Scientific Research Publishing

Chinese Studies, 2026, 15(2), 97-112
https://www.scirp.org/journal/chnstd
ISSN Online: 2168-541X
ISSN Print: 2168-5428

Mechanistic Insights into YiJinJing Qigong for Symptom Rehabilitation into Opioid Dependence

Longwei Li

Department of Criminal Investigation, Hainan Police College, Haikou, China
Email: na.jiang@bnu.edu.cn

How to cite this paper: Li, L. W. (2026). Mechanistic Insights into YiJinJing Qigong for Symptom Rehabilitation into Opioid Dependence. *Chinese Studies, 15,* 97-112.
https://doi.org/10.4236/chnstd.2026.152006

Received: February 13, 2026
Accepted: April 10, 2026
Published: April 13, 2026

Abstract

Opioid dependence, characterized by high relapse rates and substantial social harm, represents a major global public health challenge. Grounded in the traditional Chinese medicine concept towards the integrated unity of "body, qi, and mind" and the holistic regulatory principles for health Qigong, this study adopts a perspective of non-pharmacological intervention to systematically investigate the integrative intervention mechanisms towards YiJinJing, a traditional Qigong practice. The rehabilitation of opioid dependence is first summarized from its current landscape, prevailing paradigms, and unresolved challenges. Subsequently, YiJinJing is introduced as a structured practice in which the bodily movement, breath regulation, and muscle stretching are integrated, combined with the core principles of regulating the body, breath, and mind, as well as its systemic regulatory effects towards blood function, internal organ function, and meridian pathways. Finally, the feasibility and potential therapeutic relevance of the YiJinJing training as a rehabilitative approach for opioid dependence are examined from physiological, psychological, and neuroscientific perspectives. On this basis, a multi-target, multi-level theoretical model towards YiJinJing interventions was proposed. At the physiological level, the guiding movements of Yijinjing may alleviate somatic withdrawal symptoms, stabilize autonomic function, and regulate immune endocrine function. At the psychological behavior level, reducing cravings and negative emotions through meditation and focused training can enhance self-regulation and psychological resilience. From the levels of neural mechanisms, it is speculated that YiJinJing may influence the dopaminergic signaling and endogenous opioid peptide system, thereby facilitating the adaptive restructuring towards the reward loop and the neural plasticity. As an integrated physical and mental training, YiJinJing exhibits potential views in improving the physical

and psychological state of dependent individuals, enhancing life quality, and reducing the risk of relapse, thereby serving as a complementary component within existing intervention frameworks. This work provides a theoretical basis for the scientific translation of traditional mind-body exercise into substance-dependence rehabilitation and informs future mechanistic investigations and clinical applications.

Keywords

Fitness Qigong, YiJinJing, Opioid Dependence, Rehabilitation Therapy

1. Introduction

This paper is a conceptual framework paper, and the literature is mainly sourced from China National Knowledge Network (CNKI). Using "YiJinJing" as the keyword to search, as of the beginning of 2026, a total of 52 English documents and 266 Chinese documents were retrieved; Using "Health Qigong" and "YiJinJing" as common keywords to search, a total of 35 Chinese documents were retrieved, and the website has not yet included relevant English documents; With the keyword "prevention and treatment of opioid dependence", a total of 203 Chinese literatures were retrieved. At present, the direct research literature on the application of Health Qigong YiJinJing in the field of opioid prevention and control is extremely limited, but some domestic scholars have begun to explore this field from different perspectives. Based on this, this paper attempts to put forward the possibility hypothesis that Health Qigong YiJinJing has potential application value in opioid prevention and treatment through theoretical analysis of the interest regulation principle of Health Qigong YiJinJing and the addiction mechanism of opioid dependence, in order to provide theoretical reference and basic support for subsequent related research.

2. Current Status, Prevailing Paradigms, and Challenges in Rehabilitation of Opioid Dependence

2.1. Overview of Rehabilitation Paradigms

Rehabilitation of opioid dependence was widely regarded as a prolonged and arduous systemic process, involving multiple stages such as physiological detoxification, psychological recovery, and social reintegration. The current mainstream model for rehabilitation treatment towards opioid dependence was a comprehensive intervention paradigm that combined biomedical, psychosocial, and social reintegration. Although decades of development had led to a multi-level intervention system, persistent challenges, including high relapse rates, serious side effects, and the limited improvement in daily life of patients, still remained.

The biomedical paradigm revolved around chemicals and neural regulation, viewing opioid dependence as a chronic and recurrent brain disease. In clinical

practice, the medication substitution therapy was commonly implemented, where a medicine with lower addiction and longer duration in the body was utilized as a substitute, and the dosage was progressively decreased over time until the continued use towards the medicine was completely eliminated. Opioid receptor agonists, such as methadone and buprenorphine, or opioid receptor antagonists (e.g., naltrexone) were often used as adjunctive therapy chemicals to alleviate withdrawal symptoms, block opioid-induced pleasure, and stabilize neurological function (Li, 2021). In addition, neuromodulation approaches, like repetitive transcranial magnetic stimulation and deep-brain stimulation, have been explored to directly modulate abnormal activities in relevant addictive brain areas (e.g., the prefrontal cortex and nucleus accumbens) to reduce cravings. However, this technique remained largely in the research stage, and the corresponding clinical efficacy required further validation.

