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Research on Optimization Strategies for Family Rehabilitation Skills Training for Children with Cerebral Palsy under the "Internet +" Background

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Abstract: Rehabilitation treatment for children with cerebral palsy faces systemic challenges, including uneven distribution of medical resources concentrated in large cities, high long-term treatment costs imposing heavy financial burdens on families, and weak family support systems making sustained rehabilitation training difficult. This study proposes an optimized path for Internet-enabled family rehabilitation skills training. Through information technologies such as building a digital curriculum system and a remote guidance platform, it integrates resources from all parties to construct a three-level linked rehabilitation ecosystem of "hospital–community–family". Combining online learning with offline practice, the path systematically carries out training integrating theoretical explanation and operational demonstration. It aims to continuously strengthen parents' mastery of cerebral palsy rehabilitation knowledge, effectively improve their rehabilitation skills and professional quality, and provide timely and long-term psychological support and health education for families through online communities and psychological service modules. Ultimately, it promotes continuous optimization of family rehabilitation effects and substantial improvement in the quality of life of children.

Keywords: Internet +; Children with cerebral palsy; Family rehabilitation

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1. Introduction

Pediatric cerebral palsy is a common neurodevelopmental disorder that affects children's motor, cognitive, and language development. Currently, there is no effective cure for pediatric cerebral palsy worldwide, and rehabilitation treatment is an important way to improve children's functions, enhance their self-care ability and social participation [1]. However, traditional rehabilitation usually requires professional physicians or therapists in medical institutions, which generally has problems such as high service costs, long treatment cycles, and uneven distribution of high-quality resources. It not only brings heavy economic pressure to

children's families but also constitutes a sustained burden in time, energy and psychology, which has become an important factor affecting the universality and sustainability of rehabilitation for children with cerebral palsy.

With the increasing maturity of "Internet +" technology and its in-depth integration and wide application in the medical and health field, it provides innovative ideas and technical empowerment to solve these problems. Therefore, this study aims to explore how to systematically use Internet technology to optimize the practical path of family rehabilitation skills training for children with cerebral palsy. It focuses on exploring systematic, standardized and personalized rehabilitation skills training for parents through modes such as remote real-time guidance, structured online courses, virtual simulation training and intelligent feedback systems, as well as providing continuous professional support and dynamic tracking. The study expects to comprehensively improve families' care ability and the scientificity of rehabilitation management by building a "hospital–community–family" linked rehabilitation ecosystem, so as to achieve the overall goals of improving rehabilitation effects, reducing family and social burdens, and enabling more children to obtain effective rehabilitation support.

2. Current situation and existing problems of rehabilitation treatment for children with cerebral palsy

There are about 6 million cerebral palsy patients in China, with an annual increase of 40,000 to 50,000 [2]. The prevalence of cerebral palsy among children aged 0–6 is 0.23–0.246%, forming a large and growing group. The disease is mainly manifested as dyskinesia, with or without sensory, perceptual and intellectual defects, and is the most common cause of physical disability in children [3–5]. It not only seriously affects children's own growth and future social integration but also makes their families bear long-term heavy care burdens and mental pressure, becoming an urgent public health and social problem.

2.1. Insufficient and unbalanced rehabilitation medical resources, shortage of professional talents

The rehabilitation intervention system for children with cerebral palsy in China has problems of weak foundation and unbalanced development. From the supply side, rehabilitation medical resources are generally scarce. Data show that the human resources of rehabilitation therapists in China are generally scarce and unevenly distributed. According to the *China Health Statistics Yearbook 2023*, the ratio of rehabilitation therapists in China was about 4.57 per 100,000 population in 2022, a significant increase from 1.03 per 100,000 population calculated by Ren Yanping et al. in 2014 [6]. However, there is still a significant gap compared with the target of 12 per 100,000 population by 2025 proposed in the *Opinions on Accelerating the Development of Rehabilitation Medical Work* and the level of more than 30 per 100,000 population in developed countries. Among them, professional talents specializing in children, especially proficient in cerebral palsy rehabilitation assessment and treatment, are even scarcer. Existing practitioners generally have problems such as shallow professional qualifications, insufficient systematic training and limited clinical experience, which are difficult to meet the refined and individualized requirements of cerebral palsy rehabilitation.

