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Review article

An Integrative Approach to the Development of the "Mental Retreat" Wellness Program to Prevent Early Aging

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Abstract

In today's society, where everyday challenges and pressures can significantly impact one's psych-emotional state, it is crucial to develop effective stress reduction strategies and maintain mental well-being. Prolonged stress, as recognized in global practice, can trigger the development of various ailments, such as cardiovascular pathologies, endocrine disorders, and psychosomatic deviations, and can also predispose individuals to autoimmune and oncological conditions. Furthermore, the influence of stressful situations over one's lifetime is a well-acknowledged risk factor that heightens the likelihood of early-onset age-associated illnesses and premature death.

The primary objective of this study is to analyze and assess the effectiveness of health-promoting procedures in reducing stress levels and to develop a comprehensive wellness Program called "Mental Retreat." The application of this Program aims to mitigate the risk of various chronic diseases and preempt changes at the gene expression level to decelerate intracellular aging, enhance the body's antioxidant system, and stimulate the immune system. This work lays the groundwork for understanding the effects of procedures with substantial empirical support, highlighting synergistic influences in their combination, such as meditative practices, respiratory exercises, aromatherapy, outdoor physical activities, thermal and contrast procedures with elements of aroma and halotherapy, as well as lymphatic drainage massage effects, among others.

The developed wellness Program is intended to be evaluated through dynamic observation and monitoring of integrative organism indicators: based on results from bioimpedance analysis (body composition), assessment of stress levels, and biological age accounting for the imbalance between the parasympathetic and sympathetic nervous systems and heart rate variability.

Based on a global analysis of existing research, it has been found that the use of a variety of wellness methods has proven to improve concentration and overall psycho-emotional well-being, have a positive effect on the respiratory and cardiovascular systems, promote relaxation and improve sleep, strengthen the immune system and metabolism, increase stress tolerance, and can also have a positive effect on skin health. It's worth underscoring that the successful implementation of such a wellness Program could have immense implications for public healthcare by preventing the onset of numerous chronic diseases and contributing to an overall enhancement of quality of life.

Key words: *psychological stress, meditation, aromatherapy, integrative medicine, program, mental health, aging, cardiovascular diseases, ischemia, genes.*

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Introduction

Nowadays, special attention is given to the issues of preserving and maintaining health, disease prophylaxis, and prevention, where such a subjective factor as a conscious and responsible attitude to one's health is of paramount importance. An integrative and personalized approach is also essential to developing our wellness Program. In the "Strategy for Traditional and Complementary Medicine 2014-2023", the World Health Organization (WHO) has set one strategic goal: "create effective models for integrating traditional therapies into national health care systems". In modern healthcare, Integrative Medicine (I.M.) is actively working and being implemented around the world: European Society for Integrative Medicine (E.U.), Academic Collaboration on Integrative Health (USA), Academic Consortium for Integrative Medicine and Health (USA), Integrative Health Policy Consortium (USA), Academy of Integrative Health and Medicine (USA), and so on. The World Congress on Integrative Medicine (Berlin, 2017) defines the following: "I.M. combines modern medical practice with traditional wisdom and values technological advances and revolutionary advances in molecular, cellular, and systems biology. Integrative medicine assumes that disease causes are multifactorial, not hierarchical and include genetic, physical, emotional, psychological, and spiritual problems. Personalization in our wellness Program is achieved by assessing each person's genetic, physiological, and biochemical characteristics.

World practice shows that prolonged stress triggers diseases such as cardiovascular system pathology, endocrine diseases, and psychosomatic abnormalities and can lead to the development of autoimmune diseases and cancer. Lifelong exposure to stressful situations is a known risk factor for health deterioration, increasing the risk of the early development of age-related diseases and premature death [1-3]. Models studying the mechanisms that govern these effects have focused on the consequences of repeated and prolonged activation of the sympathoadrenal and hypothalamic-pituitary-adrenal systems, leading to wear and tear at the biological level [4]. Many suggest that this wear is manifested at the cellular level, causing the accumulation of DNA damage, increasing inflammation, shortening telomere length, and causing cellular aging [5,6]. Critically short telomere length in immune cells and cellular stress (e.g., DNA damage) can lead cells to a non-replication state called cellular aging [7,8]. In addition to localized tissue-specific aging [9], age-related changes in immune function contribute to systemic aging, organ failure, and premature mortality, making immunosenescence a critical factor in aging and disease [10].

In a pooled analysis of two prospective cohort studies including 918 participants [11], the presence of myocardial ischemia under psychiatric stress compared with no ischemia under psychiatric stress was significantly associated with an increased risk of cardiovascular death or nonfatal myocardial infarction (hazard ratio 2.5).