The psychosocial paradigm focused on cognitive and behavioral reconstruction, mainly aiming at the guiding and reconstructing the psychological and behavioral domains towards opioid addicts. Generally, approaches such as cognitive behavioral therapy, motivational interviews, and family/community support were commonly implemented to help patients identify and correct distorted cognitions as well as automated thinking that led to medicine use, strengthen intrinsic motivation for change, thus improving their skills in coping with craving and high-pressure situations.

In addition, the social reintegration paradigm was centered around the environment and supporting system, with emphasis placed on the interaction between individuals and social structures. Through therapeutic communities, mutual-help associations, case management, and vocational rehabilitation, strict community rules and a lifelong rehabilitation framework supported by peers were utilized, while employment was leveraged as a critical source of social support for maintaining recovery. In this context, the pressure after returning to society and relevant triggers were intended to be reduced, thus promoting the comprehensive reshaping towards the values and lifestyles for opioid addicts, and improving the efficiency of their social reintegration.

2.2. Achievements and Structural Limitations for Current Paradigms

Though the integrated intervention paradigm of biomedical, psychosocial, and social reintegration has achieved certain results, it still faced multiple insurmountable bottlenecks, thus contributing to sustained high relapse rates. Within the biomedical paradigm, pharmacological treatment for opioid addiction has largely been targeted toward opioid receptor agonists and antagonists. However, neither strategy has yielded consistently satisfactory outcomes. Medication-replaced therapy has primarily been used to maintain neurochemical balance and required daily medication or regular injections (Zhu, 2019). Omission of medication could lead to increased risk, and this symptom-oriented approach was a stopgap that

failed to address the root causes. Moreover, MAT chemicals themselves showed dependence liability. For those opioid addicts, it could not eliminate psychological cravings but only shift from one type of opioid dependence to another, which was a transfer towards dependence risk. In addition, this paradigm was also unable to proactively and systematically repair neural function impairments for prefrontal executive function and stress response system dysregulation caused by the medication-dependence, which were considered as the physiological basis for cognitive deficits and emotion-driven relapse in opioid dependence.

The psychosocial paradigm also had notable limitations. In rehabilitation practice, individuals with opioid dependence commonly exhibited a cognitive-behavioral dissonance and weak mind-body interaction, which mean that they cognitively understood the harm for relapse, but their impaired executive function could not call upon the learned coping skills under intense cravings or emotional stressors such as pain, insomnia, and anxiety, resulting in the heightened sensitivity towards withdrawal-related physical discomfort, misinterpreting it as an intolerable signal and thereby triggering medication behavior.

In addition, the high social costs and project requirements have led to significant limitations towards the social reintegration paradigm. Among them, the role of support systems such as mutual-aid associations continued to weaken after patients return to their daily environment, making it difficult for them to adapt or persist. Meanwhile, the pressure and triggering clues in real life were pervasive, thus indicating that the gap between protective environments and high-risk reality formed during this process led to a persistently higher relapse rate among opioid addicts.

2.3. Core Challenges: Mind-Body Disconnection and Executive Dysfunction

The deeper dilemma towards the existing treatment system could be attributed to two core issues. Firstly, there was a disconnect between physical and mental interventions, which mean the biomedical intervention in body and the psychosocial intervention in cognition. At this time, the feelings for patients towards their own body were often in a hostile or distant relationship, and there was an urgent need for a systematic and proactive retraining and re-education program for the body itself as a carrier of craving and emotions. Secondly, top-down control was lacked, as treatment has not effectively repaired impaired prefrontal regulation over limbic system. This "braking failure" state has been considered a neural basis for impulsive relapse and inability to cope with negative emotions. Though a multi-paradigm framework for opioid-dependent rehabilitation therapy has been established, a significant gap remained in addressing the core mechanisms towards relapse—physical and mental disorders and behavioral control deficits caused by nerve damage. These limitations highlighted the need for an adjunctive intervention that could directly act on the connection between body and mind, proactively repair execution functions, and integrate them into existing treatment

systems. On this basis, incorporating YiJinJing training, which originated from ancient Chinese medicine guiding techniques and combined physical/mental regulation, attention training, and low-intensity physical recovery characteristics, into the research field had a clear logical starting point and practical necessity.

3. Mind-Body Integration: Feasibility of YiJinJing Training for Opioid Dependence

3.1. Theoretical Feasibility and Mechanistic Basis for Multi-Pathway Interventions in Opioid Dependence

1) Restoration of executive function and enhancement of top-down control

To address the dilemma of mind-body separation and top-down control defects in opioid dependence rehabilitation, YiJinJing—rooted in the principles of nourishing body and spirit as well as the interdependence towards mind and breath—exhibited gentle mind-body regulatory characteristics, lower entry thresholds, and profound cultural adaptability. Accordingly, it had the potential to become an effective, accessible, and sustainable non-pharmacological complementary therapy, which could effectively compensate for the shortcomings of traditional interventions in repairing physical/mental connectivity and executive function. In addition, it offered an innovative perspective for building a comprehensive rehabilitation model that integrated biology, psychology, society, and spirituality. On the one hand, YiJinJing could provide patients with neural plasticity induction. It required practitioners to maintain precise posture and balance during slow and controlled movements, thereby repeatedly activating and training brain regions such as the prefrontal cortex and anterior cingulate gyrus, which constitute core hubs for performing attention control, working memory, and impulse suppression functions. Regular practice might promote increased gray-matter density and functional connectivity in these regions, thus directly targeting the "brain brake" failure caused by addiction. On the other hand, attentional anchoring was emphasized through the principle that intention followed form, thereby requiring attention to be focused on body movements, breathing or specific areas. This sustained and interoceptive attention focus constituted a repeated training of attention control network, which helped mitigate the common attention bias (oversensitivity to medicine-related cues) and distractibility towards addicts.

