Scholar Publishing Group
International Journal of Public Health and Preventive Medicine
https://doi.org/10.38007/IJPHPM.2021.020103
ISSN 2789-8377 Vol. 2, Issue 1: 24-36

Weiqi Training on Patients' Brain Health Recovery Module under Ultra-high-power Biological Microscope

Lei Zhang*

State Grid Energy Research Institute, Beijing, China

230359131@qq.com

**corresponding author*

Keywords: Biological Microscope, Weiqi Training, Brain Health, Neurotrophic Factor

Abstract: The complexity of human brain structure can be observed under ultra-high-power biological microscope, and the brain differences of people of different occupations are often greater than those of people of the same occupation. The reason is that different activities stimulate the brain differently. Similarly, Weiqi, as an activity beneficial to the brain, also has the function of improving the brain. However, Weiqi training is usually regarded as an entertainment activity and its medical function is often neglected. The purpose of this article is to study the effect of Weiqi training on the brain health recovery of patients. Through literature research and investigation, the function and brain structure of Weiqi are briefly introduced, and the types of brain diseases and neurotrophic factors are analyzed. The classification of brain diseases mainly includes brain injury, brain tumor, cerebrovascular disease, scalp and skull diseases, intracranial infectious diseases, functional diseases, etc. The effects of Weiqi training on the brain health recovery of patients were compared through comparative experiments. The results showed that 40 minutes of go training per day increased the BDNF concentration of mild Alzheimer's patients by 0.52μg/L, and 80 minutes of go training per day increased the BDNF concentration of mild Alzheimer's patients by 0.75μg/L. The 40-minute go training every day makes 52.5% of the patients feel better, and the 80-minute go training every day makes 60% of the patients feel better. Moreover, Weiqi training is of great help to relieve anxiety and depression of patients.

1. Introduction

Weiqi is not only the oldest art of chess and cards, but also the art of chess and cards with the greatest space for calculation and problem solving. In 1996, AI Deep Blue defeated the champion of human chess with a simple and exhaustive algorithm. After 20 years of development, AI Alpha go

was able to defeat human beings. The reason is that the exhaustive method of simple calculation is not applicable to go calculation [1]. Weiqi is too complicated, with a possibility of 3 to the 361 power, exceeding the sum of all atoms in the universe. Alphago differs from Deep Blue in that it must form a "strategy library" and can only play go if it can produce all kinds of advanced game strategies like human beings. Therefore, Weiqi is a rare game that combines strategy and computation to train basic human thinking and strategy. The thinking it can train includes (but is not limited to) the following aspects [2]. Working memory: the ability to process several symbols simultaneously in the brain; Space rotation ability: that is, the ability to turn over a part of the chess game through imagination; Mind Theory: Ability to reason about other people's strategies, etc. These basic thinking abilities will become the most favorable thinking tools for children in their future academic studies, empathy and competition in the future society [3].

In the past literature, several studies have found the changes of Weiqi to thinking and cognitive ability and brain. The earliest brain imaging study was fMRI study from China University of Science and Technology and University of Minnesota in 2003. In this study, six amateur Weiqi players were asked to perform thinking activities in magnetic resonance apparatus to discover brain regions activated by Weiqi activities [4]. The results showed that prefrontal lobe, parietal lobe, visual cortex, temporal lobe and cingulate region were activated. These areas form a complex network, which is used to deal with each step of go confrontation: spatial perception, image imagination, attention, working memory, acquisition of situational memory, and problem solving. However, there is no control group in this experiment and there is no control of large factors [5]. Researchers at the University of Manchester in the UK have released a research plan that they believe Weiqi will enhance children's executive function and emotional control. At the same time, Weiqi also has an improvement effect on children's attention deficit. After 16 weeks of training, the right prefrontal cortex of ADHD children showed great improvement in Theta and beta band brainwaves [6].

Zhang found significant changes in brain regions of patients with major depression, such as frontal lobe, hippocampus, temporal lobe, thalamus, striatum and amygdala. Brain connections include structural connections and functional connections, which reflect diseases from different angles [7]. Stern combines memory tests, brain imaging and sleep electroencephalography to study the interaction between brain structure, sleep loss and cognitive ability. It was found that the individual differences in human hippocampal anatomy explain many differences in learning disabilities after sleep loss [8]. Greene proved the evidence of brain structural abnormalities in children and adolescents with TS, consistent with and extending previous findings, and pointed out the new target areas and research directions of TS [9]. Kantarci found that estrogen therapy in postmenopausal women is related to ventricular enlargement and increased white matter hyperintensity, but not cognitive decline [10]. Muhlert explored whether the interindividual variation of negative urgency level of traits is related to the interindividual variation of regional gray matter volume. Smaller volumes of dorsal medial prefrontal cortex and right temporal lobe were found, which were previously associated with emotion assessment, emotion regulation and emotion-based decision making, and with higher levels of nervous impulses [11]. Jahanshad found that the first-degree relatives of subjects with cerebral hypoplasia showed significant cerebrovascular measurements compared with intracranial pressure, including higher intracranial volume, cortical and cerebellar gray matter, total brain surface area and ventricular volume [12].