Mental stress-induced ischemia develops at a lower myocardial oxygen demand than exercise-induced ischemia. Although it is less closely related to the severity of coronary atherosclerosis than normal stress ischemia, the presence of endothelial dysfunction and plaques can impair the vasomotor response to mental stress, causing paradoxical vasoconstriction [12]. While systemic vascular resistance falls in response to exercise, it increases under mental stress due to peripheral vasoconstriction, which contributes to psychiatric stress-induced ischemia. Inflammation also increases dramatically under mental stress in patients with CHD, although its association with psychiatric stress-induced ischemia has not been demonstrated [13]. Ultimately, the reasons why some people develop psychiatric stress-induced ischemia are probably related to the neurobiology of stress. Studies with brain imaging link mental stress-induced ischemia to changes in the brain's stress response in areas involved in the regulation of emotion and autonomic function [14]. Brain responses in this circuit are also associated with cardiovascular events in patients with CHD [15].

Our research has shown that long-term work in stressful situations with psycho-emotional tension leads to emotional burnout; the degree of manifestation and time of development depends on the professional group, sex, age, and length of service. Thus, the high prevalence of emotional burnout among the studied professional groups requires complex corrective measures directed to:

1. Neutralization of stress consequences with the achievement of neuro-emotional balance.

2. Increase the vital potential of an organism's immunity.

3. Management of energy and physical resources of the body to increase stress resistance and prolong life.

4. Reducing the risk of chronic diseases.

Purpose of a Literature review: to analyze and assess the effectiveness of health-promoting procedures in reducing stress levels and develop a comprehensive health program called "Mental Retreat." This Program aims to mitigate the risk of various chronic diseases and preempt changes at the gene expression level to decelerate intracellular aging, enhance the body's antioxidant system, and stimulate the immune system.

Methodology

An extensive review of scientific studies in the PubMed, Cochrane, and Google Scholar databases was conducted between December 2022 and June 2023 to identify recent research relevant to the development of an integrative wellness Program called "Mental Retreat" for the prevention of early aging. The search was conducted using keywords and phrases related to stress reduction wellness practices such as "mental stress", "meditation", "aromatherapy", "aging" and others. The literature was carefully selected based on several criteria, including the study's relevance, the quality of its methodology, and the data provided. All selected articles had to meet high methodology standards and provide reliable and valid data. The selected articles were then subjected to a detailed analysis, including an assessment of the methodology of the studies conducted, an analysis of the data provided, and a thorough examination of the conclusions drawn by the authors.

The research findings were then systematically synthesized to identify common trends, key findings, and recommendations that can inform the development of an integrative wellness "Mental Retreat" Program.

This synthesis provided a deeper understanding of current scientific knowledge in early aging prevention and contributed to evidence-based strategies and approaches for creating an effective program.

The relationship between Gene Expression, Telomerase and Meditative Practices

In order to solve our tasks, we analyzed techniques that contribute to stress reduction with proven scientific and clinical studies. A Harvard Medical School study [16] used extended genomic testing to analyze transcriptional changes during relaxation practice (including mindfulness meditation) for both long-term practitioners and novices. Complex results showed that just one mindfulness meditation caused rapidly increased expression of genes related to energy metabolism, mitochondrial function, insulin secretion, and telomere maintenance, as well as decreased expression of genes related to the inflammatory response and stress-related pathways. The results demonstrate that a single meditation practice session induces rapid changes in gene expression (on the order of minutes) associated with a select set of biological pathways among practitioners in both the long and short term, which may explain the health benefits of meditation practice. These genes are associated with pathways responsible for energy metabolism, the electron transport chain, biological oxidation, and insulin secretion. These pathways are central in mitochondrial energy mechanics, oxidative phosphorylation, and cell aging. Activation of biological oxidation gene sets can increase the efficiency of redox reactions and thereby reduce oxidative stress. In addition, long-term practice has activated pathways related to genome stability, such as telomere packing, maintenance, and tight junction interactions. Dysfunction or shortening of telomeres can disrupt mitochondrial regulators and cause mitochondrial compromise, which ends in apoptosis.

The results of several recent studies confirm [17, 18] that mind-body interventions, such as meditation, breathing exercises, and aromatherapy, can enhance telomerase pathways. For example, 3-month meditation in 30 participants resulted in increased telomerase activity of immune cells compared with 30 matched control subjects. In contrast, psychological stress was associated with decreased telomerase activity, telomere shortening, and accelerated cell aging. Telomere length has been associated with insulin resistance, and evidence of insulin signaling as a critical target, which is progressively activated as time in meditation practice increases, supports this relationship. The systemic biological analysis identified histone (HIST1H2BC), calcium channel (CACNA1C), and cytochrome C (CYC1) as the primary focal points of long-term activation pathways. HIST1H2BC is a significant component of the nucleosome and is thus essential for regulating transcription, DNA repair, DNA replication, and chromosome stability. Cytochrome C is an essential member of the mitochondrial respiratory and energy complex, which may shed light on the role of meditation in mitochondrial energy efficiency. CACNA1C, a calcium channel gene, mediates the entry of calcium ions into excitable cells and is also involved in numerous calcium-dependent processes, including muscle contraction, hormone and neurotransmitter release, gene expression, cell mobility, cell division, and cell death.