2) Stress-response system regulation and emotional homeostasis

According to the General Treatise of YiJinJing, the massage of the inner fascia was achieved through the beating and filling of the breath so as to reach the target of internal strengthening. In practice, the breath was characterized as deep, long, thin, even, and soft. And training was typically performed using the reverse abdominal breathing method with abdominal breathing as the main approach and a combination of chest and abdomen. When inhaling, the mind guided the air to sink into dantian, with the abdomen drawn inward, the diaphragm descending, and the thoracic cavity expanding. While during exhalation, the abdomen relaxed

and expanded outward together with the diaphragm ascending. And the expiratory air was fully expelled. This breathing pattern could maximize tidal volume, improve lung capacity, and thus enhance the gas exchange efficiency. More importantly, slow and rhythmic deep-breathing could directly affect the autonomic nervous system. Research has shown that deep and prolonged exhalation could effectively activate the parasympathetic nervous system, reduce sympathetic nervous system excitability, decrease the levels for baseline stress, and improve negative emotions such as anxiety and depression, thereby producing physiological effects towards sedation and relaxation and combating these negative emotions. This was crucial for regulating the dysfunction of the hypothalamic-pituitary-adrenal (HPA) axis caused by long-term drug abuse. In addition, interoceptive awareness might also be reshaped. Addicts often misunderstood normal physiological fluctuations—increased heartbeat and muscle tension during withdrawal or stress—as unbearable crisis signals. YiJinJing gently guided practitioners to perceive, accept, and regulate these physical sensations, thus cultivating a non-judgmental mode of interoceptive awareness. This process might help to break the automated chain towards "discomfort → anxiety → craving → medication" and thus enhance tolerance and coping ability to internal triggering factors.

3) Improvement of somatic symptoms and withdrawal discomfort

The name YiJinJing itself conveyed the notion of changing muscles and bones. Its classical twelve-form sequence was designed to systematically engage major muscle-tendon groups, joints, and meridian pathways through ultimate slow stretching and twisting across multiple angles and directions. YiJinJing exercise exhibited a regulating effect on both inside and outside towards the human body, which could adjust muscles and bones as well as improve body function externally. Meanwhile, it could regulate the yin-yang balance of the body and improve individual psychological state (Zhang et al., 2021). In addition, it could gradually restore muscle strength, flexibility, and proprioception, effectively alleviate the physical weakness, chronic pain, and sleep disorders symptoms of opioid dependent individuals, as well as improve sleep quality through physical and mental relaxation. This sustained and controlled stretching might increase joint range of motion and enhance the elasticity and functional capacity of muscles and ligaments. More importantly, physical traction applied to the myofascial–tendon structures attached to the skeleton was thought to indirectly stimulate and "unblock" related meridian pathways, promote the smooth flow of qi and blood in the meridians, eliminate the coagulation and blockage of qi and blood caused by "muscle contraction", and provide a non-opioid self-management strategy for common comorbid pain in dependent individuals by regulating the brain's perception and processing of pain, thereby improving overall performance. Long-term regular moderate-intensity aerobic exercise could regulate the reward system function by affecting the DA and EOP systems, thus controlling the formation of drug addiction and alleviating withdrawal symptoms (Feng et al., 2019) (**Table 1**).

Table 1. Easy tendon meridian action relieves opioid-related symptoms.

Action Name	Efficacy	Relieve Symptoms
The first action for Wei Tuo Xian Chu	As a starting action, it mainly plays the role of calming the mind and adjusting the breath	Improves anxiety and irritability, intense craving, and insomnia
The second action for Wei Tuo Xian Chu	Through the cross arm, focus on exercising the strength of the shoulders and arms, and dredge the meridians of the upper limbs	
The third action for Wei Tuo Xian Chu	Also known as "palm-resting Tianmen", by lifting the heel, it can regulate the qi of the three jiao and promote blood circulation throughout the body	
The action of the green dragon's claw	Through turning, bending knees and pressing palms, mainly exercise the hypochondrium and waist on both sides, so as to dredge the liver	
The action of picking stars and changing buckets	By turning the waist and neck, exercise the neck, shoulders and back, and stimulate the relevant acupuncture points	Improve physical discomfort and pain symptoms: abdominal pain and gastrointestinal spasm, muscle soreness and bone pain, tremor, etc
The action of pulling nine oxtail upside down	Simulate the action of pulling the oxtail, through the twisting of the arms, dredge the meridians, and exercise the muscle strength of the upper limbs	
The action of striking out the claws and shining the wings	Repeatedly open and close the thoracic acupuncture points by pushing and withdrawing the palms to improve the respiratory function and the movement of qi and blood	
The action of the nine ghosts pulling the saber	By twisting and stretching the body, fully stretch the spine, neck and shoulders, and strengthen the waist and kidney	
The action of landing in sanpan	Through squatting and pressing, combined with breathing and breathing (mouth vomiting "hi" sound), enhance the strength of the waist, abdomen and lower limbs	
The act of bowing	Through actions such as covering the ears, bending the body, and strengthening the body, it stretches and relaxes the spine, which has the effect of strengthening the brain and calming the nerves	
The action of a crouching tiger trying to fight	Imitate the action of a tiger fighting food, fully stretch the waist and back, exercise the strength of fingers, wrists and lower limbs	Improve autonomic nervous system symptoms: tearing and runny nose, sweating and goose bumps, elevated blood pressure and tachycardia, etc
The act of dropping the tail	By learning over, pressing with both hands and shaking your head and tail, harmonizing the qi and blood of the whole body and relaxing all joints	

