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Review Article

Clinical Research Progress of Acupuncture and Tuina in the Rehabilitation of Pediatric Cerebral Palsy

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Abstract

Pediatric cerebral palsy is a syndrome of central motor and postural developmental disorders caused by non-progressive brain injury in fetuses or infants, often complicated by intellectual disability, language disorders, epilepsy, and behavioral abnormalities. Its incidence rate is approximately 2‰–3‰, with spastic type accounting for 60%–70%, making it a key and challenging condition in pediatric rehabilitation [1]. In traditional Chinese medicine (TCM), this disease falls under the categories of "Five Types of Retardation," "Five Types of Flaccidity," "Atrophy Syndrome," and "Fetal Weakness." Its core pathogenesis is congenital deficiency and lack of nourishment to the brain marrow, combined with improper post-natal care and phlegm-stasis obstructing the meridians, leading to disturbed qi and blood flow and failure to nourish the sinews, bones, and muscles. Western medicine mainly uses modern rehabilitation training, physical agent therapy, and symptomatic medications. Although these approaches can improve symptoms to some extent, they have limitations such as slow onset of action, unsatisfactory long-term efficacy, and poor tolerance in some children. Acupuncture and tuina, as characteristic external TCM therapies, have been widely used in the rehabilitation of pediatric cerebral palsy due to their safety, environmental friendliness, non-invasiveness, and ease of operation. With the deepening of integrated Chinese and Western medicine research, their mechanisms have been continuously elucidated, clinical protocols have become increasingly standardized and precise, and their combination with modern rehabilitation has achieved synergistic efficacy. This article reviews recent domestic clinical research progress on acupuncture and tuina for pediatric cerebral palsy from the aspects of mechanisms, clinical treatment protocols, efficacy evaluation systems, and combined application models, aiming to provide a reference for developing individualized and comprehensive rehabilitation plans for children with this condition.

Mechanisms of Acupuncture and Tuina in Treating Pediatric Cerebral Palsy

The mechanisms are reflected in both TCM pathogenesis interpretation and modern pharmacological mechanisms, which mutually corroborate and provide theoretical support for clinical application. Their targets mainly focus on brain function regulation, neuromuscular function improvement, and systemic qi-blood metabolism regulation.

(1)TCM Pathogenesis Level

TCM believes that the disease location of pediatric cerebral palsy is in the brain, closely related to the Governing Vessel, liver, kidney, spleen, and stomach. "The brain is the house of the original spirit," and the Governing Vessel is the "sea of yang meridians," entering the brain and connecting to the

heart, responsible for nourishing the brain marrow. Congenital deficiency leads to deficiency of qi and blood in the Governing Vessel, resulting in malnourishment of the brain marrow and loss of spirit function, manifested as motor and intellectual retardation. The liver and kidney govern the sinews and bones and produce marrow; the spleen and stomach are the sources of qi and blood production. Deficiency of liver and kidney leads to flaccidity of sinews and bones; deficiency of spleen and stomach leads to insufficient qi and blood production. Combined with phlegm turbidity and blood stasis obstructing the meridians, qi and blood flow is further blocked, exacerbating limb spasticity and abnormal postures. Acupuncture primarily acts to revive the brain and open orifices, unblock the Governing Vessel and regulate its pulse, and dredge the meridians. Needling points such as Baihui (GV20), Sishencong (EX-HN1), Shuigou (GV26), and Dazhui (GV14) can replenish qi and blood of the Governing Vessel, nourish the brain marrow, and restore the spirit's control over limb movement. Based on pattern differentiation, points including Ganshu (BL18), Shenshu (BL23), Pishu (BL20), and Zusanli (ST36) can nourish the liver and kidney, strengthen the spleen and stomach, and cultivate the source of qi and blood, fundamentally improving the child's constitution. Local points on spastic limbs can dredge meridians, harmonize qi and blood, and relieve muscular tension. Tuina focuses on relaxing sinews and activating collaterals, realigning sinews, and harmonizing qi and blood. Through direct manipulation on spastic muscles, joints, and back Shu points, tuina can release muscle adhesions, relieve spasms, correct abnormal joint postures, and improve local qi and blood circulation. Meanwhile, kneading back Shu points and points on the Ren and Governing Vessels regulates visceral function, nourishes liver and kidney, strengthens spleen and stomach, achieving "internal and external co-regulation" and synergizing with acupuncture.