Thus, a study using advanced genomic and systems biology analysis methodology to examine temporal transcriptional changes during a single meditation practice session showed that the practice induced activation of ATPase and insulin function by 20%. The excitement of meditation can enhance mitochondrial energy production and utilization. Meditation significantly affects multiple pathways through mitochondrial signal transduction, which can contribute to cellular and systemic adaptive plasticity responses. These adaptive responses become markers of what might be called mitochondrial resistance or mitochondrial reserve capacity. Gene expression data indicate meditation increases ATP energy production through the ATP synthase electron-transport complex. It may lead to an increase in mitochondrial reserve, which provides the ability to meet the metabolic energy requirements necessary to protect against oxidative stress in many stress-related diseases.

A 2016 Carnegie Mellon University study showed for the first time that mindfulness meditation, unlike placebo meditation, changes both the brain and body of ordinary people (not just those who have been meditating for a long time) [19]. The study found that a few days of meditation increased activity in parts of the brain that process stress-related reactions and other areas related to concentration and calm. Participants in the trial meditation also saw much lower levels of the biomarker of systemic inflammation interleukin-6 (IL-6) in their blood – even months later.

A randomized clinical trial (2016 – 342 adults) at the University of Washington in Seattle [20] found that mindfulness-based stress reduction (8 weeks of mindfulness meditation sessions once a week and yoga) resulted in more significant reductions in back pain and functional limitations after 26 weeks than conventional treatments (prescription opioids, etc.). 44% of participants doing meditation/yoga reported a significant reduction in pain compared to 27% of participants receiving conventional care/prescription painkillers, and so on. Mindfulness-based cognitive therapy is effective in reducing the recurrence of depression. A meta-analysis of nine randomized trials conducted in Europe and North America at Oxford University (2016) found that mindfulness-based cognitive therapy (MCBT) was more effective in reducing depression recurrence over 60 weeks [21].

Thus, considering the above effects on the mitochondrial intracellular level, effects on gene expression, telomere stability, meditative practices, and yoga will receive attention in the "Mental Retreat" wellness Program we have developed. Several studies confirm the significant positive effects of various yoga practices on anxiety and depression [22, 23]. However, very few have studied the effects of pranayama breathing practices on neurophysiological, psychological, and psychiatric variables, although evidence suggests improved self-regulation, positive moods, and reduced stress and anxiety [24]. A study evaluating the effects of fast and slow pranayama on perceived stress and cardiovascular parameters in young students found significant and comparable reductions in perceived stress scores with both types of pranayama practices. In contrast, cardiovascular parameters changed only after slow pranayama [25]. In addition, evidence suggests that yoga programs incorporating pranayama lead to decreased anxiety in individuals [26, 27], and a recent feasibility study found evidence of a positive effect of pranayama on patients with therapy-resistant generalized anxiety disorder [28, 29].

A study conducted by scientists at the Federal University of Rio Grande do Norte, Brazil, in 2020 [30] provides the first preliminary evidence that four weeks of pranayama reduces anxiety and increases positive emotions and that these changes are related to the activity and connectivity of brain networks involved in emotion processing, in particular the amygdala, anterior cingulate, anterior insular and prefrontal cortex. Resting fMRI revealed significantly reduced functional connectivity, especially involving the insula's anterior lobe and the prefrontal cortex's lateral parts involved in awareness and attention.

In a systematic review by Hartley et al. [31] – 11 trials (800 participants) showed that yoga had a beneficial effect in reducing diastolic blood pressure (mean difference (MD) -2.90 mmHg, 95% CI of -4.52 to -1.28), high-density lipoprotein cholesterol (HDL) (MD 0.08 mmol/L, 95% CI 0.02 to 0.14), and triglycerides (blood lipid) (MD -0.27 mmol/L, 95% CI -0.44 to -0.11)), and uncertain effects on low-density lipoprotein cholesterol (LDL) (MD -0.09 mmol/L, 95% CI -0.48 to 0.30). None of the included trials reported adverse events, the occurrence of type 2 diabetes, or costs.

