sleep, and activities to manage stress, but also positive activities. Primary care and specialty settings may only have the bandwidth to conduct brief discussions of positive well-being activities—although showing that the practitioner takes positive activities as seriously as other healthy lifestyles is essential.

Positive psychology topics for discussion during the clinical encounter can vary widely. A few common ones include harnessing optimism, personal character strengths, practicing gratitude, finding meaningful activities. As time is short in a busy clinical practice, patients can be encouraged to consider doing a few exercises on their own. They can be asked to write down their vision of optimal health and happiness and the steps and activities they could do to achieve that vision. Patients could be prompted to consider their strengths and how they have successfully applied their strengths to achieve goals in the past. Keep a gratitude journal with entries of three good things in their lives once or twice a week could be another exercise. Dedicating some time to identify what is meaning in one's life or remembering recent positive events and writing them down can also enhance positive affect. Providing a handout or webpage number of options, encouraging the patients to choose at least one, and following up at the next visit along with other medical updates could be an easy strategy for integrating these approaches into the patient action plans. Acknowledging that individuals from different cultures, personalities, interests, and past experiences may benefit differently and emphasizing the need to explore various activities can help patient's comfort level for pursuing them [2].

Patients can also be referred to other members of the healthcare team or external behavioral health professionals, health coaches, and spiritual counselors for assessments, discussions, and follow-up. They can be referred to community and digital resources. A number of digital apps designed to help individuals track and boost their positive emotions, their personal strengths, and positive activities. In addition, various mindfulness and stress management classes in the community, hobby groups, volunteer organizations, and senior centers can provide opportunities for PERMA activities.

Health professionals can also bring positive interactions into the examining room, shifting the conversation during those encounters to build positive emotions. These

interactions can be as simple as asking the patients what has gone well in their lives since they were last seen and also ending encounters with a question about what went well during the encounter.

A few examples of questions that can be asked include: What happened in the past week that made you smile. What in your life brings you joy? What's a favorite activity that you have done recently? What's something that you are looking forward to in the coming week? Is there something fun you'd like to do in the near future?

Coaches have been integrating positive psychology techniques into healthy behavior counseling for over two decades, such as combined positive psychology and motivational interviewing practices. Health professionals who are counseling for health behavior change can learn from these practices. Both motivational interviewing and positive psychology coaching have their roots in person-centered theory. Integrating positive psychology into coaching harnesses the upward spiral theory we introduced earlier. Positive visioning is another method to help engage patients to look at a positive future when they make their changes, during that positive visioning, they are already boosting their positive emotions.

Positive interactions with patients create positivity resonance for both the patient and for the health practitioner. The work of Barbara Fredrickson and colleagues [48] shows that positivity resonance leads to physiologic benefits, such as boosts of the parasympathetic nervous system, when a synchrony of positive emotions occurs between individuals or within a group.

Another essential aspect of positive psychology is character strengths. Health practitioners and individuals can identify their individual strengths either informally by making an assessment of family and friends and what they notice as the individual's strengths or more formally, through a validated questionnaire at viacharacter.org. Making a concerted effort to identify one's strengths and use them on a regular basis can boost one's well-being. Health practitioners can encourage patients to identify their character strengths and build them into their action plans for health behavior change and positive health.

A coach or health practitioner can bring these strengths out by asking questions such as: Tell me about your past achievements. How did you make it happen? Think back over the previous week or month; when were you at your best? Among your family or friends what are you most famous for?

6. Positive psychology for practitioner well-being

Health practitioners can personally and professionally use the PERMA model for well-being by intentionally having experiences designed to elicit positive feelings and engagement—becoming immersed in health behavior activities and worthwhile pursuits to the point where one has that sense of flow. They can especially be mindful of developing strong connections by doing healthy activities together, such as healthy cooking with family and friends and walking together in groups, increasing positivity resonance and work-life balance. They can find personal meaning in pursuing healthy behaviors to build their own vitality to serve as role models for patients, teach students, and boost their capacity to achieve meaningful life goals. Lastly, setting health behavior goals and achieving them through small steps to ensure success can lead to a sense of accomplishment, which boosts a sense of well-being.