3.2. Practical Feasibility: Low-Barrier Access, High Adaptability, and Sustainability

1) Safety and acceptability

YiJinJing movements were gentle, with controllable intensity, low operational risk, no severe impact or high-intensity load, and low requirements for the cardiovascular system. It was suitable for most individuals in the rehabilitation period with weak physical fitness. Moreover, it had the ability to purify the name and cultural affinity, and as a Chinese health and wellness method rather than a "mental illness treatment", it was more easily accepted by patients and reduced their sense of shame. Within Chinese and broader east Asian cultural contexts, intrinsic cultural familiarity and identity alignment might further facilitate engagement

and adherence.

2) Accessibility and cost-effectiveness

Following long-term development and refinement, YiJinJing was supported by standardized instructional materials (e.g., teaching videos and illustrated manuals) and a relatively broad instructor base, which facilitated dissemination and scale-up. Because no expensive equipment was required and space constraints were minimal, both individual- and system-level costs could be kept lower, aligning well with the economic principles of public health interventions.

3) Structured format and integrability

The twelve YiJinJing postures have been traditionally mapped to the twelve sinew channels and the twelve principal meridians. Through practicing of specific forms, corresponding pathways were purported to be activated, thereby promoting the smooth circulation of qi and blood and strengthening resistance to external pathogenic factors for disease prevention. Program content can be structured and individualized according to the needs and capacities of people in rehabilitation, and YiJinJing may be positioned as an adjunct to medication-assisted treatment (MAT) and psychotherapy (Chai & Yan, 2016). For example, it may be incorporated as a stabilization exercise prior to group sessions or used as a mindfulness-based coping skill when craving emerges.

4. Alignment of YiJinJing Training with Rehabilitation Needs in Opioid Dependence

4.1. Rehabilitative Interventions for Physiological Dependence

Yijinjing exhibited direct and perceptible benefits in alleviating somatic symptoms during withdrawal and in modulating physiological functions that have been dysregulated by long-term opioid use.

1) Alleviating withdrawal symptoms and somatic discomfort

Somatic manifestations during withdrawal, such as myalgia, arthralgia, gastrointestinal cramping, cold sweats, chills, and tremors, were widely recognized as major contributors towards early discontinuation of detoxification and rehabilitation. In the Xue Zheng Lun of Zonghai Tang in Qing dynasty, this famous physician pointed out that Qi was the leader of blood, and the blood flowed with it. While blood was the defender of qi, when it was obtained, the blood got quiet. In addition, a stagnation of qi could cause blood coagulation, a deficiency of qi could cause blood detachment, and a pressure of qi could cause blood to leave. In this context, slow and extended movements for tendon-stretching and bone-guiding of YiJinJing, combined with its breath-regulation practice, were proposed to relax withdrawal-related muscle tension, enhance local circulation, and attenuate perceived muscle and joint pain. As illustrated in **Figure 1**, the squat for "San Pan Luo Di" performed with prolonged exhalation was traditionally described as facilitating the descent of "turbid qi" and the ascent of "clear qi". Concomitant mild warming of the body during practice may also help alleviate cold intolerance commonly experienced in withdrawal. With regular practice, attention might be

shifted from distressing bodily sensations to controllable movement and breathing patterns, thereby strengthening tolerance of discomfort and improving self-regulatory capacity during the withdrawal phase.

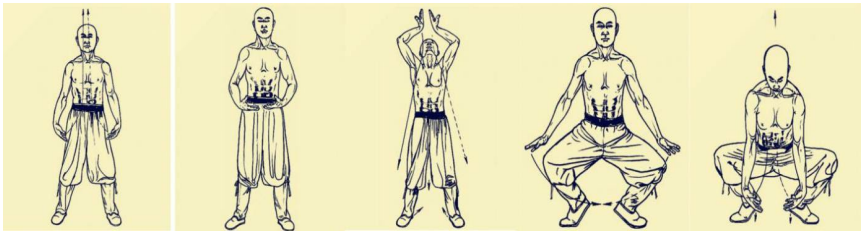

Figure 1. Posture for San Pan Luo Di.[1]