In brief, this article discusses the effect of Weiqi training on the brain health recovery of patients. Specifically, the main research content of this paper is roughly divided into five parts: The first part is the introduction part, which aims to make a systematic overview of the main research content of

this paper from the aspects of research background, research purposes, research ideas and methods; The second part is the theoretical basis, which introduces the structure and function of the brain in detail and systematically, and also introduces the types of brain diseases. The third part is related research, through inquiring data and carrying out related experiments, expounds Alzheimer's disease and neurotrophic factors. The fourth part is the analysis of the data, through specific survey data and research results, comparing the impact of Weiqi training on patients' brain health recovery. The results showed that 40 minutes of go training per day increased the BDNF concentration of mild Alzheimer's patients by 0.52μg/L, and 80 minutes of go training per day increased the BDNF concentration of mild Alzheimer's patients by 0.75μg/L. The 40-minute go training every day makes 52.5% of the patients feel better, and the 80-minute go training every day makes 60% of the patients feel better. Moreover, Weiqi training is of great help to relieve anxiety and depression of patients. The fifth part is the summary and suggestion part of this article, which is the summary of the results of this article.

2. Proposed Method

2.1. Functional Structure of Brain

The brain is the most advanced part of the nervous system and consists of left and right cerebral hemispheres with transverse nerve fibers connected between the two hemispheres. Each hemisphere includes: cerebral cortex (cerebral cortex): a layer of gray matter on the surface (cell body concentrated part of nerve cells). There are many concave grooves (fissures) on the surface of human brain, and there are bulged loops between the grooves (fissures), thus greatly increasing the area of cerebral cortex. The human cerebral cortex is the most developed organ of thinking, which dominates all activities in the body and regulates the balance between the body and the surrounding environment. Therefore, the cerebral cortex is the material basis of higher nervous activity. The brain includes telencephalon and diencephalon, and telencephalon includes left and right cerebral hemispheres. Telencephalon is the main part of the higher nervous system of vertebrate brain, which consists of left and right hemispheres. In human beings, telencephalon is the largest part of the brain and is the higher nerve center that controls movement, produces sensation and realizes higher brain functions. The telencephalon of vertebrates is the swollen part of the thin wall at the head end of the medulla when it is embryonic, and later develops into two cerebral hemispheres, mainly including cerebral cortex, cerebral medulla and basal ganglia. The cerebral cortex is gray matter coated on the surface of the telencephalon and is mainly composed of the cell bodies of neurons. The deep part of cortex consists of medulla or white matter formed by nerve fibers. In the medulla there are gray matter masses or basal nuclei, of which striatum is the main part.

The cerebral cortex is the most advanced center of the central nervous system. The functions of each cortex are complex and are not only related to various senses and movements of the body, but also closely related to language and writing. According to the cell composition, arrangement and architecture of cerebral cortex, the cortex is divided into several regions. Cortical motor area: Located in the central anterior gyrus (area 4), it is the center that dominates the contralateral somatic voluntary movement. It mainly receives proprioceptive impulses from the contralateral skeletal muscles, tendons and joints to feel the body's position, posture and motor sensation, and emits fibers, namely pyramidal bundles, to control the voluntary movement of the contralateral skeletal muscles. Return to cortical premotor region: located before the central anterior gyrus (region 6), it is an extrapyramidal cortical region. It sends fibers to thalamus, basal ganglia, red nucleus, substantia nigral, etc. It is related to the coordination of joint movements and postures, and

also has some functions of autonomic nerve cortex center. Cortical oculomotor region: Located in the 8-axis frontal lobe and the 19-axis occipital lobe, it is the same gaze center for eyeball movement and manages the simultaneous gaze of the two eyeballs to the opposite side.