Health professionals can apply positive psychology techniques both at home and at work. Opportunities throughout the workday arise for contributing to a culture of

well-being in the healthcare workplace. For example, the health team can maintain a gratitude jar—a positive and invigorating practice. Gratitude notes from coworkers are collected throughout the week, and at the end of the week, the team reads through them. Such practices, not only bonds the team, but also can boost positive emotions for greater work engagement.

Health professionals can intentionally look for opportunities throughout the workday to get into flow, while doing medical procedures, for example, to complement the flow they find outside of work when involved with hobbies. Seeking positive interactions with coworkers and patients throughout the day is also essential, adding to the well-being benefits—positivity resonance—of relationships with family and friends.

In addition, being mindful of what they find meaningful at work and how their work aligns with their values further can contribute as a well-being promoter. However, health professionals need to avoid overemphasizing work as their main source of meaning, which may lead to overwork and burnout. Hence, finding meaning outside of the work brings greater work-life balance. Setting short-term goals throughout the workday and achieving them, as well as advancing toward exciting professional long-term goals can help prevent burnout. Taking a class to learn a new professional skill or taking skills-based examinations to advance one's career brings that healthy sense of accomplishment when achieving one's goals. Such positive activities can have short and long-term positive effects on well-being and happiness [49–51]. Practicing core healthy lifestyle modifications with positive activities is key to medical practitioners' well-being, enable modeling of positive health for patients, coworkers, and students.

7. Future research

Much of the research cited here comes from positive psychology and mental health behavioral health settings. Translational research in healthcare settings can test the feasibility and impact on patients' health outcomes and provide satisfaction of positive psychology approaches conducted in these settings. Cross-discipline research with positive psychology researchers and medical practitioners will advance the necessary translational research.

Medical practitioners can partner with research societies and local universities, attend conferences to learn more about research gaps, and consult published meta-analyses about the current scope of positive psychology research and evidence to date. Practitioners can contribute by helping to conduct small tests of feasibility for making changes in their practices that harness positive psychology. Testing various practice redesign frameworks that support positive psychology interventions serves an essential step before committing to larger-scale translational research that study health outcomes. While the evidence base is being built for positive psychology integration into healthcare practice, practitioners can apply the techniques summarized in this chapter and build leading-edge research-informed practices that promote positive health.

Examples of translational research questions that need to be addressed include: What specific positive psychology interventions can influence which mental and physical health conditions? What positive psychology interventions work best for mental and physical health outcomes in different populations? What is the feasibility and acceptability of clinical positive psychology to patients and other health professionals in non-mental health/behavioral health settings? Do these positive psychology

strategies impact outcomes in real-world healthcare settings improve quality of life and boost health behaviors? Can these positive psychology strategies be implemented into medical practice? In meaningful effective and efficient ways?

8. Resources

Credible positive psychology resources are available on the websites of academic institutions with positive psychology centers, such as the University of Pennsylvania. Useful digital apps include those that leverage positive psychology for stress management, track current life stressors, measure progress toward happiness, and provide how-to audio and guides. Health coaches, articles, weekly assignments grounded in kind of behavioral techniques, identification of character and personality strengths, and tracking of positive habits and social interactions are just a few of the ever-expanding offerings. A key criterion for choosing resources is verifying the apps and websites are offered by credible, science-based teams. Check out the “about” section to learn the background of the teams.