Physical exercise - Pilates and stretching

A vital element of the designed Mental Retreat wellness Program is a set of physical exercises (Pilates) designed to mobilize the joints and work out the muscular corset to strengthen all muscles, develop endurance and coordination of movements, and master deep breathing techniques. It is essential to combine physical exercises and cardio exercises with stretching of muscle fibers, which not only helps increase flexibility but also improves posture, reduces stress, relieves pain in the body, and removes all the nerve and muscle blocks. After stretching, the stretched muscles get plenty of oxygen. Specially designed stretching exercises activate the work of peripheral vessels, which often reduces the risk of thrombosis and atherosclerosis and reduces the risk of osteoporosis. During bending and unbending of the body, blood flow is stimulated in the pelvic organs, which is essential both for women's and men's health, as well as stretching and sharp relaxation of the muscles, which are highly beneficial to the nervous system. Specialists believe that stretching most naturally slows down the body's aging and even contributes to its rejuvenation by 30%.

Ayurvedic approach to nutrition and wellness

Another important aspect of our wellness Program is the development of an individual menu, considering the metabolism's genetic characteristics and identifying food intolerances. All menus are based on a healthy diet with "authentic cuisine" elements, where organic farm products - meat, fish, kumys, sour cream, and cottage cheese- will provide fully balanced and safe building material for the body. Fermented foods will improve digestion by improving the quality of the intestinal microbiome. Forest berries, mushrooms, and medicinal herbs - as sources of vitamins and antioxidants, are included in the diet-designed menu. The Ayurvedic approach to nutrition and wellness has a long-standing evidence base and centuries of experience; the review article presents numerous evidence-based data [32]. A Harvard observational study [33] points to improved behavioral patterns: A 5-day Ayurvedic cleansing retreat improved subjects' adherence to new, healthier behaviors.

Ayurveda is a comprehensive system of natural healing that originated in India over 5.000 years ago. It is still widely used in India as a primary healthcare system, and interest in it is growing worldwide. Ayurveda has unique concepts and methodologies for lifelong health care, from pregnancy and infant care to geriatric diseases. Research on Ayurveda has been conducted all over the world. There are encouraging results of its effectiveness in treating various diseases, including chronic diseases related to aging. Pilot studies [32] have been conducted on depression, anxiety, sleep disorders, hypertension, diabetes, Parkinson's disease, and Alzheimer's disease. These preliminary studies have yielded positive results and provided the basis for more extensive and rigorous clinical trials. Recent studies [34] on the prevalence, acceptability, availability, and recognition of complementary and alternative therapies were reviewed to assess the current acceptance of complementary and alternative medicine in the United States. Several signs point to the growing acceptance of complementary and alternative medicine in the United States; the use of complementary and alternative medicine is expanding significantly, many aspects of Chinese medicine and Ayurveda are becoming accepted, practitioners in the United States are beginning to be licensed, and insurance companies are starting to cover some complementary and alternative therapies. So, there were 19 randomized and 14 non-randomized controlled trials of 12 medications and three non-medicinal interventions involving 2,952 patients [35]. No serious adverse events were observed in all trials. Based on these data, Rumalaya and Shunthi-Guduchi appear to be safe and effective drugs for treating osteoarthritis patients.

Outdoor activities – “Bathing in the forest - Shinrin-Yoku”

A unique role in our Program is occupied by physical activities in the air, which are based on physiological stimulation of the respiratory system by natural phytoncides, aversion therapy of coniferous trees, and improving cardiovascular system function. The development of routes for walks and physical activities was carried out while considering the landscape. Terrenkur (terrain treatment) with dosed cross-country walks and a gradual increase in motor activity. Improvement of general well-being was achieved by active oxygen intake into the body in the open air. When physical activity increases the lungs' vital volume, the alveolar-capillary membrane's diffusion capacity increases; as a result, more oxygen goes into the bloodstream, and metabolism intensifies. Just the ups and downs on the terrain contribute to metered strain on the cardiovascular system and improve blood circulation in the brain. The emotional background of the body is enhanced with visualization of the beauty of fauna; when the landscapes of forest steppes, the water smoothness of lakes, and refreshing springs open, exceptional beauty can be observed and meditate in the moments of sunrise and sunset, as well as in certain places of power. Visiting beautiful places is accompanied by "smells of nature" when natural aromatherapy is available in the warm periods of the year.

