



## REVIEW ARTICLE

## The Effects of Yoga Exercises on the Health of Iranian Men and Women: A Review Study

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## KEY WORDS

Aging;  
Anxiety;  
Cancer;  
Depression;  
Diabetes;  
Multiple Sclerosis;  
Yoga

## ABSTRACT

Yoga is a combination of physical exercises, breathing control, relaxation, diet control, positive thinking and meditation. The purpose of doing yoga exercises is harmony in the body, mind and environment. Physical activities in this sport are less than other sports and more breathing techniques are practiced. Yoga is one of the most popular sports around the world. This study was conducted with the aim of reviewing the therapeutic and supportive effects of yoga in Iranian men and women during the last two decades. For this purpose, reliable and relevant articles were prepared from the websites of Scientific Information Database (SID), the Islamic World Science and Technology Monitoring and Citation Institute (ISC) and Scopus citation database. The results of the studies have indicated the positive and harmless effects of yoga on the physical and mental conditions of healthy people and those suffering from various diseases. Yoga has significant positive effects on reducing stress, anxiety and symptoms of depression, improving breathing, balance, flexibility, sleep quality and self-esteem, increasing immunity due to stimulation of the lymphatic system, eliminating toxins and heavy metals, increasing strength and endurance, improving blood flow, better digestive function such as reducing symptoms of irritable bowel syndrome, reducing symptoms related to pregnancy, postpartum depression and chronic pain such as back pain or frequent headaches, improving physical condition and reducing symptoms of personality disorder, control of diabetes, multiple sclerosis, heart failure and cancer. Therefore, yoga can be used as a very suitable therapeutic method for healthy and sick men and women, athletes and non-athletes in different age groups.

### Introduction

The origin of yoga is from India and was developed in the late 2000s. Yoga helps heal injuries and illnesses and improves overall fitness. Many inspiring results have been reported from people who have started practicing yoga in middle and late life, with significant physical disabilities. They have been able to regain strength, flexibility, energy and a level of health that they thought had been lost as their youth passed. In yoga therapy, they use yoga movements, breathing control, relaxation, meditation and nutrition

to get rid of emotional and muscular pressures, increase concentration, raise the blood oxygen level and help the body in its recovery (Mahdipour Zareh and Bahri, 2005). Yoga, meaning the unity of body and mind, has been used as a traditional medicine in the Middle East for 3 to 5 thousand years, and recently it has been used as a complementary and alternative medicine in the treatment of diseases (Hadi and Hadi, 2006).

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### ***The balance***

Static and dynamic balance in the dominant and non-dominant leg significantly increased after 8 weeks of yoga practice in middle-aged women without any medical history. Also, a significant difference was found between the improvement rate of the dominant and non-dominant leg in dynamic balance, but the static balance of both legs was equally improved. Yoga exercises lead to increased static and dynamic balance in both legs. The dynamic balance of the non-dominant leg improved significantly more than the dominant leg, but the static balance of the dominant and non-dominant leg increased to the same extent (Khazaei *et al.*, 2014). Yoga exercises (closed control loop exercises) have a greater effect on the static balance of deaf children, and table tennis exercises (open control loop exercises) lead to better dynamic balance in them (Jalilvand, 2021). 8 weeks of selected yoga central stability exercises in female students caused a significant difference in the variables of static balance, posterior-anterior semi-dynamic balance, posterior-internal semi-dynamic balance and posterior-external semi-pubic balance with eyes open and eyes closed (Ghasemian *et al.*, 2021). It is possible to use yoga exercises with the approach of ultimate preparation (UF) and hatha yoga as a non-pharmacological method in rehabilitating, maintaining and improving the balance of middle-aged women (Babaei Khorzoghi *et al.*, 2021).