2) Restoring autonomic balance

Autonomic dysfunction is frequently exacerbated by opioid withdrawal and long-term misuse. The ingestion of exogenous opioid has been implicated in disruption of endogenous opioid peptide (EOP) function and maladaptive reward-circuit regulation. In many individuals, sympathetic activity remained dominant or hyperreactive, manifesting as palpitations, diaphoresis, anxiety, and insomnia (Sun & Zhou, 2021). The slow, deep, and even breath regulation emphasized in YiJinJing, especially for prolonged exhalation, has been widely reported as an effective physiological means to engage parasympathetic activity and reduce sympathetic arousal. In YiJinJing, each form was practiced with specified breathing cues, following the traditional principles such as "inhale on rising, exhale on lowering", "inhale on opening, exhale on closing", and "inhale on gathering, exhale on releasing". For example, in the arm-opening and chest-expanding posture of "Wei Tuo San Xian" shown in **Figure 2**, inhalation was coordinated to facilitate thoracic expansion and an upward-directed sense of internal lift, whereas in forward-bending and downward-pressing movements such as "Dagong" (in **Figure 3**), exhalation was coordinated to promote relaxation and the traditional notion of "sinking qi to the dantian". This breath–movement coupling—often described as "guiding qi with the breath and mobilizing the body with qi"—positions respiration as an internal driver that supports coordinated force expression and enhances interoceptive feedback, thereby reducing stiffness and disorganization in movement. Through deliberate breathing practice, the stress-related "fight-or-flight" mode might be shifted toward a "rest-and-digest" state, with potential benefits including a more stable heart rate, lower blood pressure, reduced sweating, and improved sleep quality. With regular practice, autonomic flexibility and overall sympathovagal balance. Through deliberate breathing practice, the stress-related "fight-or-flight" mode might be shifted toward a "rest-and-digest" state, with potential benefited including a more stable heart rate, lower blood pressure, reduced sweating, and improved sleep quality. With regular practice, autonomic flexibility and overall sympathovagal balance may be progressively restored.

[1]All figures in this article are from [http://baijiahao.baidu.com/s?id=1840896543942226170&wfr=spider&for=pc].

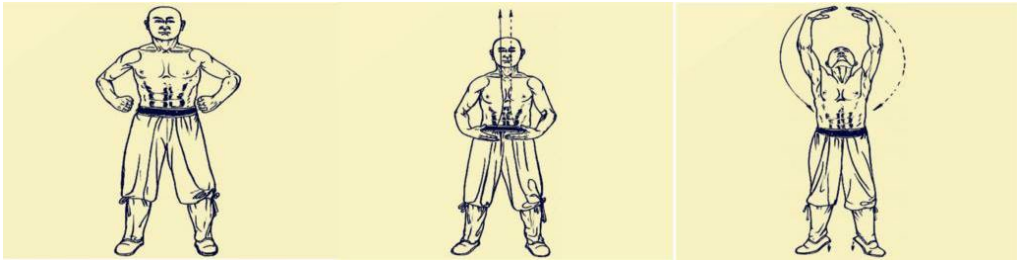

Figure 2. Posture for Wei Tuo San Xian Chu.

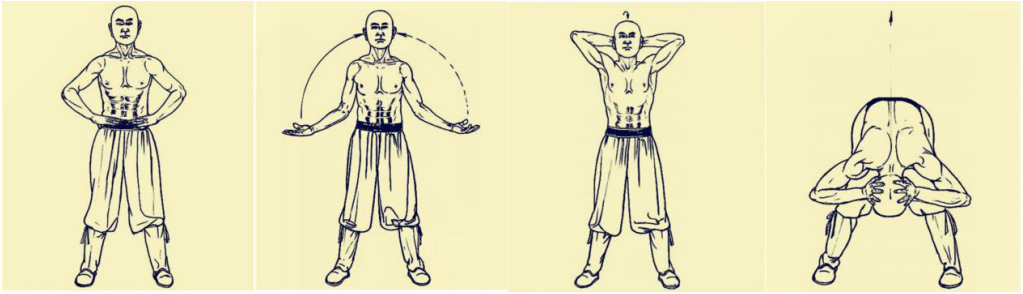

Figure 3. Posture for Da Gong.

3) Modulating immune and endocrine function

Long-term opioid dependence has been associated with immunosuppression and dysregulation of endocrine axes, including the HPA axis and gonadal axis. In YiJinJing practice, posture-specific movement patterns were considered to exert region-targeted regulatory effects. For instance, the squat-and-rise component of "San Pan Luo Di" was described as strengthening the lower limbs and providing a gentle massage towards the lower abdominal region for kidney and bladder. In addition, the alternating trunk rotation and reaching movement in "Qing Long Tan Zhao" in Figure 4 was intended to traction the rib region, with stimulation of the liver and gallbladder meridian pathways and an effect for liver-soothing and qi-regulating. When combined with breath regulation and its autonomic-modulatory potential, nausea, abdominal pain, and diarrhea might be alleviated. Such internally oriented "massage-like" effects, together with respiratory-driven pressure and rhythmic movement, might facilitate visceral perfusion and support the regulation of digestive, excretory, and endocrine function, thereby progressively improving constitutional strength and disease resistance, with "musculoskeletal strengthening" and "visceral harmonization" being advanced in parallel. Moreover, the gentle and moderate nature of YiJinJing practice could be characterized as low-intensity aerobic activity, through which circulation and metabolism might be promoted without excessive physiological stress. It has been reported that regular YiJinJing practice might modulate the secretion rhythm of stress-related hormones (e.g., cortisol) and enhance indices of immune cell activity. By supporting HPA-axis regulation, YiJinJing might help correct stress-system dysregulation in addiction and create a more favorable internal milieu for broader physiological recovery.