The human auditory analyzer is also involved in the recreational atmosphere of nature, when a person can appreciate the silence after the noise of the city, listening to the singing of birds. The developed walking routes take into account not only the correct physical load on the body but also when accompanied by a trained instructor, all safety measures in nature are followed, and stories about the features of this nature park and historical events of the area, help to consolidate the effects of physical, emotional and spiritual balanced state. Research results of Park et al. [36] show that the forest environment contributes to lower cortisol concentrations, heart rate, blood pressure, parasympathetic nerve activity, and sympathetic nerve activity than the urban environment. The study by Li (2020) [37] proved that "bathing in the forest – Shinrin-Yoku" has the following beneficial effects on human health: 1) it increases natural killer (N.K.) activity, the number and intracellular levels of anti-cancer proteins, suggesting a preventive effect on cancer; 2) lowers blood pressure and heart rate, having a preventive effect on hypertension and heart disease; 3) lowers levels of stress hormones such as adrenaline and noradrenaline in urine and cortisol in saliva/serum, promoting stress management; 4) increases parasympathetic nerve activity and decreases sympathetic nerve activity to stabilize the balance of the autonomic nervous system. 5) improves sleep; 6) increases serum adiponectin and dehydroepiandrosterone sulfate levels; 7) in the Profile of Mood States (POMS) test, it reduces anxiety, depression, anger, fatigue, and confusion and increases energy levels, demonstrating a preventive effect on depression; 8) can be used in rehabilitation medicine; 9) can have a preventive effect on COVID-19 by increasing immune function and reducing mental stress. These data suggest that Shinrin-Yoku may have a potential preventive effect on non-communicable diseases. Another study by Li and his colleagues [38] proved that phytoncides such as alpha-pinene and beta-pinene are found in forest air but almost none in urban air. These results show that bathing in the forest increases N.K. activity, the number of N.K. cells, and the level of intracellular anti-cancer proteins. This effect persists for at least seven days after the trip. A modern review by Japanese scientists Hansen, Jones, and Tocchini [39] shows that natural therapy in the forest has a practical impact on the respiratory, immune, cardiovascular, and nervous systems. The mind-body-spirit experience associated with Shinrin-Yoku is for everyone and has an evidence base supported by current scientific data, history, and personal experience. Shinrin-Yoku (S.Y.) and Nature Therapy (N.T.) practices are ontological realism and offer people an authentic way to heal and protect the health of the mind, body, and spirit.

Aromatherapy

Continuing to explore the potential of natural remedies with centuries of experience in wellness practices led us to use aromatherapy actively. Thus, a search of randomized controlled trials [40] of aromatherapy to reduce anxiety was conducted in PUBMED, WEB OF SCIENCE (from January 1990 to October 2019), COCHRANE LIBRARY, EMBASE and in the Chinese databases CNKI, WanFang, and CBMD. Twenty-five articles (thirty-two trials) were included in this meta-analysis. Data on Spielberger's State and Trait Anxiety Inventory (STAI) scores were extracted. The combined results showed that inhalation and massage aromatherapy significantly reduced anxiety levels across different conditions. The weighted mean difference was -5.16 for the State Anxiety Inventory (SAI) (95% CI: -5.78, - 4.55, $p<0.001$) and -2.85 for the Trait Anxiety Inventory (TAI) (95% CI: -3.95, -1.75, $p<0.001$). No side effects were reported in all studies. A meta-analysis showed that aromatherapy using various essential oils can significantly alleviate anxiety regardless of its cause. However, the proper dosage of essential oils requires further research. Takeda et al. (2008) evaluated the effectiveness of aromatherapy and proved that compared to massage alone, aromatherapy body care provides stronger and longer-lasting relief from fatigue, especially fatigue of mental origin [41]. Similarly, the results of a study by Wu et al. in 2014 [42] show that aromatherapy massage can significantly affect several neurobiological parameters such as EEG patterns, salivary cortisol levels, and brain-derived neurotrophic factor (BDNF).

Heat and contrast procedures with aroma, halotherapy, and lymphatic drainage massage effect

Heat and contrast procedures play a unique role in our Program. Laukkanen et al. [43] proved that regular sauna visits are associated with various health benefits. A 2018 meta-review published in the Mayo Clinic Proceedings found that people who regularly visit the sauna have lower rates of cardiovascular disease and fewer problems with everything from lung disease to mental health problems. Depending on the study, those who frequent the sauna more often have up to an 83 percent lower risk of stroke, high blood pressure, heart attacks, or death, and frequent sauna use is also associated with more than a 60 percent lower risk of dementia and Alzheimer's disease. Similarly, work by Cullen and colleagues in 2020 [44] proves that heat therapy (saunas, hot tubs) offers the same benefits as exercise benefits, including lower blood pressure, better blood sugar control, and reduced inflammation - all similar to the effects of moderate exercise such as jogging or cycling. A 2018 study [45] conducted by the University of Eastern Finland (analyzed 1,628 people over 15 years) found that compared to people who visited the sauna once a week, those who visited the sauna 2-3 times a week were 12% less likely to have a stroke. Those who went to the sauna 4-7 times a week reduced their risk of stroke by 62%. Although the study was observational and cannot prove causality, the researchers found a strong independent effect. To maximize the effectiveness of bathing procedures, our wellness Program has created unique conditions to potentiate and enhance the positive effects, so the steam room has panels of Himalayan salt. Most studies of halotherapy indicate the benefits of Himalayan salt in respiratory conditions such as asthma, chronic bronchitis, and allergies, as well as skin conditions from psoriasis to acne. Himalayan salt contains 85 valuable microelements that have a powerful therapeutic effect when heated for a long time. The salt blocks release microparticles (negative ions) that contribute to a unique microclimate in the room (similar to the mountain or sea air), disinfect the ambient air, and benefit all human body systems. Himalayan salt stabilizes blood pressure and relieves depressed mood and chronic fatigue syndrome, giving a positive mental attitude.