(2)Modern Pharmacological Level

Recent clinical studies using transcranial Doppler, electromyography, and serological testing have clarified the modern mechanisms of acupuncture and tuina for pediatric cerebral palsy, which are multi-targeted and multi-pathway:

Improving cerebral blood flow and regulating brain function: Acupuncture at head and Governing Vessel points such as Baihui, Sishencong, and Dazhui stimulates cerebrovascular vasomotor function, increases blood flow velocity in the anterior, middle, and basilar cerebral arteries, enhances local cerebral oxygen supply, improves microcirculation in injured brain regions, and promotes repair and regeneration of damaged neurons [2]. It also regulates neurotransmitter levels in the brain, increasing inhibitory neurotransmitters such as dopamine and serotonin, and decreasing excitatory neurotransmitters such as glutamate, thereby balancing neural circuits and inhibiting excessive motor neuron excitation to relieve limb spasticity [3].

Relieving muscle spasticity and improving neuromuscular junction function: Tuina techniques such as kneading, pinching, grasping, and rolling directly act on spastic muscle groups and tendon attachments, reducing muscle tone, relieving spasticity, decreasing the release of muscle injury markers like creatine kinase, and improving muscle metabolism. They also regulate peripheral nerve conduction velocity, repair damaged neuromuscular junctions, restore nerve control over muscles, and enhance limb movement coordination [4]. Electroacupuncture and warm needle acupuncture can further relieve spasticity through electrical and thermal stimulation.

Regulating visceral function and improving systemic nutritional metabolism: Acupuncture and tuina at spleen and stomach related points such as Pishu, Weishu (BL21), and Zusanli regulate gastrointestinal motility, enhance digestion and absorption, increase nutrient intake and utilization, and alleviate common malnutrition and weakness in pediatric cerebral palsy. They also regulate serum levels of growth hormone and insulin-like growth factor, promoting growth and development and laying a foundation for rehabilitation training [5].

Suppressing inflammatory responses and reducing secondary brain injury damage: Some studies have found chronic low-grade inflammation in brain injury regions of pediatric cerebral palsy, with abnormally elevated inflammatory cytokines such as tumor necrosis factor-alpha and interleukin-6 exacerbating neuronal damage. Acupuncture and tuina can regulate immune function, reduce serum inflammatory cytokine levels, suppress chronic brain inflammation, reduce secondary damage, and slow disease progression [6].

Clinical Treatment Protocols of Acupuncture and Tuina for Pediatric Cerebral Palsy

With deepening clinical research, acupuncture and tuina for pediatric cerebral palsy have evolved from empirical applications to standardized, pattern-differentiated, and characteristic protocols. Acupuncture emphasizes "reviving the brain and unblocking the Governing Vessel with pattern-based point selection," while tuina focuses on "relaxing sinews and realigning sinews, and harmonizing the internal organs." The combination of acupuncture and tuina, due to its synergistic effect, has become the preferred TCM comprehensive treatment.

(1) Acupuncture Therapy

Acupuncture for pediatric cerebral palsy is based on filiform needling, with derived techniques including scalp acupuncture, Jin's three-needle therapy, electroacupuncture, warm

needle acupuncture, and abdominal acupuncture. Point selection mainly involves the Governing Vessel, head, liver-spleen-stomach meridians, and local limb points. Needling techniques emphasize "light, shallow, and fast" to improve tolerance.

Classic filiform needling: The core principle is reviving the brain and unblocking the Governing Vessel. Main points include Baihui, Sishencong, Shuigou, Neiguan (PC6), Dazhui, and Yaoyangguan (GV3). Supplementary points based on pattern differentiation: liver-kidney deficiency adds Ganshu, Shenshu, Xuanzhong (GB39); spleen-stomach weakness adds Pishu, Weishu, Zusanli; phlegm-stasis obstruction adds Fenglong (ST40), Xuehai (SP10), Geshu (BL17); upper limb spasm adds Quchi (LI11), Hegu (LI4), Shousanli (LI10); lower limb spasm adds Yanglingquan (GB34), Weizhong (BL40), Kunlun (BL60); talipes varus adds Qiuxu (GB40), Jiexi (ST41); talipes valgus adds Taixi (KI3), Zhaohai (KI6). Use 0.25 mm × 15–25 mm fine needles. Scalp points are inserted subcutaneously 0.3–0.5 cun; Governing Vessel and trunk points are inserted perpendicularly 0.5–1.0 cun; limb points are inserted perpendicularly 0.3–0.8 cun. Use even reinforcing-reducing or tonifying method, retain needles for 20–30 min, every other day, 10–15 sessions as one course [7].