Writings by key thought leaders in the field of positive psychology provide another useful resource to advance one’s knowledge, skills, and clinical practice for positive health. Look for the extensive work on flow by Mihaly Csikszentmihalyi. Angela Duckworth leads the thinking and research on personality traits and success. Sonia Lyubomirsky focuses her research on happiness practices, including gratitude practice. Ed Diener is one of the most cited positive psychology researchers in well-being and flourishing assessments. Barbara Fredrickson has spearheaded the work on positive emotions, positivity resonance, the broaden and build theory, and the upward spiral theory—theories that frame how positive emotions broaden thinking and influence behavior change. Martin Seligman, considered the founder of positive psychology, has written widely on flourishing and PERMA and coined the term positive health, as we have defined in this chapter.

Academic and professional organizations serve as essential resources for building research, services, and education in positive psychology and health. A few of these institutions include the University of Pennsylvania’s Positive Psychology Center, the Stanford University Center for Altruism Research and Education, the Yale University’s Center for Emotional Intelligence, the Benson Henry Institute for Mind Body Medicine, Stanford University’s Center for Compassion Cultivation Training, and the University of Pennsylvania’s Positive Psychology Center and Master’s in Applied Positive Psychology. The extensive work at the Harvard Center for Health and Happiness conducts cutting-edge research on a variety of topics in positive psychology and health and well-being.

Healthcare programs that integrate positive psychology into health promotion and treatment lead the transformation of care to emphasize this well-being element. Examples are the Veterans Health administration’s Whole Health for Life program, Stanford University’s WELL for Life program, Kaiser Permanente Medical group’s Thrive campaign program, and the Massachusetts General Hospital’s cardiac psychiatry program that offer positive psychology interventions for cardiovascular disease, diabetes, and metabolic syndrome.

Scientific publications serve as the core resource for the growing evidence base behind positive psychology and happiness research and health and well-being. Key journals in this subject area include the *Journal of Positive Psychology*, *Journal of Positive Psychology and Wellbeing*, and the *Journal of Happiness Studies*.

Community-based programs, such as Australia's Act-Belong-Commit, which promotes individual and community action and the Action for Happiness movement support and bring people together to engage in activities for happiness and well-being. These programs, along with educational organizations, such as the Global Positive Health Institute, facilitate the adoption and practical application of the expanding scientific and application resources.

9. Conclusion


The relatively new field of positive psychology offers powerful science and tools essential for promoting total well-being and positive health. The healthcare field is starting to harness the science of positive health, as we test and develop feasible and impactful approaches that can be integrated into healthcare systems informed by studies from behavioral health. Much more research is needed to translate this science into the evidence base for traditional healthcare settings. In the meantime, research-informed and simple lessons and tools can be applied for promoting both practitioner and patient well-being. As the field of positive psychology and health, perhaps to be called "positive health" as a standard term, grows in scientific research, practical implementation, training, and dissemination, we have much to gain for achieving and sustaining the highest levels of well-being in the public domain, as well as in health care.