It is not by chance that Himalayan salt has long interested researchers specializing in bioenergetics. It has an antiseptic, antifungal effect, stabilizes the pH of the skin, strengthens the walls of blood vessels, as well as contributes to

- general improvement of well-being;
- accelerated excretion of toxins;
- regulation of blood pressure and blood sugar levels;
- activation of blood and lymph flow;
- prevention of respiratory diseases.

At the same time, its beneficial properties are intensified precisely during prolonged heating (which takes place in a bath or sauna).

A review of studies [46] on halotherapy for chronic respiratory disease suggests positive effects. Thirteen studies of different methods of halotherapy conducted in 2022 indicate that it can positively affect patients suffering from chronic respiratory diseases, improving mucociliary elimination and lung function in common chronic respiratory diseases. The growing production of modern drugs is becoming a new source of environmental pollution. The scientific community is interested in developing alternative environmental treatments for asthma. Halotherapy [47] has proven its benefits in the treatment and prevention of asthma and may represent a reliable therapeutic adjunct to allopathic treatment due to its environmental friendliness and harmlessness to the environment to prevent or prolong the time to exacerbation in asthmatic patients.

Besides that, to intensify the healing effects, our Program uses natural oils of conifers, so on the ceiling where the temperature reaches the highest values, a panel of juniper is placed. As a result, the most intensive release of healing oils of juniper occurs. Juniper oil helps with urinary tract infections, bloating, skin irritations and infections, digestive problems, liver cleansing, stressful situations, poor sleep, heartburn, and acid reflux. The steaming in the Program developed by us provides the beneficial properties of conifers (fir and spruce brooms), with emitted aroma oils from conifers relieving psycho-emotional stress and physical fatigue. At the same time, steaming with coniferous wood secretes phytoncides with a strong anti-infective effect, so strong that using a fir broom even purifies the air in the steam room. Thus, the process of steaming in a specially designed space with elements of ion therapy, aromatherapy, halotherapy, and the effect of lymph and vascular massage from contrasting water procedures (font, Furako) contributes to the complex recovery of the body, improves immunity and reduce psycho-emotional stress.

Quality and full-fledged sleep

An essential role in our Program is dedicated to quality and full-fledged sleep. A large study from the University of California at Berkeley in 2020 (1600 participants) [48] explains why disturbed nighttime sleep and clogged arteries are pathologically related. It is the first study to show that fragmented sleep is associated with a unique mechanism, chronic circulating inflammation throughout the bloodstream, which in turn is associated with increased plaque in the coronary arteries, which can lead to fatal heart disease. A 2018 study [49] by the National Institutes of Health (NIH) and Yale University found that sleep deprivation was associated with higher levels of beta-amyloid protein, a well-known precursor to Alzheimer's disease. Nineteen of the 20 participants had higher levels of beta-amyloid in their brains after a night of exhaustion, suggesting that the processes associated with the development of Alzheimer's disease are likely enhanced. Although this is a small study, it is vital because it is the first to test people under controlled conditions. A meta-review [50] of six clinical trials conducted by the National Taiwan University in 2012 showed that 10- to 16-week exercise programs (either moderate aerobic or high-intensity exercise) significantly improved overall sleep. Based on scientifically proven research, we in the «Mental Retreat» wellness Program provide comprehensive activities to improve sleep: outdoor physical activity, meditation, massage, and aromatherapy.