Scalp acupuncture: Commonly used for motor dysfunction in pediatric cerebral palsy. Based on cortical functional localization and TCM meridian theory, select the motor area, sensory area, balance area, language area, etc. Examples include Jiao's motor area, Jin's three-needle for intelligence and brain. Use rapid twisting manipulation at 200–300 times/min, retain needles for 30 min, manipulate 2–3 times during retention. Can be used alone or combined with filiform needling, especially suitable for children with motor, language, and balance impairments [8].

Electroacupuncture: On the basis of filiform needling, connect an electroacupuncture device to points on spastic limbs. Use sparse-dense waves or continuous waves; stimulus intensity should cause mild limb twitching without crying. Each session lasts 20 min, every other day. The pulsed stimulation enhances point stimulation, more effectively relieving muscle spasticity and improving neuromuscular transmission. Suitable for spastic type, and studies show better efficacy than filiform needling alone [9].

Warm needle acupuncture: Combines needling with thermal stimulation. While retaining the needle, place a segment of moxa stick on the needle handle and ignite, conducting heat through the needle to deep tissues. Suitable for children with spleen-stomach weakness, liver-kidney deficiency, or limb spasticity accompanied by coldness and fear of cold. It warms the meridians, unblocks qi, tonifies qi and blood, and nourishes liver and kidney. Control the thermal intensity to avoid burns [10].

(2) Tuina Therapy

Tuina for pediatric cerebral palsy focuses on relaxing sinews and activating collaterals, relieving spasticity, and realigning sinews, combined with visceral regulation based on pattern differentiation. Manipulations emphasize "gentle, moderate, persistent, and penetrating," avoiding violence. Adjust force according to age, constitution, and symptom severity. Main types include basic relaxing tuina, pattern-based tuina, and characteristic tuina, often used together.

Basic relaxing tuina: Aimed at relieving limb spasticity and correcting abnormal postures, suitable for all types of pediatric cerebral palsy, focusing on spastic limbs and both sides of the spine. Head and face: open the heavenly gate, push the palpebral arch, knead Baihui, press and knead Sishencong and Fengchi (GB20) with gentle force to revive the brain and benefit intelligence. Trunk and back: roll and knead the bilateral bladder meridian lines along the spine, press and knead Ganshu, Shenshu, Pishu, Feishu (BL13), and perform spinal pinching (Jian Ji) 3–5 times to regulate viscera and tonify qi and blood. Limbs: knead, pinch, grasp, and press spastic limbs to release adhesions, focusing on Quchi, Hegu, Zusanli, Yanglingquan, Kunlun, etc., then perform passive joint flexion-extension, rotation, and stretching to relieve spasms, increase range of motion, and correct abnormal postures [11].

Pattern-based tuina: Add or subtract manipulations based on basic relaxing tuina according to TCM pattern differentiation. Liver-kidney deficiency: increase pressing and kneading of Shenshu, Ganshu, Taixi, Xuanzhong with greater force, and rub the posterior muscles of the lower limbs to nourish liver and kidney and strengthen sinews and bones. Spleen-stomach weakness: emphasize pressing and kneading Pishu, Weishu, Zhongwan (CV12), Zusanli, combined with abdominal rubbing for 5–10 min to strengthen spleen and stomach and tonify qi and blood. Phlegm-stasis obstruction: press and knead Fenglong, Xuehai, Geshu, combined with pressing Shuigou and Neiguan to resolve phlegm, dispel stasis, and unblock meridians [12].

Characteristic tuina: Mainly spinal pinching and foot reflexology. Spinal pinching stimulates the bilateral bladder meridian and Governing Vessel, regulating visceral function, tonifying qi and blood, and unblocking the Governing Vessel to revive the brain. Suitable for all children with pediatric cerebral palsy, especially those with weakness and digestive disorders. Foot reflexology: press and knead reflex zones of the kidney, liver, spleen, brain, and motor area on the soles to indirectly regulate brain and visceral function as an adjunctive therapy [13].