More prominent is the structural contradiction in resource distribution. High-quality rehabilitation institutions, experts and technical equipment are relatively concentrated in large medical institutions in first-

and second-tier cities, while rehabilitation services are less accessible in vast rural areas, small and medium-sized cities and economically underdeveloped areas. This significant gap between urban and rural areas and regions leads a large number of children's families to travel to other places for medical treatment, further increasing time, energy and economic costs [7].

2.2. Long-term rehabilitation highlights economic pressure, gaps in the existing security system

Rehabilitation of cerebral palsy is essentially a long-term, even lifelong process throughout the entire growth and development cycle of children. Short-term and intermittent inpatient treatment is difficult to achieve and consolidate substantial functional improvement, making rehabilitation treatment characterized by continuous investment. However, limited by the current insufficient accessibility of rehabilitation resources and widespread family economic pressure, only a few children can receive early, standardized and uninterrupted institutional rehabilitation at present, and most children are actually in a home state lacking systematic professional support for a long time [8]. Ding Yiming et al. pointed out in a representative national multi-center study (covering 12 provinces) that the average annual direct economic burden of families with children with cerebral palsy is heavy, with a median of 40% of the family's annual income, and this proportion even exceeds 100% in some families, with rehabilitation treatment costs being the main component [9]. This sustained high economic factor increases the risk of "poverty due to illness" and "return to poverty due to illness" for families with children with cerebral palsy, and becomes the main reason for families to interrupt or abandon treatment [10].

This not only means that children lose precious opportunities for functional improvement but also causes losses in previous medical investment, and affects the overall rehabilitation effect from a social perspective. Therefore, exploring and establishing a sustainable service model that can not only guarantee rehabilitation effects but also effectively reduce long-term economic costs and improve the efficiency of public fund use has certain practical significance.

3. Analysis of family rehabilitation treatment needs and pain points

Many studies have shown that on the basis of rehabilitation treatment in medical institutions, strengthening family rehabilitation training plays an important role in the rehabilitation of pediatric cerebral palsy [11,12]. Through active and correct daily care and family rehabilitation training, parents can help children with cerebral palsy obtain partial functional recovery and self-care in daily life, reduce complications, and significantly reduce rehabilitation costs, relieving burdens for families and society. Therefore, family rehabilitation has now become an important part of the overall rehabilitation medical service for children.

A questionnaire survey of children's families found that 87.5% of parents believed that hospital rehabilitation had problems such as limited medical resources, long waiting times and high rehabilitation costs; 85.3% of parents were willing to carry out family rehabilitation training for their children; 74.3% of parents could insist on daily family rehabilitation training for their children for about half an hour to one hour; 81.2% of parents hoped to receive comprehensive family rehabilitation support such as rehabilitation training and real-time guidance.

The existence of this contradiction shows the importance of developing an innovative rehabilitation service model. In recent years, the rise of tele-rehabilitation models based on information technology has

provided new methods to solve the above problems. For example, Du Yanxuan et al. pointed out that tele-rehabilitation technology can break through geographical and time restrictions, enabling rehabilitation experts to conduct remote assessment, supervision and real-time feedback on training in the home environment, effectively improving the standardization and sustainability of family rehabilitation, thus forming an efficient rehabilitation closed loop of "professionals–parents–children" [11,12]. These explorations show that deeply integrating digital tools with traditional rehabilitation to build a professional ecosystem that supports, trains and connects families is an important development direction to make up for the shortcomings of the current service system and respond to the core demands of families.