Meditative relaxation

An integrative approach used in a 2021 large-scale study by Chandran et al. [51] found that several immune and other fundamental cellular pathways were altered after a meditative retreat. Applying an integrative systems biology approach, starting with whole blood gene expression profiling combined with multilevel bioinformatics analysis, allowed the characterization of co-expression, transcriptional, and protein-protein interaction networks, which allowed the identification of a core network specific to meditation. The response to oxidative stress, detoxification, and cell cycle regulation pathways were shown to be suppressed after meditation. Strikingly, 220 genes directly related to the immune response, including 68 genes related to interferon signaling, were activated without significant changes in expression within the inflammatory genes. This robust meditation-specific immune response network is significantly impaired in patients with multiple sclerosis and severe COVID-19. The work provides a framework for understanding the effects of meditation. It suggests that meditation as a behavioral intervention can voluntarily and non-medically improve the immune response to treat various conditions associated with excessive or persistent inflammation with a compromised immune system profile. This paper references recent studies showing that the peripheral immune response can affect neuronal function, behavior such as spatial learning and memory, and normal brain function. Thus, exposure of the peripheral immune system to meditation as an intervention may point to a new era of behavioral therapy development to maintain brain health and reverse currently irreversible neurological disease. Crucially, yogic and meditative practices have been shown to enhance immune function without activating inflammatory signals and without pharmacological intervention. Likewise, long-term effects of meditation have been shown; the 58 genes three months after meditation, consisting of several activated genes involved in catalytic activity, localized at the mitochondrial membrane and involved in the translation elongation factor. These results indicate that meditation can induce long-term changes in the transcription profiles associated with the most fundamental cellular pathways.

Thus, our analysis of the world literature on the effectiveness of wellness interventions to reduce stress levels has allowed us to develop the most comprehensive "Mental Retreat" wellness Program, the application of which will reduce the risks of various chronic diseases and prevent changes in gene expression levels to reduce the rate of intracellular aging, increase the body's antioxidant system and stimulate the body's immune function. The Program includes the most evidence-based procedures, which have a potential effect when combined:

1. Yoga;
2. Pilates, stretching;
3. Meditation;
4. Acupressure;
5. Ayurvedic massage;
6. Dry-air hyperthermia with halotherapy and ion therapy in the sauna;
7. Heat and contrast procedures;
8. Stone therapy;
9. Aromatherapy;
10. Breathing exercises;
11. Activity in nature - "Forest bathing";
12. Rejuvenating procedures (wrappings);
13. Nutrition with ecologically clean products enhanced antioxidant protection properties of the organism, and products for normalization of the intestinal microbiome.

In the process of application of the health improvement Program developed by us, it is planned to evaluate its effectiveness by dynamic observation and monitoring of integrative indicators of the body: by results of bioimpedance study (body composition), assessment of stress level and biological age considering imbalance of parasympathetic and sympathetic nervous system and levels of heart rhythm variability.

Conclusions

Based on a global analysis of existing research, it was found that the use of a variety of methods has a positive impact on the physical, psychological, and emotional well-being of a person: meditative practices, including mindfulness meditation and yoga, breathing exercises, aromatherapy, outdoor physical activity, elements of halotherapy and ion-therapy in the sauna, as well as heat and contrast procedures, have proven their ability to increase the level of concentration and overall psycho-emotional well-being The synthesis of different approaches in our wellness program, the “Mental Retreat”, is a holistic method for the prevention of early aging, helping to reduce stress levels and improve a person's physical and psychological well-being. This study highlights the importance of a personalized approach to health and longevity, integrating scientific evidence and practical methods to achieve optimal health and quality-of-life outcomes. It should be emphasized that the successful implementation of such a wellness Program can have tremendous public health benefits, preventing the onset of multiple chronic diseases and contributing to an overall improved quality of life.

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Ерте қартаюдың алдын алу үшін «Менталды ретрит» сауықтыру бағдарламасын әзірлеудегі интегративті тәсілдеме

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Түйіндеме

Күнделікті қиындықтар мен қысым психоэмоционалды жағдайға айтарлықтай әсер етуі мүмкін. Сондықтан қазіргі қоғамда стрессті төмендетудің және психикалық денсаулықты сақтаудың тиімді стратегияларын жасауға ерекше назар аудару қажет. Әлемдік тәжірибеге сәйкес, ұзақ мерзімді стресс жүрек-қан тамырлары патологиясы, эндокриндік бұзылулар, психосоматикалық ауытқулар сияқты әртүрлі аурулардың дамуына тұрткі болуы мүмкін және аутоиммунды және онкологиялық аурулардың пайда болуын алдын ала анықтай алады. Ал өмір бойына созылған стресстік жағдайлардың әсері жасқа байланысты аурулардың ерте пайда болу ықтималдығын арттыратын және мезгілсіз өлімнің белгілі қауіп факторы болып табылады.

Бұл зерттеудің мақсаты - стресс деңгейін төмендету бойынша сауықтыру процедураларының тиімділігін талдау және бағалау, сонымен қатар әртүрлі созылмалы аурулардың даму қаупін азайту және жасушаішілік қартаю жылдамдығын төмендету, ағзаның антиоксиданттық жүйесін арттыру және иммундық жүйені ынталандыру үшін ген экспрессиясы деңгейіндегі өзгерістерді алдын алуға мүмкіндік беретін "Менталды ретрит" толық кешенді сауықтыру Бағдарламасын әзірлеу. Бұл жұмыста медитация практикасы, тыныс алу гимнастикасы, ароматерапия, ашық ауадағы физикалық белсенділік, ароматерапия, галотерапия элементтері және лимфодренаждық массаж эффектісі бар термиялық және контрастты процедуралар, және т. б. сияқты өзара үйлесімде потенциалды әсер ететін ірі дәлелді базасы бар процедуралардың әсерін түсіну үшін негіз ұсынылған.