Telencephalon is the most advanced part of the central nervous system. The telencephalon is composed of about 14 billion cells, weighing about 1400 grams, the thickness of cerebral cortex is about 2-3 millimeters, and the total area is about 2200 square centimeters. It is estimated that about 100,000 brain cells die every day (the more brain cells die; the more brain cells die). The capacity of a person's brain to store information is equivalent to 10,000 libraries with 10 million books. The human brain is an organ of thought and consciousness developed in the long-term evolution process. The shape of the cerebral hemisphere and the lobulated left and right cerebral hemispheres are connected by the corpus callosum. The hemispheric lacunae are called lateral ventricles, which communicate with the third ventricle through the interventricular foramen. The lateral fissure of the brain starts from the bottom surface of the hemisphere and turns to the lateral surface from the front lower part to the back upper part. There is an occipital fissure on the inner side of the hemisphere from the upper back to the lower front. The talus fissure connects the occipital fissure from the rear forward to the occipital pole. These sulci divide the cerebral hemisphere into five lobes: frontal lobe before and above the central sulci; Temporal lobe below lateral fissure; Occipital lobe behind parietal occipital fissure; The parietal lobe above the lateral fissure, between the central sulcus and the parietal occipital fissure; And the insula deep in the lateral fissure.

The diencephalon consists of thalamus and hypothalamus. Thalamus is in contact with cerebral cortex, brain stem, cerebellum, spinal cord, etc. It is responsible for sensory relay and controlling movement, etc. Hypothalamus is related to maintaining body constancy, controlling autonomic nervous system, emotion, etc. The brain is your own brain. Scientific research has proved that the brain is divided into left hemisphere and right hemisphere. The left hemisphere is responsible for all activities on the right side of the human body. Generally, the left brain has the functions of language, concept, number, analysis, logical reasoning, etc. The right hemisphere is responsible for all activities on the left side of the human body. The right brain has functions of music, painting, spatial geometry, imagination, synthesis, etc. People's left and right hemispheres develop unevenly. Statistics show that the vast majority of people have developed left hemispheres (about half of them are more balanced). Ten percent of the people in the world are left-handed, that is, the right brain is relatively developed. However, the different levels of development of the left and right brains imply many secrets of your traits and talents: brain cells that understand mathematics and language are concentrated in the left hemisphere; Brain cells that display emotions and appreciate art are concentrated in the right hemisphere.

People with well-developed right hemisphere: because the right hemisphere is the ancestral hemisphere and the left hemisphere is an extension of the right hemisphere (it plays an auxiliary role in reducing the pressure of the right hemisphere and the subconscious mind is used to correct and repair each other), it is likely to be stronger in perception and imagination. It is possible to think about problems and deal with things more quickly. Moreover, perception, spatial sense and the ability to grasp the overall situation are likely to be stronger. He is relatively more agile in various movements. The most important contribution of the right brain is creative thinking. The right brain does not rigidly adhere to local analysis, but looks at the overall situation in a unified way, making bold guesses and jumping forward to reach an intuitive theory. In some people, intuitive thinking has even become a prophet's ability to predict future changes and make important decisions in advance. Be careful, patient and careful in doing things. Be cautious in making friends; Love to learn, be interested in knowledge and things.

People with developed left hemisphere: the memory circuit of left hemisphere is low speed memory, while that of right hemisphere is high speed memory. Left hemisphere memory is a kind of "bad memory", while right hemisphere memory is amazing. It has the ability of "never forgets anything". People's left brain is relatively active when dealing with simple language problems. People with developed left brain are more logical and organized in handling things. The developed left brain is more active in social occasions and is good at judging various relationships and causes and effects. The left brain is well developed, good at statistics and has a strong sense of direction. The left brain is well developed and good at organization. The left brain is well developed and good at technical and abstract work.

2.2. Classification of Brain Diseases

The classification of brain diseases mainly includes craniocerebral injury. Brain tumor; Cerebrovascular diseases; Lesions of scalp and skull; Intracranial infectious diseases; Functional diseases, etc.

(1) Craniocerebral injury

Craniocerebral injury begins with the mechanical deformation of skull, meninges, cerebral vessels and brain tissue caused by external force acting on the head. The type of damage depends on the location and severity of mechanical deformation. Primary brain injury is mainly the injury of nerve tissue and cerebral vessels, which is manifested by nerve fiber breakage and efferent dysfunction, different types of nerve cell dysfunction and even cell death. Secondary brain injury includes cerebral ischemia, cerebral hematoma, brain swelling, cerebral edema, increased intracranial pressure, etc. These pathophysiological changes are caused by primary injury, which in turn can aggravate the pathological changes of primary brain injury.