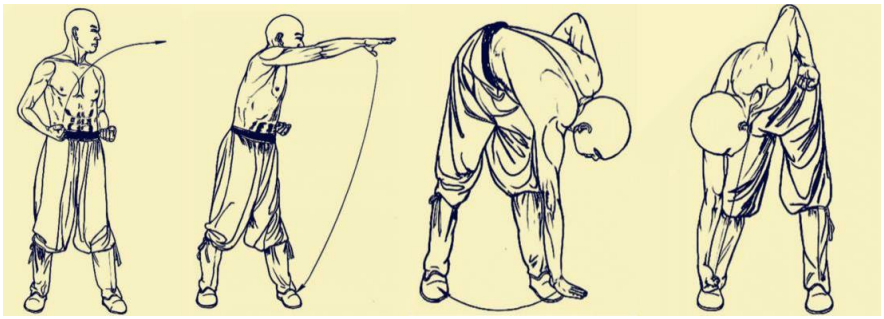

Figure 4. Posture for Qing Long Tan Zhao.

4.2. Rehabilitative Interventions for Psychological Dependence

At the level of mind regulation, YiJinJing practice was positioned to directly target core components of psychological dependence, including craving, negative affect, and perceived loss of control.

1) Reducing craving and cue reactivity

The requirements of YiJinJing for yishou (holding the intention) and rujing (entering a quiet and settled state) could be conceptualized as forms of attentional training. YiJinJing practice showed moderating effects both externally and internally. For external part, it could moderate the musculoskeletal function and thus improve physical conditions. And for internal part, a balance of yin-yang was regulated, with potential benefits for psychological state. When attention was fully allocated to subtle sensations associated with breathing and movement, limited cognitive resources were engaged, which might transiently interrupt compulsive drug-related thoughts and craving (Zhang et al., 2021). Over time, the attentional capacity cultivated through regular practice might enable earlier detection of emerging craving in daily life, allowing cognitive redirection to be initiated before craving escalates. In addition, as a healthy and self-controlled source of positive experience, YiJinJing practice could partially substitute for drug-induced reward, provide a novel focus towards engagement, and weaken the control and dominance for drug-related clues.

2) Managing negative emotions and relieving dependence

Anxiety, depression, and irritability were highly prevalent during withdrawal and the post-withdrawal period and constituted key risk factors for relapse. The mind regulation state in YiJinJing, especially the awareness of breathing and the attitude of accepting bodily sensations without judgment, aligned closely with core principles of mindfulness-based stress reduction. Improvements in depressive and anxiety symptoms have been reported following YiJinJing practice in university populations (Wei et al., 2017). Through training, individuals with opioid dependence might learn to relate to distressing internal states in a calmer and more objective manner, thereby reducing catastrophizing responses and avoidance tendencies. In addition, the relaxation response elicited during practice and a potential increase in endogenous opioid peptide release could exert anxiolytic and antidepressant-like effects, which might help disrupt the vicious circle of

"negative affect to drug utilization for relief".

3) Enhancing self-efficacy and psychological resilience

A successful completion of YiJinJing practice, even though the movements were relatively simple, might provide an immediate sense of achievement for individuals with addiction who had long experienced repeated setbacks and loss of control. With continued practice, improvements in flexibility, perceived strength, and overall well-being might enhance body image and self-efficacy, reinforcing the belief that "my body and emotions could be regulated by myself". Such confidence in one's own capacity was an important psychological resource for resisting relapse triggers. Moreover, patience, persistence, and tolerance of discomfort cultivated during practice might generalize to broader coping contexts, thereby strengthening psychological resilience in the face of withdrawal-related distress and everyday adversity.

4.3. Intervention Therapy for Nervous System Dependence

The most cutting-edge and in-depth aspects towards the intervention mechanism of YiJinJing required more empirical research in neuroscience to provide a reasonable hypothesis pathway for existing theories and preliminary studies.

1) Modulating neurotransmitter system and restoring reward circuitry

Long-term opioid utilization could lead to the downregulation towards dopamine D2 receptors. Evidence further suggested that regular physical exercise (including Qi gong) might increase dopamine D2 receptor availability across multiple regions such as striatum. In addition, exercise has also been reported to influence hippocampal brain-derived neurotrophic factor (BDNF) levels under chronic morphine exposure with intensity-dependent effects. Regular moderate-intensity forced exercise has been suggested to ameliorate cognitive impairment and anxiety-like behavioral deficits in male individuals with addiction. As a mind–body form of exercise, YiJinJing might engage similar pathways, potentially restoring the sensitivity of reward circuitry to natural reinforcers and reducing pathological drug reward-seeking (Shahroodi et al., 2020). More importantly, the deep relaxation state emphasized in YiJinJing, together with the traditional principle of "guiding qi with intention," might facilitate the release of endogenous opioid peptides (e.g., endorphins and enkephalins). Although endorphins acted on opioid receptors, the associated effects were typically described as milder, longer-lasting, and non-harmful, including euphoria-like mood elevation and analgesia. This could provide individuals with opioid dependence a physiological and health-promoting route of "self-regulation," potentially supporting withdrawal stabilization and gradually rebalancing endogenous opioid systems that have been disrupted by exogenous opioid exposure.