(3) Combined Acupuncture and Tuina Therapy

The combination of acupuncture and tuina is the core TCM protocol for pediatric cerebral palsy. Acupuncture focuses on reviving the brain, regulating visceral function, and dredging meridian qi and blood, improving brain function and systemic status from the "spirit" and "qi" levels. Tuina focuses on directly releasing muscle spasms, correcting joint postures, and improving local motor function, addressing limb motor disorders at the "form" level. Together they achieve "spirit and form co-regulation," with significantly better efficacy than either alone.

The common clinical combined model is "reviving-brain and unblocking-Governing Vessel acupuncture + relaxing-sinews and pattern-based tuina." First perform filiform needling at main points such as Baihui, Sishencong, Shuigou, Dazhui, and pattern-based supplementary points, retain needles for 30 min, then after needle withdrawal perform relaxing-sinews and pattern-based tuina, focusing on the spastic limbs and visceral Shu points corresponding to the needling areas. Alternatively, scalp acupuncture plus spinal pinching can be used for the spastic type with intellectual and language impairments, where scalp acupuncture revives the brain and improves motor function, and spinal pinching tonifies qi and blood and regulates viscera, enhancing overall rehabilitation [14].

Efficacy Evaluation System for Acupuncture and Tuina in Pediatric Cerebral Palsy

Efficacy evaluation is key to judging treatment effects and optimizing protocols. Currently, a comprehensive system combining TCM pattern scores, Western objective scales, and physicochemical indicators has been established, achieving standardized, objective, and quantitative evaluation covering motor function, muscle tone, activities of daily living (ADL), intellectual and language function, TCM patterns, and brain function.

(1) TCM Pattern Evaluation

Referencing the efficacy criteria for "Five Types of Retardation" and "Five Types of Flaccidity" in the Standards for Diagnosis and Efficacy of TCM Diseases and Patterns, combined with clinical features of pediatric cerebral palsy, pattern scores are given from three aspects: motor development, sinew-bone status, and systemic symptoms. Primary symptoms include delayed standing, walking, tooth eruption, speech, and hair growth; soft head, neck, hands, feet, and muscles. Secondary symptoms include sallow complexion, fatigue, poor appetite, weakness of lower back and knees, and profuse phlegm. Each symptom is graded as none, mild, moderate, or severe, scoring 0, 1, 2, 3 respectively. After treatment, a reduction of pattern score ≥70% from baseline is considered marked effect, 30%–69% effective, and <30% ineffective. This system intuitively reflects the effect of acupuncture and tuina on TCM patterns, embodying the "treatment based on pattern differentiation" principle [15].

(2) Western Objective Scale Evaluation

Western scales are the core tools for evaluating rehabilitation effects in pediatric cerebral palsy. The selected scales focus on motor function, muscle tone, and ADL, while also addressing intellectual, language, and behavioral comorbidities. They are internationally recognized or nationally accepted standardized scales in pediatric rehabilitation, providing quantifiable and comparable results.

Motor function assessment: Gross Motor Function Measure (GMFM-88/66). GMFM-66 is preferred for its simplicity and precision, covering five functional areas: lying and rolling, sitting, crawling and kneeling, standing, and walking/running/jumping. Total score 0–100, higher score indicates better motor function. For children with fine motor impairment, the Fine Motor Function Measure (FMFM) is used to assess hand-eye coordination, grasping, and manipulation [16].

Muscle tone assessment: Modified Ashworth Scale (MAS). Muscle tone is graded 0–4 (0=normal, 1=slight increase, 1+=mild to moderate increase, 2=moderate increase, 3=severe increase, 4=rigidity). Lower grade indicates more normal tone. It is the gold standard for evaluating limb spasticity improvement in the spastic type of pediatric cerebral palsy [16].

Activities of daily living assessment: The Pediatric Cerebral Palsy ADL scale covers five dimensions: eating, dressing, washing, toileting, and mobility. Total score 0–50, higher score indicates greater independence. The Pediatric Quality of Life Inventory Cerebral Palsy Module (PedsQL-CP) also addresses physical, emotional, and social functions, providing a more comprehensive assessment of quality of life [17].

Comorbidity assessment: For intellectual disability, use the Denver Developmental Screening Test (DDST) or Gesell Developmental Diagnosis Scale (GDDS). For language disorders, use the S-S Language Development Retardation Assessment. For epilepsy or behavioral abnormalities, use corresponding specialty scales [18].