Біз әзірлеген сауықтыру Бағдарламасын ағзаның интегративті көрсеткіштерін динамикалық бақылау және мониторингілеу арқылы бағалау жоспарлануда: биоимпедансстық зерттеу нәтижелері бойынша (дене құрамы), парасимпатикалық және симпатикалық жүйке жүйесінің теңгерімсіздігін мен жүректің жұмыс істеу ырғағының өзгергіштік деңгейін ескере отырып, стресс деңгейін және биологиялық жасты бағалау бойынша.

Қолданыстағы зерттеулердің жаһандық талдауы негізінде сауықтырудың әртүрлі әдістерін қолдану зейін деңгейін және жалпы психо-эмоционалдық әл-ауқатты арттыруға, тыныс алу және жүрек-қантамыр жүйесіне, ұйқының релаксациясы мен жақсаруына, иммундық жүйені және зат алмасуды нығайтуға, стресске төзімділікті арттыруға, сондай-ақ, теріге оң әсер ететіндігі дәлелдеді. Айта кету керек, мұндай сауықтыру бағдарламасын сәтті жүзеге асыру көптеген созылмалы аурулардың пайда болуынан сақтап, өмір сапасының жалпы жақсаруына ықпал ете отырып, денсаулық сақтау үшін үлкен маңызға ие болуы мүмкін.

***Түйін сөздер**: психологиялық стресс, медитация, ароматерапия, интегративті медицина, бағдарлама, психикалық денсаулық, қартаю, жүрек-қан тамырлары аурулары, ишемия, гендер.*

Интегративный подход в разработке оздоровительной программы «Ментальный ретрит» для профилактики раннего старения

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Резюме

В современном обществе, где повседневные вызовы и давление могут оказывать значительное воздействие на психоэмоциональное состояние, важно уделить особое внимание разработке эффективных стратегий снижения стресса и поддержания психического здоровья. Длительный стресс, согласно мировой практике, может стать триггером для развития различных заболеваний, таких как патологии сердечно-сосудистой системы, эндокринные расстройства, психосоматические отклонения, а также может предопределять появление аутоиммунных и онкологических заболеваний, в то время как воздействие стрессовых ситуаций на протяжении всей жизни является хорошо известным фактором риска, увеличивающим вероятность раннего появления возраст-ассоцированных заболеваний и преждевременной смерти.

Цель данного исследования - проанализировать и оценить эффективность оздоровительных процедур по снижению уровня стресса и разработать наиболее полную комплексную оздоровительную программу "Ментальный ретрит", применение которой позволит снизить риск развития различных хронических заболеваний и предотвратить изменения на уровне экспрессии генов для снижения скорости внутриклеточного старения, повышения антиоксидантной системы организма и стимуляции иммунной системы. В данной работе предложена основа для понимания эффектов процедур с наибольшей доказательной базой и оказывающие потенцирующее влияние при их сочетании таких как медитативные практики, дыхательная гимнастика, ароматерапия, физические активности на воздухе, тепловые и контрастные процедуры с элементами ароматерапии, галотерапии и эффектом лимфодренажного массажа и др.

Разработанную нами программу оздоровления планируется оценивать по динамическому наблюдению и мониторингу интегративных показателей организма: по результатам биоимпедансного исследования (состав тела), оценке уровня стресса и биологического возраста с учетом дисбаланса парасимпатической и симпатической нервной системы и уровня вариабельности сердечного ритма.

На основе глобального анализа существующих исследований было выявлено, что применение разнообразных методов оздоровления доказали свою способность к повышению уровня концентрации внимания и общего психо-эмоционального благополучия, оказывают положительное воздействие на дыхательную и сердечно-сосудистую системы, способствуют расслаблению и улучшению сна, укреплении иммунной системы и обмена веществ, повышению стрессоустойчивости, а также способны оказать положительное воздействие на здоровье кожи. Следует подчеркнуть, что успешная реализация такой оздоровительной программы может иметь огромное значение для общественного здравоохранения, предостерегая от возникновения множества хронических заболеваний и способствуя общему повышению качества жизни.

Ключевые слова: психологический стресс, медитация, ароматерапия, интегративная медицина, программа, психическое здоровье, старение, сердечно-сосудистые заболевания, ишемия, гены.