Author details

Liana Lianov
Global Positive Health Institute, United States

*Address all correspondence to: friends@myhappyavatar.com

IntechOpen

© 2022 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

References

- [1] Gable SL, Haidt J. What and why is positive psychology? Review of General Psychology. 2005;**9**(2):103-110
- [2] Lianov L. Roots of Positive Change, Optimizing Health Care with Positive Psychology. Chesterfield, MO: American College of Lifestyle Medicine, in Collaboration with HealthType LLC; 2019
- [3] Jacka FN, O'Neil A, Opie R, et al. A randomized controlled trial of dietary improvement for adults with major depression (the 'SMILES' trial). BMC Medicine. 2017;**15**:23
- [4] Parletta N, Zarnowiecki D, Cho J, et al. A Mediterranean-style dietary intervention supplemented with fish oil improved diet quality and mental health in people with depression: A randomized controlled trial (HELFIMED). Nutritional Neuroscience. 2019;**22**(7):474-487
- [5] Beezhold B, Radnitz C, Rinne A, DiMatteo J. Vegans report less stress and anxiety. Nutritional Neuroscience. 2015;**18**(7):289-296
- [6] Beezhold BL, Johnston CS, Daigle DR. Vegetarian diets are associated with healthy mood states: A cross-sectional study in seventh day Adventist adults. Nutrition Journal. 2010;**1**:9-26
- [7] Blanchflower D, Oswald A, Stewart-Brown S. Is psychological wellbeing linked to the consumption of fruit and vegetables? Social Indicators Research. 2013;**114**:785-801
- [8] Gardner MP, Wansink B, Kim J, et al. Better moods for better eating? How mood influences food choice. Journal of Consumer Psychology. 2014;**24**(3):320-335
- [9] White BA, Horwath CC, Conner TS. Many apples a day keep the blues away—Daily experiences of negative and positive affect and food consumption in young adults. British Journal of Health Psychology. 2013;**18**(4):782-798
- [10] Cooney GM, Dwan K, Greig CA, et al. Exercise for depression. Cochrane Database of Systematic Reviews. 2013;**9**:CD004366
- [11] Eriksson S, Gard G. Physical exercise and depression. Physical Therapy Reviews. 2011;**16**(4):261-268
- [12] Mammen G, Faulkner G. Physical activity and the prevention of depression: A systematic review of prospective studies. American Journal of Preventive Medicine. 2013;**45**(5):649-657
- [13] Rimer J, Dwan K, Lawlor DA, et al. Exercise for depression. Cochrane Database of Systematic Reviews. 2012;**11**(7):CD004366
- [14] Blumenthal JA, Babyak MA, Doraiswamy PM, et al. Exercise and pharmacotherapy in the treatment of major depressive disorder. Psychosomatic Medicine. 2007;**69**(7):587-596
- [15] Boecker H, Sprenger T, Spilker ME, et al. The runner's high: Opioidergic mechanisms in the human brain. Cerebral Cortex. 2008;**18**(11):2523-2531
- [16] Ernst C, Olson AK, Pinel JP, et al. Antidepressant effects of exercise: Evidence for an adult-neurogenesis hypothesis? Journal of Psychiatry & Neuroscience. 2006;**31**(2):83-92
- [17] Mikkelsen K, Stojanovska L, Polenakovic M, et al. Exercise and mental health. Maturitas. 2017;**106**:48-56

- [18] Ekkakis P, Hal EE, Van Landuyt LM, et al. Walking in affective circles: Can short walks enhance affect? *Journal of Behavioral Medicine*. 2000;**23**:245-275
- [19] Singh NA, Stavrinou TM, Scarbek Y, et al. A randomized controlled trial of high versus low intensity weight training versus general practitioner care for clinical depression in older adults. *Journal of Gerontology*. 2005;**60**(6):768-776
- [20] Stanton R, Reaburn P, Happell B. Is cardiovascular or resistance exercise better to treat patients with depression? A narrative review. *Issues in Mental Health Nursing*. 2013;**34**(7):531-538
- [21] Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's updated sleep duration recommendations: Final report. *Sleep Health*. 2015;**1**(4):233-243
- [22] Stickgold R. Sleep on it. *New Scientist*. 2015;**313**(4):52-57
- [23] Riemann D, Voderholzer U. Primary insomnia: A risk factor to develop depression? *Journal of Affective Disorders*. 2003;**76**(1-3):255-259
- [24] Neckelmann D, Mykletun A, Dahl AA. Chronic insomnia as a risk factor for developing anxiety and depression. *Sleep*. 2007;**30**(7):873-880
- [25] Tugade MM, Fredrickson BL, Barrett LF. Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality*. 2004;**72**(6):1161-1190
- [26] Van Cappellen P, Rice EL, Catalino LI, et al. Positive affective processes underlie positive health behavior change. *Psychology & Health*. 2017;**33**:77-97
- [27] Kim ES, Strecher VJ, Ryff CD. Purpose in life and use of preventive health care services. *Proceedings of the National Academy of Sciences*. 2014;**111**(46):16331-16336
- [28] Cohn MA, Fredrickson BL. In search of durable positive psychology interventions: Predictors and consequences of long-term positive behaviour change. *The Journal of Positive Psychology*. 2010;**5**(5):355-366
- [29] Rhodes RE, Kates KA. Can the affective response to exercise predict future motives and physical activity behavior? A systematic review of published evidence. *Annals of Behavioral Medicine*. 2015;**49**(5):715-731
- [30] Catalino LI, Fredrickson BL. A Tuesday in the life of a flourisher: The role of positive emotional reactivity in optimal mental health. *Emotion*. 2011;**11**:938-950
- [31] Fredrickson BL, Cohn MA, Coffey KA, et al. Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*. 2008;**92**:1045-1062
- [32] Kansky J, Diener E. Benefits of well-being: Health, social relationships, work, and resilience. *Journal of Positive Psychology and Wellbeing*. 2017;**1**(2):129-169
- [33] Seligman MEP. *Flourish*. New York, NY: Atria; 2012
- [34] Kabat-Zinn J. *Wherever you Go, there you Are: Mindfulness Meditation in Everyday Life*. New York, NY: Hachette Books; 2009
- [35] Siegel DJ. *The Mindful Brain: Reflection and Attunement in the*