Craniocerebral injury is a common trauma, which can exist alone or in combination with other injuries. The classification can be divided into scalp injury, skull injury and brain injury according to the anatomical parts of the brain, and the three can coexist. Scalp injuries include scalp hematoma, scalp laceration and scalp avulsion. Skull fracture includes craniofacial linear fracture, skull base fracture and concave fracture. Brain injury includes concussion, diffuse axonal injury, brain contusion and laceration, brain stem injury. According to the time and type of injury, it can be divided into primary craniocerebral injury and secondary craniocerebral injury. Closed craniocerebral injury and open craniocerebral injury are classified according to whether the contents of cranial cavity communicate with the outside world. According to the degree of injury, it can be divided into four types: light, medium, heavy and extra heavy. The injury condition should be judged from the following aspects: state of consciousness, vital signs, ocular signs, dyskinesia, sensory disorders, cerebellar signs, head examination, cerebrospinal fluid leakage combined with injury. In addition, factors affecting judgment should be considered, such as drunken injury, taking sedative drugs, strong dehydration, shock, etc. In addition to the injury mechanism and clinical signs of patients, the early diagnosis of craniocerebral injury should also select a fast and accurate examination method, and CT scan is the first choice.

(2) Brain tumor

Intracranial tumors, also known as brain tumors and brain tumors refer to tumors of the nervous system occurring in the cranial cavity, including tumors originating from neuroepithelium, peripheral nerves, meninges and germ cells, lymphoid and hematopoietic tissue tumors, craniopharyngiomas and granulosa cell tumors in Sella turcica region, and metastatic tumors. According to its origin, it can be divided into primary intracranial tumors (tumors originating from

intracranial tissues) and secondary intracranial tumors (tumors transferred from distant parts of the body or extending from adjacent parts to intracranial tumors). According to its biological behavior, it can be divided into benign intracranial tumors and malignant intracranial tumors. The environmental factors of the onset include physical, chemical and biological factors, such as ionic rays (e.g. X-ray) and non-ionic rays (e.g. radio frequency waves and low frequency electromagnetic fields), pesticides, benzene and other organic solvents, nitrosamine compounds, tumor-causing viruses and other infectious factors, some of which have not yet been determined. The oncogenic viruses that have been basically identified are mainly human papillomavirus JC type (high-grade astrocytoma, small brain medulloblastoma), EB virus (central nervous system lymphoma), human adenovirus (embryonic tumor, such as neuroblastoma, medulloblastoma, medulloblastoma or neuroblastoma), SV40 virus (intracranial sarcoma tumor).

(3) Cerebrovascular diseases

Cerebrovascular diseases are a group of diseases that occur in brain vessels and cause brain tissue damage due to intracranial blood circulation disorders. The "cerebrovascular accident", "stroke" and "apoplexy" mentioned in our life all belong to cerebrovascular diseases. Clinically, most of the cases are acute, mostly middle-aged and elderly patients with hemiplegia and speech disorders. Acute cerebrovascular diseases are generally divided into ischemic and hemorrhagic types. Hemorrhagic cerebrovascular diseases are common in the following two types: cerebral hemorrhage: cerebral hemorrhage is usually caused by the rupture of microaneurysms formed by arteriosclerosis, resulting in corresponding clinical manifestations of intracerebral hematoma. The common signs are hemiplegia, hemiparesis and hemianopia on the opposite side of the lesion. Sometimes, the same gaze paralysis occurs. Signs of brain stem or cerebellum damage will appear if the hematoma occurs in pontine or cerebellum, and signs of cerebral rigidity and brain stem damage will appear if the hematoma breaks into ventricle. Subarachnoid hemorrhage: Severe headache, vomiting and meningeal irritation are typical clinical manifestations due to congenital aneurysm or arteriovenous malformation rupture and blood entering subarachnoid cavity. Cerebrospinal fluid pressure in hemorrhagic cerebrovascular diseases often rises, and the appearance is pink (cerebral hemorrhage) or bloody (subarachnoid hemorrhage). High density hematoma image can be seen on head CT, with edema zone around. If it breaks into ventricle or subarachnoid space, high density shadow can be seen in ventricle and subarachnoid space. The treatment principle is to reduce intracranial pressure and maintain acid-base balance in acute stage. For subarachnoid hemorrhage, cerebral angiography should be performed; for aneurysm or arteriovenous malformation, surgical treatment should be performed.