### ***Depression and anxiety***

Eight weeks of yoga and aerobic exercise significantly reduce depression in non-athletic women over 40 years old. Compared to yoga, aerobic exercises have a greater effect on reducing depression. There is a negative and significant relationship between depression and the level of education and a positive and significant relationship between depression and the number of children. There is no relationship between depression and weight and age. However, the effect of eight weeks of aerobic exercise in weight loss is more effective than yoga (Ghaseminezhad and

Nourbakhsh, 2008). All three factors of walking, yoga and the use of herbal medicine Hyperan are useful and effective in reducing depression in middle-aged non-athletic women, and walking, yoga and herbal medicine respectively have the greatest effect (Nourbakhsh *et al.*, 2010). Hatha yoga is called physical and breathing yoga exercises. The difference in the level of anxiety and depression of women before and after the exercises in the Hatha Yoga group is significant, but this difference was not significant in the physical fitness group, although it showed a decrease. The post-test results of anxiety and depression in the Hatha Yoga group were significantly better than the physical fitness group (Rahimi and Bavaqar, 2011). Performing simple, fun and inexpensive yoga exercises is associated with reducing depression in the lives of abused women, and by using these exercises; you can take steps to improve the psychological problems of abused women (Zehtab Najafi *et al.*, 2012). The effect of yoga on the anxiety of breast cancer patients undergoing chemotherapy was positive and the anxiety of the intervention group was significantly lower than the control group (Rezaei and Ghanei, 2013). The effect of yoga therapy on primary maladaptive schemas and emotional ataxia of depressed women in Tehran was investigated. There was no significant difference between the mean cutoff and rejection and impaired limits and emotional ataxia after the educational intervention between the two experimental and control groups (Saeidi Asl and Rbati, 2021). There is a significant inverse relationship between physical social anxiety and physical activity indicators (12 weeks of yoga practice) and with the increase of each of the physical activity indicators, the level of social physical anxiety has decreased. Exercise has additional benefits because it helps people feel better about themselves. Based on this, by maintaining regular physical activity, the role of provoking social physical anxiety

is gradually reduced and athletes reach their fitness goals (Babaei Bonab and Fattah Poumarandi, 2019).

### ***Happiness and hope for life***

Yoga training can increase the psychological well-being and happiness of people about to retire (Mehrabizadeh *et al.*, 2013). Yoga exercises have also been effective on women's life expectancy (Ghorbani *et al.*, 2019). Twelve weeks of yoga practice effectively improves psychological well-being and happiness in female heads of households. (Babaei Bonab, 2021).

### ***Self-resilience and self-efficacy***

By promoting resilience in women, yoga exercises increase problem-solving skills and social sufficiency and make them have a clearer view of the future (Kamarzarrin *et al.*, 2012). Yoga training has significantly increased the sense of coherence, self-resilience and cognitive flexibility of women. (Badavi and Zeinali, 2019) The results show that yoga can be used as a convenient, accessible and low-cost treatment for treating anxiety and promoting resilience. Used in middle-aged women (Evazei *et al.*, 2019). Compared to aerobics, the yoga exercise program has significantly increased the self-efficacy of female employees of the University of Medical Sciences (Ayatinasab *et al.*, 2013).

### ***Aggression***

The amount of aggression of mothers in the yoga group as well as the self-compassion group has decreased significantly compared to the control group (Shams *et al.*, 2020). Yoga improved self-injurious behaviors with two interventions of mindfulness and self-management. Self-management had a greater effect on improving self-injurious behaviors (Nourouzi *et al.*, 2021).

### ***Obsession***

Yoga is used as a therapeutic method in obsessive-compulsive patients along with common medication.

Significant changes to the preparedness indicate the effectiveness of this treatment. (Taherkhani *et al.*, 2003).

### ***Restorative exercise***

Fatigue during endurance exercise appears in response to the accumulation of lactic acid in active muscles and blood. Two training methods, immersion in a cold water pool and yoga on blood lactate during the phase of returning to the initial state after a residual exercise were investigated on 45 soccer players. A significant increase in blood lactate levels was observed immediately after exercise compared to baseline levels in all groups. A significant difference in blood lactate levels at 5 and 15 minutes of recovery compared to baseline levels was observed in two groups compared to the control group (Khatami *et al.*, 2021).