(3) Objective Physicochemical Indicator Evaluation

Physicochemical indicators provide a microscopic validation of acupuncture and tuina efficacy, objectively reflecting improvements in brain function, neuromuscular function, and systemic metabolism. Commonly used indicators include:

1. Cerebral hemodynamics: Transcranial Doppler (TCD) measures peak systolic and end-diastolic flow velocities in the anterior cerebral artery (ACA), middle cerebral artery (MCA), and basilar artery (BA). Significant increases after

treatment indicate improved cerebral perfusion [2].

Neurotransmitters and inflammatory cytokines: ELISA detects serum levels of dopamine, serotonin, glutamate, tumor necrosis factor-alpha, and interleukin-6. After treatment, inhibitory neurotransmitters increase, excitatory neurotransmitters decrease, and inflammatory cytokines decrease, indicating improved neural circuit balance and suppression of chronic inflammation [3,6].

Neuromuscular function indicators: Electromyography measures peripheral nerve conduction velocity. After treatment, motor and sensory conduction velocities significantly increase, indicating peripheral nerve repair. Serum creatine kinase (CK) and lactate dehydrogenase (LDH) levels significantly decrease, indicating relief of muscle spasticity and improved muscle metabolism [4].

Imaging indicators: Cranial CT/MRI assesses morphological changes in brain injury regions. Although acupuncture and tuina cannot completely reverse organic brain damage, they can improve microcirculation in injured areas; some children show mild improvement in periventricular leukomalacia or brain hypoplasia on follow-up [19].

Combined Application Models of Acupuncture and Tuina with Modern Rehabilitation Approaches

Rehabilitation for pediatric cerebral palsy emphasizes comprehensiveness and individualization; a single therapy cannot address multiple functional impairments. The current mainstream clinical model is "TCM acupuncture and tuina + modern rehabilitation," fully utilizing the advantages of acupuncture and tuina in reviving the brain, relieving spasticity, and regulating visceral function, as well as modern rehabilitation in correcting postures, training motor function, and improving social adaptation, achieving complementary advantages and synergistic efficacy. Common combined models are as follows:

(1) Combined with Motor Therapy

Motor therapy is the core of modern rehabilitation for pediatric cerebral palsy, including Bobath, Vojta, Ueda, and neurodevelopmental therapy (NDT). Bobath is preferred for its focus on correcting abnormal postures and promoting normal movement patterns. The core logic of combining acupuncture and tuina with Bobath is: acupuncture/tuina first, then rehabilitation training. Acupuncture revives the brain and regulates brain function; tuina releases muscle spasms and relieves joint contractures, reducing movement resistance. Then Bobath methods are applied for specific motor training (e.g., correcting head retraction, talipes varus, training rolling, sitting balance, standing, walking). At this time, the child's muscle tone is relatively normal, making cooperation easier and training effects significantly improved [20]. Studies show that reviving-brain acupuncture plus relaxing-sinews tuina combined with Bobath therapy for the spastic type of pediatric cerebral palsy yields significantly greater improvements in GMFM-66 and ADL scores than Bobath alone [21].

(2) Combined with Occupational Therapy

Occupational therapy focuses on improving fine motor skills and ADL through targeted training such as grasping toys, threading beads, self-feeding, and dressing, cultivating independent living ability. It is suitable for children with fine motor impairment and low ADL ability. When combined, acupuncture selects upper limb points such as Shousanli, Hegu, Neiguan to improve upper limb nerve function; tuina performs fine upper limb tuina to release muscle spasticity in fingers and wrists, improving flexion and grasping. Then occupational therapy training significantly enhances fine motor ability and accelerates independent daily activities [22].

(3) Combined with Physical Agent Therapy

Physical agent therapy includes electrical therapy, magnetic therapy, thermal therapy, etc., such as neuromuscular electrical stimulation (NMES), transcranial magnetic stimulation (TMS), and paraffin therapy. Combining with acupuncture and tuina achieves "stimulation superposition and efficacy enhancement": electroacupuncture plus NMES provides dual electrical stimulation to more effectively relieve spasticity and improve neuromuscular transmission; warm needle acupuncture plus paraffin therapy provides dual thermal stimulation to more effectively warm meridians and relax sinews; reviving-brain acupuncture plus TMS acts doubly on the brain to more effectively improve cerebral blood flow and regulate brain function [23].