Focal damages caused by cerebral blood supply disorders are common in the following ways. Transient ischemic attack (TIA): Most of the small fragments of atherosclerotic plaque are scattered in the blood or micro emboli, which enter the brain circulation to cause focal small infarction. Transient hemiplegia, monoplegia, loss of sensation, aphasia, blindness, etc. occur. Symptoms and signs disappear within 24 hours, but they can recur. Cerebral thrombosis: focal cerebral infarction caused by cerebral atherosclerosis, stenosis of lumen and obstruction of blood flow, with corresponding symptoms and signs, such as hemiplegia, aphasia, etc. Most cases occur at night or during rest, and the peak is 60 ~ 70 years old. Symptoms can worsen within hours or even 1-2 days, and gradually recover later. Cerebral embolism: blood clots (thrombus fragments) outside the brain or air, fat, parasite eggs, etc. enter the brain with blood flow, causing acute embolism, forming focal infarction, and presenting corresponding symptoms and signs, such as hemiplegia, monoplegia, aphasia, etc. Most of them are found in young and middle-aged patients with rheumatic heart disease and mitral valve diseases. Their valve vegetations fall off and become emboli, causing

cerebral embolism. Cerebral CT examination of ischemic cerebrovascular disease shows low density infarcts, TIA may be normal, lacunar low density infarcts can also be seen. The therapeutic principle is to use vasodilators, calcium antagonists, antiplatelet agents, etc.

(4) Scalp and skull lesions

Scalp injury is the most common type of primary craniocerebral injury, which ranges from minor abrasion to avulsion injury of the whole scalp. Its significance lies in that doctors can judge the location and severity of craniocerebral injury according to this. Scalp injuries are often combined with skull and brain tissue injuries of different degrees, which can become the invasion portal of intracranial infection and cause secondary intracranial lesions. Scalp is the surface barrier of skull and brain against external violence. It has great elasticity and toughness, and has strong resistance to pressure and tension. Therefore, violence can be introduced into the brain through the scalp and skull, causing brain tissue damage, while the scalp is intact or slightly damaged. The structure of scalp is obviously different from that of skin in other parts of the body. The surface layer has dense hair, rich blood supply and dense subcutaneous tissue structure. Short fiber septa connect the surface layer, subcutaneous tissue layer and hat-shaped aponeurosis layer together. The trinity is not easy to separate, which is rich in fat particles and has a certain protective effect. There is a loose connective tissue gap between the capular aponeurosis and the skull periosteum, which allows the scalp to slide, thus having the function of buffering external violence.

3. Experiments

3.1. Experimental Content

In order to study the effect of Weiqi training on the brain health recovery of patients. In this experiment, mild Alzheimer's disease was selected as the research object to observe the influence of Weiqi on them. Alzheimer's disease, commonly known as "senile dementia", is one of the most common brain diseases occurring in the elderly. The brain cells of the patient will rapidly deteriorate and the brain function will decline, which is not a normal aging process. The patient's memory and other abilities will decline, and his emotion and personality will also change, which will eventually seriously affect his daily life ability. Alzheimer's disease generally occurs after the age of 60, and is more common after the age of 70. The onset of the disease is not easy to detect and its development is slow. At the earliest stage, it usually starts with gradually aggravating forgetfulness. Some old people say, "Ah! As people get older, their memories also become worse!" This may be the early manifestation of Alzheimer's disease. Although Alzheimer's disease progresses slowly, it has a serious impact on life. In the early stage, the patient's memory, thinking and language ability will be affected. The patient can't remember the recent events and the names of acquaintances. Later, as the disease progresses, the patient may not even know his family. They are not only unable to communicate with others, read and write, but also unable to take care of such trivial matters as brushing their teeth and combing their hair. After that, they may become very anxious and aggressive and may leave their homes. In short, they have completely lost their self-care ability and become a heavy burden on their families.

The etiology and pathogenesis of AD is complex and are not very clear at present. It is generally believed to be related to gene mutation, AB deposition, cholinergic deficiency, tau protein hyperphosphorylation, mitochondrial deficiency, nerve cell apoptosis, oxidative stress, free radical injury and infection, poisoning, brain injury and hypoglycemia. The risk factors of AD include age, sex (female is higher than male), education level, brain injury. AD is also related to heredity, hypothyroidism, and exposure to heavy metals, toxic chemicals and organic solvents. Other risk

factors such as cerebrovascular diseases, diabetes and depression in the elderly are also risk factors of AD. Pathological changes of AD can be seen in "normal" elderly people, but the extent and scope of the lesions are different. The main manifestations are: a large number of senile plaques in cerebral cortex, hippocampus, amygdala and thalamus; There are a large number of neurofibrillary tangles (NTF) in cerebral cortex and hippocampus, and the neurons with NTF are mostly degenerated. Amyloid plaque deposits in meninges and cortical small vessels exist in AD patients, which can seriously affect blood supply. Granulosa vacuolar degeneration and a large number of Ping Ye bodies are often seen in hippocampus. Accompanied by the above pathological changes, a large number of nerve cells were lost. Degeneration and loss of neurons in AD patients reduce the weight and volume of the brain, atrophy of frontal, parietal and temporal cortex, amygdala, hippocampus and Para hippocampal gyrus involvement may be more obvious, and the volume of white matter and deep gray matter is reduced.