### ***Self-esteem of injured athletes***

A course of yoga exercises has a significant effect on the general health and self-esteem of injured athletes with anxiety and improves their general health and self-esteem (Dehghani *et al.*, 2019).

### ***Motor functions and hyperactivity of children***

12 weeks of yoga exercises have a positive effect on motor functions (reaction time, movement time and response time) of six to 10-year-old children with attention deficit/hyperactivity disorder (Beik *et al.*, 2018). After eight weeks of training, a significant reduction in symptoms of attention deficit /hyperactivity disorder was observed in 5-10-year-old children, and yoga treatment had a greater effect than neurofeedback and neurofeedback-yoga (Rashidipour *et al.*, 2017). Eight weeks of yoga training in 9- to 12-year-old girls with attention-deficit/hyperactivity disorder led to a significant increase in static balance with the upper leg and dynamic balance in different directions (Rasoolyar and Jalilvand, 2020). The prevalence of attention deficit/hyperactivity disorder is three times higher in boys than in girls. Yoga

training reduced anxiety disorders including panic attack and crowd-phobia, separation anxiety, social phobia, fear of physical harm, obsessive-compulsive and generalized-excessive anxiety in sufferers (Khayati *et al.*, 2021).

### **Memory function**

Although drug therapy is useful in improving the symptoms of schizophrenia, about 30% of patients are resistant to treatment. Eight weeks of yoga exercises were effective on the cognitive performance of schizophrenic patients by making changes in the subscales of sustained attention and memory performance (Ivandar and Mohammadi, 2019).

### **Body self-concept**

Aerobic and yoga training methods in 19-25-year-old female students significantly increased physical self-concept and components of strength and physical activity and coordination in the yoga group compared to the control group (Javadian Sarraf and Emami, 2008). The effect of 5 and 10 weeks of aerobic and yoga training on the components of physical self-description of female students aged 19 to 25 years causes a significant increase in the components of coordination and sports fitness at the end of 5 weeks of training, as well as the components of coordination and physical activity and strength at the end of 10 The week was practiced. In the yoga group, the components of sports fitness and strength at the end of 10 weeks of training were significantly higher than those of 5 weeks of training. In the yoga group, a significant increase in the components of coordination, physical activity and sports fitness is related to the effects of the first five weeks, and a significant increase in strength is related to the effects of the second five weeks of training (Javadian Sarraf and Emami, 2009). Investigating the effect of rhythmic yoga movements on the social interactions of mentally retarded children showed a significant improvement in all eight dimensions related to measuring the health of social skills in the Wayland

questionnaire (Ghanbari Hashemabadi and Saadat, 2010).

### **Visual and auditory reactions**

The effect of eight weeks of selected hatha yoga exercises on the visual and auditory reaction time of middle-aged women caused a significant reduction in the simple and selective reaction time of the intervention group. Yoga exercises were able to reduce the reaction time of middle-aged women, which was due to the increase in the ability to focus and pay attention as a result of increasing the level of awareness of the environment and oneself, through the implementation of yoga exercises (Kahrizi *et al.*, 2017).

### **Serotonin and dopamine**

Eight weeks of selected yoga exercises on serotonin and dopamine levels of non-athlete obese women led to a significant increase in serotonin and dopamine levels of the experimental group compared to the control group. Doing yoga exercises can have positive effects on some neurotransmitters effective in food intake and appetite behaviors in obese women (Karimi and Safapour, 2018).

### **Mental toughness**

The effect of yoga-based mindfulness intervention on mental toughness in athletes with different skill levels was investigated. The main effect of the intervention in the post-test was significant for the stubbornness variable and stability and control subscales, but the effect of skill level and their interactive effect were not significant. Also, in the pairwise comparison of pre-test and post-test for each group, it was observed that the mental toughness of the inexperienced and semi-skilled group had a significant improvement in the post-test compared to the pre-test. The effect of yoga-based mindfulness intervention on mental toughness and stability and control subscales in athletes was positive (Mir *et al.*, 2021).