2) Enhancing prefrontal function and strengthening cognitive control

Impairment of prefrontal cortical function was widely regarded as a central contributor to deficient inhibitory control in addiction. Neuroimaging studies have reported that mindfulness meditation and Qigong practice may increase gray

matter indices and strengthen functional connectivity in prefrontal cortex and anterior cingulate cortex regions. Among them, the mind regulation component of YiJinJing could be conceptualized as a meditative training process. With long-term practice, neural efficiency within brain systems supporting executive function, attentional control, and emotion regulation might be enhanced. Moreover, the restoration of broader physiological homeostasis could occur via modulation of central neurotransmitter balance, oxytocin (OT), brain-derived neurotrophic factor (BDNF), and immune-related pathways, which may contribute to reductions in drug craving (Yu & Liu, 2023). Collectively, these changes could strengthen the "cognitive braking" system, enable more effective engagement of reflective judgment and impulse suppression when crave or stress were encountered.

3) Promoting neuroplasticity and remodeling brain connectivity

The essence of dependence was the pathological plasticity of the brain. Fortunately, the brain retained a capacity for positive and adaptive plasticity across the lifespan. Enriched environments and sustained skill learning were recognized drivers of such beneficial neural change. Therefore, acquiring and maintaining a coordinated and multi-component mind-body skill such as YiJinJing constituted an ongoing cognitive–motor learning process, through which the formation of new neural connections might be stimulated, particularly within networks that integrated sensorimotor processing, attention, and emotion regulation. Such adaptive remodeling could help overwrite or attenuate drug-related maladaptive memories and circuit patterns, thereby providing a neurobiological substrate for the establishment of healthier behavioral routines and a more stable recovery-oriented identity (Chen et al., 2021).

4) Modulating default mode network and stress-response circuitry

Overactive state of the default mode network during rest was associated with rumination, past medication memory, and the concerns towards future craving anxiety (Taylor & Snyder, 2021). While YiJinJing practice has been reported to reduce unnecessary activation for default mode network. Moreover, the practice mentioned-above might attenuate amygdala hyperreactivity and support restoration of HPA-axis regulation, thereby decreasing overall neurophysiological stress load. A calmer and more present-focused brain state constituted an important neurocognitive substrate for resisting relapses (Herman et al., 2020).

4.4. Intervention Sessions with Systematic Exercises

The design of the YiJinJing intervention plan needs to comprehensively consider the learning rules of exercises and the individual differences of practitioners. Hierarchical "dose" parameters can be set according to the learning stage and practice depth. The details are as follows.

In the initial stage of intervention (basic learning stage), it is recommended to take the course teaching form as the main form, and the duration of each class should be controlled within 45 minutes, so as to ensure the attention of the prac-

titioners and gradually establish correct action patterns and respiratory rhythms. After the practitioners master the movements skillfully, they enter the stage of self-consolidation. The time for each complete drill of a set of boxing techniques is about 10 to 15 minutes. This stage pays attention to the coordination of movements and breathing to achieve the effect of regulating rest and nourishing sex. The practice frequency can be set as once a day or once in the morning and evening, and temporary exercises can also be flexibly arranged according to the practitioner's own state (such as mood swings such as distraction), so as to play the role of exercises in regulating mind and body.

The teaching organization form can be adjusted according to the teaching depth: regular teaching can adopt the form of large class teaching, but it is recommended that the number of students in the class should not exceed 30, so as to avoid the distraction of practitioners due to the excessive number of students and affect the teaching effect; For practitioners who need in-depth teaching, small class grouping teaching can be used, and each group is suitable for 3 to 6 people, which is convenient for personalized guidance and action correction.

Instructors should have a professional background in physical education or martial arts, be familiar with the action essentials and operating principles of YiJinJing and be able to carry out standardized teaching and guidance. At the same time, instructors need to have basic first aid knowledge and emergency handling capabilities, and master certain grasping skills to deal with unexpected situations that may arise during the practice process and ensure teaching safety.

5. Conclusion

When discussing the potential effectiveness of YiJinJing on opioid prevention and treatment, although existing studies have provided preliminary evidence showing its possible auxiliary role, it still needs to be carefully evaluated in terms of clinical promotion and theoretical interpretation.

Current studies are mainly limited to open-label experiments with small samples, lacking strict blinding control. Therefore, the expectation of efficacy of practitioners may affect subjective pain assessment and self-report of addictive behavior, making it difficult to completely rule out the placebo effect. In addition, patients are usually accompanied by drug-assisted therapy (such as naloxone) or psychological intervention (such as CBT), and existing studies are difficult to separate the independent effects and synergistic effects of "YiJinJing" itself.