With the increase of life expectancy, AD has become a common dementia type, accounting for about 50% of all dementia patients. The annual incidence rate of AD is about 1% among the elderly over 65 years old. As the age increases, the incidence rate of AD increases by about 1 time for every 5 years of age. The disease is often sporadic, with more women than men. The course of disease in women is often longer than that in men. With the aging of the population, the incidence rate of AD has increased year by year, seriously endangering the physical and mental health and quality of life of the elderly, causing severe pain to patients, bringing heavy burdens to families and society, and has become a serious social problem, attracting widespread attention from governments and the medical community.

3.2. Experimental Results

The BDNF concentration of 120 patients with mild Alzheimer's disease was measured and grouped according to the concentration, so that the concentration distribution and average value of each group were the closest. BDNF, brain-derived neurotrophic factor, is a protein synthesized in the brain and widely distributed in the central nervous system. BDNF plays an important role in the survival, differentiation, growth and development of neurons during the development of the central nervous system. Brain-derived neurotrophic factor can prevent neuronal death from injury, improve the pathological state of neurons, promote the regeneration and differentiation of injured neurons and other biological effects, and is also necessary for the survival and normal physiological functions of neurons in mature central and peripheral nervous systems.

With the application of serum-free culture of neurons and other technologies, some new specific protein molecules have been found in many tissue fluids and extracellular matrix, which can also promote the proliferation, differentiation and survival of neurons. For example, ciliary neurotrophic factor (CNTF) produced by Schwann cells and astrocytes can promote the survival of injured and embryonic spinal cord neurons, and has important value in the treatment of human motor neuron degeneration diseases. For example, glial cell-derived neurotrophic factor (GDNF) can support the survival of midbrain dopaminergic neurons in vitro experiments, and can improve the survival rate of dopaminergic neurons and the density of nerve endings and improve the symptoms in various Parkinson's disease animal models. In addition, leukemia inhibitory factor (LIF), insulin-like growth factor I (,IGF-I), transforming growth factor (TGF), epidermal growth factor (EGF), fibroblast growth factor (FGF) and platelet-derived growth factor (PDGF) are also promoting neuronal growth.

Neurotrophic factors are proteins that play an important role in the development, survival and

apoptosis of neurons. Their members include nerve growth factor (NGF), brain-derived growth factor (BDNF), neurotrophic factor 3(NT-3), neurotrophic factor 4(NT-4), etc. These proteins are potential drug targets for the treatment of diseases such as nerve injury. Previous studies have shown that neurotrophic factors have two different membrane protein receptors, namely p75NTR receptor and tyrosine kinase receptor Trk. Neurotrophic factors interact with the extracellular regions of these two receptors to transmit signals related to the survival and apoptosis of nerve cells to the interior of cells, thus regulating the development and apoptosis of cells. P75NTR can be combined with all neurotrophic factors, but the combination of p75NTR and neurotrophic factors has always been controversial. In addition, there are both synergistic and antagonistic effects between p75NTR and Trek, but the detailed mechanism of synergistic regulation still needs further study to clarify.

Group A is the control group and does not have Weiqi training. Group B trains Weiqi for 40 minutes every day. Group C has 80 minutes of go training every day. The experiment lasted 2 months. The result data are shown in Table 1.

Table 1. Effect of Weiqi Training on BDNF Concentration

Group	Weiqi Training Time (Min)	Sample Size	Average Concentration of BDNF (μg/L) Before Experiment	Average Concentration of BDNF (μg/L) After Experiment	BDNF Concentration Change (μg/L)
A	0	40	8.54	8.50	-0.04
B	40	40	8.51	9.03	0.52
C	80	40	8.52	9.27	0.75

4. Discussion

4.1. Analysis of the Influence of Weiqi Training on BDNF Concentration

Neurotrophic factor (NT) is a kind of protein molecule produced by nerve-dominated tissues (such as muscle) and astrocytes and necessary for neuronal growth and survival. Neurotrophic factors usually enter nerve endings via receptor-mediated entry, and then reach the cell body via reverse axonal transport to promote cell body synthesis of related proteins, thus playing its role in supporting neuronal growth, development and functional integrity. Among them, brain-derived growth factor (BDNF) is essential in maintaining brain function, and brain diseases often lead to its concentration reduction. In order to explore the effect of Weiqi training on the concentration, the relevant data are plotted as bar graphs, as shown in Figure 1.