### **Pain**

Breathing exercises with and without yoga had a significant effect on pain intensity, range of motion and quality of life of women with chronic neck pain in the post-test. The highest variability was related to the group of breathing exercises with yoga and the group of breathing exercises, respectively (Taghinezhad *et al.*, 2021). Breathing exercises with yoga were more effective than breathing exercises (Heidari *et al.*, 2016).

### **Multiple sclerosis**

Multiple sclerosis (MS) is a progressive disease that destroys the myelin sheath of nerve cells in the central nervous system. The most common side effects of this disease are double vision, tremors, muscle cramps, imbalance and walking disorder. Before and after yoga therapy, a significant difference has been observed in the general health status and patients' feelings about life (Najafi Dolatabadi *et al.*, 2011). Yoga can be used as a suitable and effective model to treat and reduce depression in patients with MS (Rahnama *et al.*, 2011). Physiological cost index of MS patients in selected aerobic exercise group and selected yoga exercise group has significantly decreased and this improvement was more evident in aerobic exercise group than selected yoga exercise group (Arastoo *et al.*, 2011). Central stability exercises and yoga can improve the balance of people with MS and both types of exercise have the same effect on improving the balance of patients (Shahrjerdi *et al.*, 2015). TH17 cells play an important role in MS symptoms and the effects of interleukin-17 (IL17). It is known in the process of demyelination of nerve cells. Eight weeks of yoga practice by reducing serum levels of IL-17 plays an important role in helping to improve the condition of patients with MS (Zahedi and Avandi, 2019). Balance significantly reduces fatigue and physical pain and ultimately helps to improve social functioning and to eliminate stress and anxiety in these patients. It also has a positive effect on the quality of life and improvement of their

mood and improvement in the BDI score. At the same time, yoga reduces the level of cortisol, modifies the level of ACTH and is effective on their psychological well-being (Karimi *et al.*, 2019). Compared to group psychotherapy, yoga significantly reduces the fatigue score and improves the quality of life score (Rezaeian Langroodi *et al.*, 2020). Twelve weeks of yoga practice had a significant effect on the amount of electromyography signal resulting from muscle fatigue and balance in male and female patients with MS, and improvement in balance indicators was observed (Ilbeigi *et al.*, 2020).

### **Anaerobic threshold**

Performing eight weeks of Pilates and yoga exercises on the respiratory gas exchange indices of young women at the moment of the anaerobic threshold showed that despite the changes in the respiratory indices, only changes in oxygen consumption at the moment of reaching the anaerobic threshold and changes before and after eight weeks of RER in Yoga group was significant, while the changes of VT, VE, EQO<sub>2</sub>, EQCO<sub>2</sub>, PETO<sub>2</sub>, PETCO<sub>2</sub> and VE/VCO<sub>2</sub> were not significant. Eight weeks of yoga and pilates activities cause positive but insignificant changes in some indicators of the cardiorespiratory system in women, so that the amount of oxygen consumed, flow volume and minute ventilation increase at the moment of reaching the anaerobic threshold, and the extent of this effect in Yoga is more than Pilates (Lamei Ramandi, 2017).

### **Insomnia**

Yoga exercises have been effective in improving the quality of sleep and can be easily taught and performed at home without the need for special facilities (Kiani *et al.*, 2014).

### **Muscles**

Regular yoga exercises in healthy non-athletic working women caused a significant increase in flexibility factors: trunk, sit and brush, and anaerobic power of leg muscles, but there was no significant difference in hand strength. Without having any adverse side effects, yoga exercises increase the flexibility of the joints and the anaerobic power of the leg muscles and also improve physical fitness (Izadpanah *et al.*, 2009). 20 weeks of selected cyclical yoga exercises in adult women. It showed a significant difference in the thickness of the right abdominal muscles, transversus, internal oblique, external oblique, psoas muscles and vertebral column straightener. It seems that two cycles of strengthening the central muscles of the cyclic yoga style have a positive effect on the hypertrophy of this muscle group (Kharat Ahari *et al.*, 2018).