(4) Combined with Pharmacotherapy

Pharmacotherapy for pediatric cerebral palsy is mainly symptomatic: muscle relaxants (e.g., baclofen, tizanidine) for spasticity, neurotrophic drugs (e.g., cerebroprotein hydrolysate, gangliosides) to promote neuronal repair, and Chinese herbal decoctions to strengthen spleen, open appetite, tonify liver and kidney. Combining with acupuncture and tuina achieves "toxicity reduction and efficacy enhancement." On one hand, acupuncture and tuina enhance the efficacy of muscle relaxants and neurotrophic drugs, allowing lower doses. On the other hand, they regulate visceral function, reducing gastrointestinal and hepatic adverse effects of Western drugs, while Chinese herbal decoctions echo the pattern-based treatment of acupuncture and tuina, further improving systemic regulation [24].

Problems and Prospects

In recent years, significant progress has been made in clinical research on acupuncture and tuina for pediatric cerebral palsy, with verified efficacy, partially elucidated mechanisms,

and improved outcomes through combination with modern rehabilitation. However, limitations remain:

Deficiencies in study design: Most studies are single-center, small-sample retrospective studies, lacking multicenter, large-sample, randomized, double-blind, controlled high-quality trials. Some lack rigorous control groups, leading to bias. Follow-up periods are mostly 3–6 months, lacking long-term follow-up of ≥1 year, failing to objectively reflect long-term efficacy.

Lack of standardized protocols: Point selection, manipulation techniques, treatment frequency, and course duration for acupuncture and tuina have not been unified nationally. Protocols vary among institutions (e.g., point combinations, manipulation force) and are heavily influenced by clinician experience, hindering standardized promotion.

Insufficient individualization: Most studies focus on spastic type, with few on dyskinetic, ataxic, or mixed types. Moreover, refined individualized protocols for different ages, disease durations, and comorbidities are lacking.

Future Research Directions

Conduct high-quality clinical research: Design multicenter, large-sample, randomized, controlled trials with rigorous control groups (e.g., blank control, modern rehabilitation only), unify efficacy evaluation criteria, extend follow-up, objectively validate short- and long-term efficacy, and provide high-level evidence-based medical evidence.

Establish standardized clinical protocols: Develop Clinical Practice Guidelines for Acupuncture and Tuina in the Treatment of Pediatric Cerebral Palsy based on experience from multiple tertiary hospitals, unifying point selection principles, needling methods, course duration, tuina manipulation standards, force levels, and pattern-based additions/subtractions.

Refine individualized treatment plans: Strengthen research on dyskinetic, ataxic, and mixed types. Develop refined individualized acupuncture and tuina protocols based on type, age, disease duration, constitution, and comorbidities, and integrate with modern rehabilitation features to create "one patient, one plan" comprehensive rehabilitation programs.

Innovate combined application models: Integrate rehabilitation engineering, artificial intelligence, and other new technologies to innovate combined models, such as acupuncture and tuina combined with AI-powered rehabilitation training robots, achieving "TCM characteristics + modern technology" fusion to further enhance rehabilitation outcomes.

Conclusion

Rehabilitation for pediatric cerebral palsy is a long-term, comprehensive process. Acupuncture and tuina, as characteristic external TCM therapies, occupy an important position in the rehabilitation of pediatric cerebral palsy due to their safety, environmental friendliness, non-invasiveness, and proven efficacy. Their core advantages lie in reviving the brain, unblocking the Governing Vessel, relaxing sinews and activating collaterals, and harmonizing viscera, thereby improving brain function, relieving limb spasticity, and regulating systemic qi and blood metabolism. Their combination with modern rehabilitation achieves superimposed efficacy. In recent years, significant progress has been made in clinical research, with increasingly in-depth mechanistic explanations, more standardized clinical protocols, and a more comprehensive efficacy evaluation system. However, issues such as insufficient study design, lack of unified protocols, and incomplete mechanistic understanding remain.

In the future, with deepening integrated Chinese and Western medicine research and the integration of modern technology with TCM rehabilitation, the diagnostic and treatment protocols for pediatric cerebral palsy using acupuncture and tuina will become more standardized, refined, and individualized. Their mechanisms will be further elucidated, and their combination with modern rehabilitation will continue to innovate, providing better and more comprehensive rehabilitation services for children with this condition, maximizing improvements in motor function, ADL, and quality of life, and reducing the burden on families and society. As an important means of rehabilitation for pediatric cerebral palsy, the clinical value of acupuncture and tuina will be further demonstrated, offering more TCM solutions and wisdom for the development of pediatric rehabilitation.

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