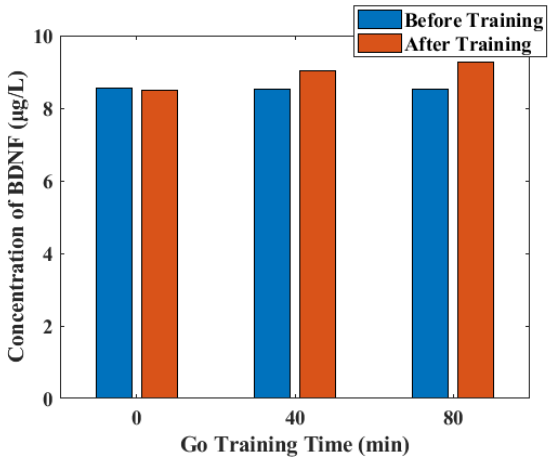

Figure 1. Effect of Weiqi training on BDNF concentration

From the data in the above figure, it can be seen that 80 minutes of go training per day increases the BDNF concentration of mild Alzheimer's patients by 0.75μg/L, and 40 minutes of go training per day increases the BDNF concentration of mild Alzheimer's patients by 0.52μg/L. However, the BDNF of the patients who did not have gone training decreased slightly, but there was no obvious change. In order to explore whether the condition of senile dementia in each group of patients has improved, we made statistics on the improvement of their condition. Most of the patients in group A had no obvious changes, and a few of them had deteriorated. The change of group b is drawn into a fan-shaped statistical chart, as shown in Figure 2.

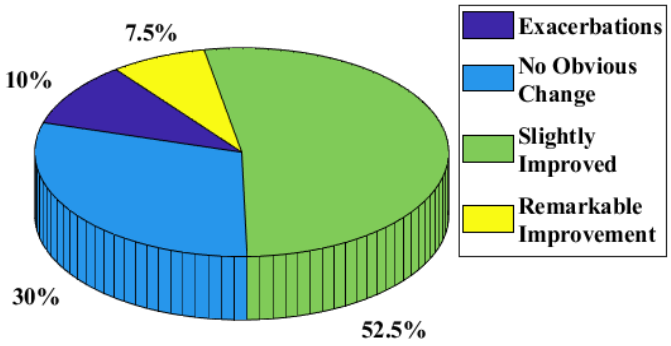

Figure 2. Changes of Alzheimer's disease symptoms in group B

As can be seen from the above figure, the 40-minute Weiqi training every day makes 52.5% of the patients with mild Alzheimer's disease feel better, and 7.5% of the patients with mild Alzheimer's disease feel significantly better. These changes were not found in the control group, and the senile dementia symptoms in the control group did not improve. Is it more effective to increase Weiqi training time? Draw the change of group b into a fan-shaped statistical chart, as shown in Figure 3.

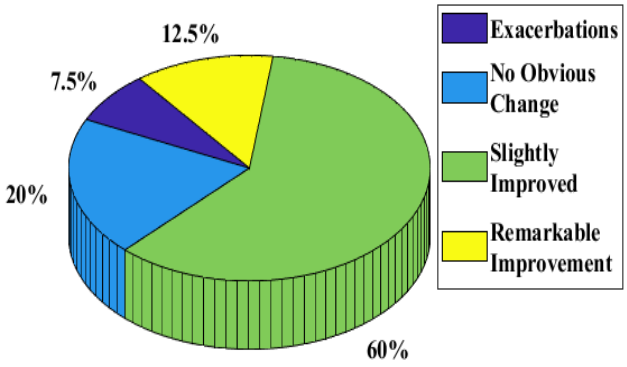

Figure 3. Changes of Alzheimer's disease symptoms in group C

As can be seen from the above figure, the 80-minute go training every day makes 60% of the patients with mild Alzheimer's disease feel better, and 12.5% of the patients with mild Alzheimer's disease feel significantly better. In this experiment, 80 minutes of go training per day is better than 40 minutes of go training per day in treating patients' brain rehabilitation.