### **Breathing and heartbeat**

Eight weeks of yoga practice on respiratory indices and heart rate of non-athletes showed a statistically significant decrease in breathing rate and resting heart rate in the experimental group, but a statistically significant increase in exhalation volume with pressure in the first second in this group. Also, there was no change in the parameters of vital capacity, maximum expiratory flow, maximum inspiratory flow and lung volume. The result of this research showed that 8 weeks of yoga practice increases the vital capacity and volume of exhalation with pressure in the first second and also decreases the heart rate and breathing rate at rest (Sharifi *et al.*, 2015).

### **Blood fat**

Plasma levels of triglycerides, total cholesterol, low-density lipoprotein, fasting blood sugar and insulin resistance index in middle-aged women doing yoga and aerobics with excess weight are significantly lower and high-density lipoprotein levels are significantly higher than the low-weight group. It has

been mobility. However, the plasma triglyceride and total cholesterol levels of yoga athletes were significantly lower than those of aerobic athletes. Both yoga and aerobic exercise patterns are effective in reducing the risk factors of cardiovascular and metabolic diseases, but the yoga exercise pattern was more pronounced than the aerobic exercise pattern in reducing the cardiometabolic risk factors of triglycerides and total cholesterol in middle-aged women (Nazem *et al.*, 2018).

### **Diabetes**

A twelve-week period of selected yoga exercises significantly improved the blood sugar level of patients with type II diabetes, while this difference was not significant in weight and BMI variables (Marandi *et al.*, 2012). Glucose, insulin and Triglyceride of women with type 2 diabetes under yoga training showed a significant decrease compared to the control group, while the level of leptin, HDL-C, LDL-C and TC did not show a significant change (Habibi and Marandi, 2013). Also twelve weeks of training Yoga caused a significant decrease in the concentration of fasting glucose, glycosylated hemoglobin, LDL, VLDL and a significant increase in the concentration of HDL in women with type 2 diabetes (Nazari Gilannejad *et al.*, 2014). A period of yoga exercises caused a significant difference in the levels of FBS, IIh.p.p, HbA1c, VO<sub>2</sub>max and skin fat percentage in the yoga group compared to the control group (Rahimi *et al.*, 2014). In addition to diet and drugs, yoga exercises can be considered as intervening factors in the process of improving diabetes (Rahimi *et al.*, 2014). Four weeks of yoga exercises and walking on the quality of life of people with type 2 diabetes. It improved physical performance, general health, vitality and mental health compared to the control group. Yoga exercise was more effective than walking in improving the general health aspect of quality of life, and walking was more effective than yoga in improving other

aspects of quality of life. Also, the stress, anxiety and depression of women with type 2 diabetes improved (Azimi *et al.*, 2015). Also, 12 weeks of aerobic training also reduced cortisol hormone and improved stress in women with type 2 diabetes. Both yoga and aerobic exercises can have beneficial effects on the hormonal system and stress of diabetic women, but these effects are more and more beneficial after yoga practice (Nazari Gilannejad *et al.*, 2017). Eight weeks of yoga exercise along with DASH diet (low calorie, low sugar and high fiber) on the plasma levels of vitamin D and calcium in women with gestational diabetes caused a significant decrease in the level of vitamin D in the exercise group and a significant increase in the calcium level of the DASH group and There was a significant decrease in fasting blood sugar in the combined and DASH groups. The decrease in fasting blood sugar in the combined group was significantly higher than in the DASH group (Yashizadeh and Galedari, 2021).

### ***Heart failure***

Yoga exercises increase flexibility and muscle strength, improve blood circulation and oxygen absorption, and the functioning of the hormonal system, and make a person feel healthy. Yoga exercises improved sleep quality and anxiety in patients with chronic heart failure. There is no significant difference between the average score of mental quality, late falling asleep and sleep disorder before and after doing yoga exercises in patients with chronic heart failure, but there is no significant difference in the average score of sleep adequacy, sleep period, use of sleeping medication and incomplete performance. During the day, there is a significant difference (Hassani *et al.*, 2016).