- Cultivation of Well-Being. New York, NY: WW Norton & Company; 2007
- [36] Kabat-Zinn J. An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry*. 1982;**4**(1):33-47
- [37] Creswell JD. Mindfulness interventions. *Annual Review of Psychology*. 2017;**68**:491-516
- [38] Engert V, Ko BE, Papassotiriou I, et al. Specific reduction in cortisol stress reactivity after social but not attention-based mental training. *Science Advances*. 2017;**3**(10):e1700495
- [39] Goldberg SB, Tucker RP, Greene PA, et al. Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review*. 2018;**59**:52-60
- [40] Connor KR, Piquart M, Gamble SA. Meta-analysis of depression and substance use among individuals with alcohol disorders. *Journal of Substance Abuse Treatment*. 2009;**37**(2):127-137
- [41] Sonja L, Layous K. How do simple positive activities increase well-being? *Current Directions in Psychological Science*. 2013;**22**(1):57-62
- [42] Csikszentmihalyi M, Csikszentmihalyi IS. *Optimal Experience: Psychological Studies of Flow in Consciousness*. New York: Cambridge University Press; 1988
- [43] Csikszentmihalyi M, Larson R. *Flow and the Foundations of Positive Psychology: The Collected Works of Mihaly Csikszentmihalyi*. New York City, NY: Springer; 2014
- [44] Harvard Adult Development Study. Available from: <https://adultdevelopmentstudy.org>
- [45] Sandstrum GM, Dunn EW. Social interactions and wellbeing: The surprising power of weak ties. *Personality and Social Psychology Bulletin*. 2014;**40**:910-922
- [46] Roepke AM, Jayawickreme E, Riffle OM. Meaning and health: A systemic review. *Applied Research in Quality of Life*. 2014;**9**(4):1055-1079
- [47] Diener E, Emmons RA, Larsen RJ, et al. The satisfaction with life scale. *Journal of Personality Assessment*. 1985;**48**(1):71-75
- [48] Fredrickson B. *Love 2.0: Creating Happiness and Health in Moments of Connection*. New York, NY: Plume; 2013
- [49] Parks A, Biswas-Diener R. Positive interventions: Past, present and future. In: Kashdan T, Ciarroch J, editors. *Bridging Acceptance and Commitment Therapy and Positive Psychology: A Practitioner's Guide to a Unifying Framework*. 2013. pp. 140-165
- [50] Sin N, Lyubomirsky S. Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*. 2009;**65**(5):467-487
- [51] Smit F, Bohlmeijer E, Bolier L, et al. Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*. 2013;**13**(1):1