4.2. Analysis of the Influence of Weiqi Training on Mental Status

Mental state is also very important for brain health, which can cause anxiety and depression. Many people think that these are just mental problems. In fact, anxiety and depression have physiological problems. Moreover, physiological and psychological problems will interact with each other, and negative mental state is very unfavorable to the recovery of patients. In order to study the effect of Weiqi training on mental condition, anxiety index and depression index of each group were evaluated. The index ranges from 1 to 5, which indicates that depression and anxiety are deepening. The evaluation results are shown in Table 2.

Table 2. Mental state of Alzheimer's disease patients

Group	Anxiety Index	Depression Index
A	3.3	2.8
B	1.7	1.3
C	1.4	1.5

The performance of depression can be divided into two categories: core performance and incidental performance. The core performance is mainly depression, loss of interest, and easy fatigue. Depression can range from mild depression to severe depression, pessimism and despair, and even suicide. The decline in interest is manifested by not being interested in anything. Lack of energy is manifested as being particularly prone to fatigue. These are the three major manifestations of depression. There are other incidental manifestations of atypical depression, such as general discomfort, soreness, fear of cold, loss of appetite, insomnia, headache, chest tightness, and even suicidal thoughts. These are manifestations of depression and are incidental symptoms.

Anxiety disorder, also known as anxiety neurosis, is one of the most common neurosis diseases. It is mainly characterized by anxiety emotional experience. This disease is mainly manifested as fear and anxiety for things without factual basis or without clear objective objects, as well as symptoms of autonomic nervous disorder and muscle tension. The mood is extremely tense, when it comes to major events, it will be stunned and become speechless. Avoiding depression and anxiety

is also an important part of rehabilitation. In order to study the effect of Weiqi training on depression and anxiety, relevant data are drawn into bar charts, as shown in Figure 4.

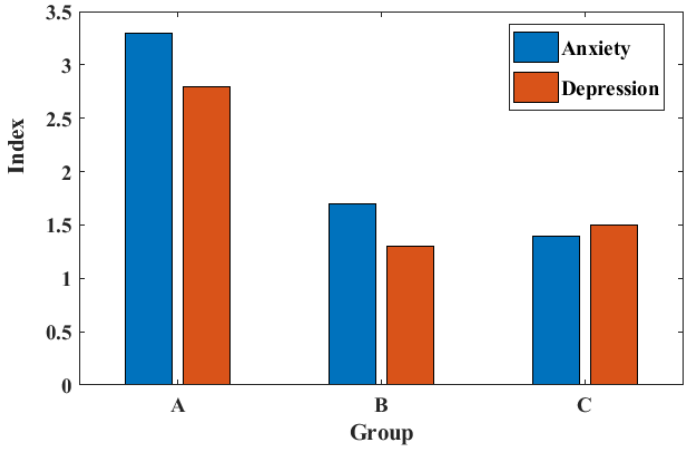

Figure 4. The influence of Weiqi training on depression and anxiety

As can be seen from the above figure, go training is of great help to relieve anxiety and depression. Whether it is 40 minutes of go training or 80 minutes of training, it greatly reduces the anxiety and depression index of patients. However, the depression index of patients trained for 80 minutes per day is higher than that of patients trained for 40 minutes. Perhaps too long training time is easy to increase depression.

5. Conclusion

(1) Introduction to the function and brain structure of Weiqi, the purpose and significance of the research and the current research situation. The thinking that Weiqi can train includes (but is not limited to) the following aspects. Working memory: the ability to process several symbols simultaneously in the brain; Space rotation ability: that is, the ability to turn over a part of the chess game through imagination; Mind Theory: Ability to reason about other people's strategies, etc.

(2) Through literature research and investigation, the types of brain diseases are analyzed and neurotrophic factors are introduced. The classification of brain diseases mainly includes craniocerebral injury. Brain tumor; Cerebrovascular diseases; Lesions of scalp and skull; Intracranial infectious diseases; Functional diseases, etc. Neurotrophic factor (NT) is a kind of protein molecule produced by nerve-dominated tissues (such as muscle) and astrocytes and necessary for neuronal growth and survival.

(3) Experiments and data analysis show that 40 minutes of Weiqi training per day increases the BDNF concentration of mild Alzheimer's patients by 0.52μg/L, and 80 minutes of Weiqi training per day increases the BDNF concentration of mild Alzheimer's patients by 0.75μ g/L. The 40-minute go training every day makes 52.5% of the patients feel better, and the 80-minute go training every day makes 60% of the patients feel better. Moreover, Weiqi training is of great help to relieve anxiety and depression of patients.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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