### ***Coronary artery bypass surgery***

Among the most important adverse consequences after coronary artery bypass surgery (CABG) are irregularity and disturbance in heart rate and heart rate variability. The combination of long-term yoga

exercises and rehabilitation has beneficial effects on heart rate variability (HRV) in post-CABG patients. By improving the HRV index, the mortality rate related to heart rate changes and autonomic disorders decreases (FakhariRad *et al.*, 2019).

### ***Breast cancer***

Movement and sensory disorders, lymphedema in the upper limbs and self-esteem reduction are one of the problems after mastectomy surgery. Performing yoga and Pilates exercises in women with breast cancer following mastectomy improves flexion, extension, shoulder internal and external rotation, elbow flexion and extension, flexion, extension, deviation towards the elbow and lower elbow, reducing edema. Arm and forearm and pain level and there were no significant difference between the two groups. Yoga and Pilates exercises were effective in reducing the side effects of mastectomy (decreased range of motion, edema and pain) (Ghorbani and Sokhangouyi, 2012). Also, three common exercise methods of yoga, Pilates and active in women following mastectomy surgery were investigated. After yoga and Pilates exercises, the amount of flexion, extension, internal and external rotation of the shoulder, flexion and extension of the elbow, flexion, extension, deviation towards the upper elbow and lower elbow, wrist and body self-concept increased significantly and the circumference of the arm and forearm decreased significantly. While flexion, extension, internal and external shoulder rotation, flexion, elbow extension and wrist flexion and body self-concept increased significantly in the common active group. In general, yoga and Pilates exercises were more effective in reducing the side effects of mastectomy, including increasing the range of motion of the upper limbs and body self-concept and reducing edema than the common active method (Ghorbani and Sokhangouyi, 2014). Women recovered from breast cancer are exposed to increased insulin resistance and increased blood sugar due to the complications of chemotherapy and surgery and reduced mobility. Twelve weeks of combined Pilates

and yoga exercises on glucose homeostasis and insulin resistance in women recovered from breast cancer caused a significant decrease in weight, body mass index and glycosylated hemoglobin, but had no significant effect on fasting blood sugar variables and insulin resistance. The positive effect of this training method on weight loss and glucose homeostasis in women recovered from breast cancer was shown, and the combined exercises of yoga and pilates are suitable training methods for these patients (Ebrahimpour *et al.*, 2020). Transpersonal therapy (spiritual therapy, yoga-meditation) is a multifaceted intervention method for breast cancer survivors. The use of this method aims to reduce the fear of recurrence in breast cancer survivors. After yoga, the mean scores of fear of relapse were significantly lower than before the intervention. Also, the mean scores of the components of fear of recurrence, including: stimuli, intensity, adaptability, performance disorders, were significantly different in the experimental group and the control group, and only the self-confidence component was not significantly different before and after the intervention (Sajadian *et al.*, 2021).

### ***Leukemia***

A person suffering from blood cancer experiences states of despair and despair. One of the effective treatments is laughter-therapeutic yoga (Kataria), which requires stimulation through laughter and relaxation through yoga. Kataria's laughter yoga training has reduced the feelings of hopelessness and loneliness of children with leukemia. Laughter yoga exercises have significantly reduced the scores of feeling hopeless and lonely (Sabori *et al.*, 2018).

### ***Radiotherapy***

Yoga in breast cancer patients undergoing radiation therapy has increased the average overall quality of life score after the intervention. After the intervention, a significant difference was observed in the scales of fatigue, nausea and vomiting, pain, loss of appetite,

treatment side effects and breast symptoms. The quality of life of breast cancer patients undergoing radiation therapy is improved by yoga (Yazdani *et al.*, 2014). Yoga can be used as an effective, convenient and low-cost method to improve the quality of life of this group of patients (Yazdani *et al.*, 2015).