Differences in patient compliance and comorbid symptoms are also important factors. Opioid addicts are often accompanied by depression, anxiety or chronic pain, and these comorbidities themselves will regulate physiological mechanisms such as endorphins and affect the benefits of exercise (Psarianos et al., 2023); Life dysfunction may lead to insufficient adherence to practice, thus underestimating the true potential of YiJinJing.

What's more profound is that cultural fit constitutes the main obstacle to its global universality. "YiJinJing" is deeply rooted in Chinese medicine and Taoist

philosophy, and its philosophical connotation and sense of ritual may cause cognitive obstacles to audiences with non-East Asian cultural backgrounds or lack of cognition of traditional Chinese medicine. In order to improve the feasibility of cross-cultural promotion, it is suggested to strip the color of Confucianism and Taoism, transform it into modern psychological concepts such as "stress management" and "emotion regulation", and carry out strict randomized controlled trials in different cultural backgrounds to verify its universality sex.

In summary, YiJinJing does not "treat" the opioid dependence directly but rather provides a systematic framework for physical and mental exercise to help addicts from multiple levels. At the physical level, it can repair physiological functions damaged by drugs and provide withdrawal support, thereby providing stabilization support during detoxification and early recovery; At the psychological level, self-awareness, emotion regulation, and stress-coping capacity can be cultivated, thus helping to disrupt maladaptive cycles that sustain psychological dependence; At the neurobiological level, a more favorable internal and external milieu can be created for brain self-repair and adaptive remodeling. As a low-risk, low-cost, and highly accessible adjunct, YiJinJing may be integrated with mainstream medical treatment and psychosocial interventions, potentially contributing to a more comprehensive and person-centered rehabilitation strategy for opioid dependence.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

Chai, Y., & Yan, W. (2016). Yijinjing Guiding Method Activates the Twelve Meridians towards the Human Body. *TCM Healthy Lift-Nurturing, 10,* 12-13.

Chen, L., Huang, S., Yang, C., Wu, F., Zheng, Q., Yan, H. et al. (2021). Blockade of B-Adrenergic Receptors by Propranolol Disrupts Reconsolidation of Drug Memory and Attenuates Heroin Seeking. *Frontiers in Pharmacology, 12,* Article ID: 686845. https://doi.org/10.3389/fphar.2021.686845

Feng, J., Yan, Y., Lu, Y., Xu, J., Sun, B., & Feng, L. (2019). Research Progress on Exercise-Based Drug Rehabilitation. *China Sport Science and Technology, 55,* 3-11.

Herman, J. P., Nawreen, N., Smail, M. A., & Cotella, E. M. (2020). Brain Mechanisms of HPA Axis Regulation: Neurocircuitry and Feedback in Context Richard Kvetnansky Lecture. *Stress, 23,* 617-632. https://doi.org/10.1080/10253890.2020.1859475

Li, Y. L. (2021). Interpreting Drug Dependence and Treatment Methods. *Family Medicine, No. 4,* 28-29. (In Chinese)

Psarianos, A., Chryssanthopoulos, C., Paparrigopoulos, T., & Philippou, A. (2023). The Role of Physical Exercise in Opioid Substitution Therapy: Mechanisms of Sequential Effects. *International Journal of Molecular Sciences, 24,* Article No. 4763. https://doi.org/10.3390/ijms24054763

Shahroodi, A., Mohammadi, F., Vafaei, A. A., Miladi-Gorji, H., Bandegi, A. R., & Rashidy-Pour, A. (2020). Impact of Different Intensities of Forced Exercise on Deficits of Spatial and Aversive Memory, Anxiety-Like Behavior, and Hippocampal BDNF during Mor-

phine Abstinence Period in Male Rats. *Metabolic Brain Disease, 35,* 135-147. https://doi.org/10.1007/s11011-019-00518-w

Sun, L., & Zhou, Y. (2021). Research Progress on the Regulatory Role of Endorphins in the Intervention of Drug Addiction Loop through Exercise. *Chinese Journal of Sports Medicine, 40,* 298-305.

Taylor, M. M., & Snyder, H. R. (2021). Repetitive Negative Thinking Shared across Rumination and Worry Predicts Symptoms of Depression and Anxiety. *Journal of Psychopathology and Behavioral Assessment, 43,* 904-915. https://doi.org/10.1007/s10862-021-09898-9

Wei, Q., Zhao, Q., & Wu, Y. (2017). Research on the Effect of Yijinjing on the Psychological Health and Physical Fitness Regulation of College Students. *Shandong Journal of Traditional Chinese Medicine, 36,* 654-656. (In Chinese)

Yu, Z., & Liu, J. (2023). Research Progress on Exercise Intervention and Its Mechanism of Action for Opioid Addiction. *China Sport Science and Technology, 59,* 37-45.

Zhang, S., Zhu, Q., Kong, L., Cheng, Y., Guo, G., & Fang, M. (2021). Clinical Exploration of Yijinjing Massage Therapy in Prevention and Treatment of Knee Osteoarthritis Pain. *China Journal of Traditional Chinese Medicine and Pharmacy, 36,* 7425-7428.

Zhu, H. (2019). *Study on the Effects of Aerobic Exercise and Strength Training on the Rehabilitation Effectiveness of Compulsory Drug Rehabilitation for Individuals*. Master Thesis, Nanjing Sport Institute. (In Chinese)