### ***Hemodialysis***

Hemodialysis patients experience high levels of mental stress, anxiety and depression. Hatha yoga exercises reduce the stress, anxiety and depression of these patients. Low-cost, simple and fun Hatha Yoga exercises improve the quality of life of hemodialysis patients (Tayyebi *et al.*, 2011; Mahmoudi *et al.*, 2018). Despite the progress made regarding hemodialysis patients during the last few decades, the adequacy of dialysis in these patients is less than its normal value. Hatha yoga exercises in hemodialysis patients significantly increased the adequacy of dialysis. Hatha yoga exercises have a positive effect on the sleep quality of hemodialysis patients (Babahaji, 2012).

### ***Parturition***

The postpartum period includes a series of unique events that are often stressful and exhausting and can lead to specific postpartum concerns, such as personal appearance concerns, postpartum weight gain, baby health, Interpersonal relationships and general care of babies lead. According to the report of the World Health Organization, 20% of women in developed countries face psychological problems after giving birth. Yoga exercises significantly increased perceived social support in the intervention group. The average perceived social support in working women was higher than that of housewives. There was no significant relationship between women's age and perceived social support (Romina *et al.*, 2021).

### ***Primary dysmenorrhea***

Primary dysmenorrhea and painful menstrual cramps without a physical cause are among the most common



complaints in gynecology. Eight weeks of aerobic exercise and yoga have led to a significant reduction in pain intensity, duration of pain and reduction in the amount of medication. There was no significant difference between the aerobic and yoga groups in terms of pain intensity and pain duration, but there was a significant decrease in the amount of painkillers used in the yoga group compared to the aerobic exercise group (Siahpour *et al.*, 2013).

### ***Asthma***

One of the complementary treatments to control asthma is yoga. Yoga breathing exercises in 5-11-year-old children with asthma caused a significant increase in the mean asthma control score (Sabeti *et al.*, 2019).

### ***Intestinal inflammation***

The results indicated the effect of yoga on positive emotions and cognitive regulation of emotions in people with inflammatory bowel disease and it can be used as an important and key intervention along with drug treatments in inflammatory bowel patients (Ajami *et al.*, 2021).

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### ***Psoriasis***

Psoriasis patients experience a wide range of psychological problems including depression and anxiety in addition to physical symptoms. Yoga exercises in patients with psoriasis led to a significant reduction in anxiety and depression scores (Jalilvand *et al.*, 2021).

### ***Parkinson***

Parkinson's disease is one of the most common disorders of the central nervous system, which causes slowness of movements, tremors, postural instability, loss of balance, and autonomic nervous system disorders. Laughter yoga is one of the complementary treatments and a combination of yoga stretching and breathing movements along with laughter. Eight weeks of laughter yoga exercises in female patients with Parkinson's disease caused a significant improvement in the movement performance of the patients. The motor function of the patients improved by about 2% (Keykhahoseinpoor *et al.*, 2013).

### ***Polycystic ovary syndrome (PCOS)***

Yoga is one of the recommended sports for this disease. Performing six weeks of yoga exercises in infertile women with PCOS had a significant effect on quality of life scores and items such as excess hair, weight, acne, concern about fertility status, emotional feeling, menstrual disorder and total score (Bahrami *et al.*, 2019).

### ***Down syndrome***

Down syndrome is one of the most common genetic diseases with mild to moderate mental retardation. A training course of Super Brain Yoga in male Down syndrome children showed that these exercises did not have a significant effect on increasing fluid intelligence, spatial visual perception and static balance, but had a significant effect on children's academic progress (Mousavi *et al.*, 2019).

### ***Osteoarthritis***

Yoga and resistance exercises in patients with knee osteoarthritis improved the quality of life and muscle strength and showed favorable effects on the signs and symptoms caused by this condition (Mazloun and Sobhani *et al.*, 2016).

### ***Osteoporosis***

The amount of mineral density of the whole lumbar vertebrae of postmenopausal athletes is significantly higher than their non-athletes counterparts. Carrying out yoga and walking sports programs by postmenopausal women can increase the mineral density of the lumbar vertebrae and as an effective non-pharmacological method, prevent the decrease of mineral density (Farazmand *et al.*, 2013).

### ***Aging***

Balance exercises in water, mental exercises and combined exercises (mental and balance in water) have increased the balance of healthy elderly men. Possible reasons include increasing the strength of the subjects' lower limbs, facilitating neuromuscular control; increasing muscle synergy, exerting pressure on the neuromuscular system, and inhibiting the spontaneous process (Hosseini *et al.*, 2010). Yoga techniques reduce the indicators of mental disorders in women. Aged and has beneficial effects in reducing psychological manifestations of depression, anxiety, physical complaints and interpersonal sensitivity (Mousavi *et al.*, 2013). Mental exercise in elderly men aged 60 to 80 living in a nursing home improved the physical conditions, but it did not have a significant effect on the mental condition and overall score of the quality of life of the elderly men (Karami *et al.*, 2014). Aerobic exercises and yoga have a positive effect on memory. General and dynamic balance of elderly men (Irandoost *et al.*, 2014). Six weeks of Hatha Yoga exercises had a significant positive effect on static balance with eyes open and closed dynamic balance, agility, upper and lower limb muscle strength, upper and lower limb flexibility. These positive effects include improving static and dynamic balance, agility, strength in upper and lower limbs, and flexibility of upper and lower limbs (Koohboomi *et al.*, 2015). Yoga exercises lead to a significant increase in social and emotional adaptation in men and women has become elderly, so yoga can be used to increase the adaptability of the elderly in nursing

homes. Weakness is in maintaining balance. The most effective method for improving the dynamic balance of the elderly was determined to be Pilates, yoga and water exercise, respectively. (Yousefi Afrashteh and Hosseini, 2016) Twelve weeks of yoga practice has no effect on the balance of elderly women under cognitive and motor tasks. But on the other hand, Pilates and yoga exercises have a meaningful effect on it. Also, the effect of yoga exercises on balance under cognitive function has been significantly higher (Alizadeh Khanghah *et al.*, 2017). Laughter yoga practice can be used as a complementary treatment, along with other treatment methods, to reduce anxiety and improve the sleep quality of the elderly with Parkinson's disease (Memarian *et al.*, 2017). Yoga for physical weakness and cognitive impairment, balance and selective attention are useful for elderly women (Taheri *et al.*, 2018). Poor balance in the elderly people leads to their falls. Yoga, as a type of exercise program effective on balance, can improve this weakness resulting from aging (Babaei Khorzoghi *et al.*, 2019). Three types of massage, selected yoga exercises and a combination of massage and yoga in elderly women. Depressed people improved their self-esteem, and the combined exercise program of massage and yoga had the greatest effect (Piri *et al.*, 2019). Also, an eight-week course of massage and yoga increased the self-esteem scores of elderly women (Piri and Ghasemi, 2020). Both pilates and yoga exercises improved the mental health and quality of life of sedentary elderly women, and yoga exercises were more effective (Nazari *et al.*, 2019). Selected yoga and Kouk Sun Do (KSD) exercises have been able to improve balance, physical flexibility and muscle strength in the lower limbs of elderly women, and probably by increasing the efficiency of the motor system, nervous system and strengthening the mechanism. The deep receptors of muscles and joints have improved the balance and performance of the elderly women (Taheri *et al.*, 2019). Also, an eight-week course of massage and yoga increased the self-

esteem scores of elderly women (Piri and Ghasemi, 2020).

### Conclusions

Yoga exercises cause significant improvement in all eight dimensions related to measuring physical, mental, social health and overall physical and mental health components. This improvement in health level has been seen in all age groups, in both genders and in all educational levels, and no significant difference has been found in terms of age, gender and educational level. The most important benefits of yoga are: reducing stress and anxiety, reducing symptoms of depression, better balance and flexibility, improving sleep, increasing immunity due to stimulation of the lymphatic system, eliminating toxins and heavy metals, increasing strength and endurance, improving blood flow, better digestive function (including reducing symptoms of irritable bowel syndrome), reducing symptoms related to pregnancy and postpartum depression, chronic pain such as back pain or frequent headaches, improving physical condition and reducing symptoms of personality disorder.

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