4. Internet + family rehabilitation skills training path for children with cerebral palsy

As the most familiar and reassuring living space for children with cerebral palsy, the family is not only the core place for emotional support but also the best practical base to achieve rehabilitation goals. The advantage of family rehabilitation lies in its high personalization and contextualization. Family rehabilitation carried out under the continuous company and professional guidance of family members can design and implement the most practical intervention strategies according to children's specific functional disorders and family living environments, naturally integrating treatment into children's daily activities, from dressing and eating to daily walking. This life-oriented rehabilitation model can more effectively improve children's adaptability and independent living skills, thus promoting the transfer and consolidation of rehabilitation skills in real life [13].

Therefore, with the development of modern information technology and the popularization of electronic devices such as computers and mobile phones, it is of great significance to use Internet+ technology to carry out online + offline theoretical + practical training, strengthen parents' learning of cerebral palsy rehabilitation knowledge, improve their rehabilitation skills and professional literacy, and have rehabilitation therapists provide regular guidance, training and evaluation, and adjust training plans when necessary to improve the effect of family rehabilitation. The core of this integrated model is to break the time and space barriers of traditional rehabilitation services, extend professional resources to family scenarios through digital means, and build a continuous, dynamic and accessible support network, thus significantly enhancing the standardization, scientificity and sustainability of family rehabilitation.

4.1. Formulate online rehabilitation courses

Make full use of Internet + technology to systematically and modularly integrate family-applicable rehabilitation techniques into a series of teaching short videos with clear themes, clear steps and appropriate duration. The curriculum content should fully cover key areas of cerebral palsy rehabilitation, specifically including: occupational therapy training, such as activities of daily living training (correct sitting and standing posture adjustment, assisted eating skills, safe bathing methods, adaptive dressing training), game interaction training and crawling guidance; motor function training, such as promoting head and neck control, independent turning over, sitting balance, standing preparation and walking training, as well as sensory integration training; speech function training, such as oral muscle function exercise, auditory recognition games, articulation practice and oral proprioceptive stimulation; cognitive function training, covering

enlightenment of digital and spatial concepts, improvement of basic cognitive abilities such as attention and memory, as well as simple logical reasoning and item classification strategies. The curriculum system should establish a scientific advanced path, facilitating parents to learn and practice step by step according to the assessment results and rehabilitation stages.

4.2. Build community rehabilitation gyms

As an authoritative rehabilitation diagnosis and treatment institution, hospitals can provide professional medical services, but generally face practical dilemmas such as tight rehabilitation beds, limited therapist human resources and high long-term rehabilitation costs, which are difficult to meet the high-frequency and long-term rehabilitation needs of children. Community rehabilitation gyms can serve as an important supplement and extension of professional hospital treatment, building a comprehensive service model of "precision treatment in hospitals, continuous rehabilitation in communities and families". This can effectively alleviate the pressure on public medical resources, reduce family economic and time costs, and make rehabilitation services more accessible.

Through the three-dimensional linkage of "hospital–community rehabilitation gym–family", a three-dimensional and closed-loop rehabilitation support ecosystem is built. It can not only provide children with high-frequency, low-cost and nearby training opportunities but also effectively reduce their long-term social isolation at home, promoting the construction of an inclusive and supportive community environment.

4.3. Construct an internet + comprehensive rehabilitation support system

First, use online media such as WeChat official accounts, social media, video accounts and exclusive mini-programs to carry out expert live Q&A, special online lectures, series of micro-lessons and online guidance to achieve efficient and convenient knowledge dissemination. Timely collect user feedback through the background to dynamically optimize, accurately push and targeted adjust the online course package, and even prescribe customized "video prescriptions" for individual children and provide personalized family rehabilitation plans.

Second, rely on online platforms to provide e-commerce shopping guides, online leasing or second-hand replacement information services for small and safe family rehabilitation training aids (such as finger separators, orthotics), helping families obtain necessary resources in a more economical way and promoting the recycling of rehabilitation equipment.

Third, develop an integrated rehabilitation progress sharing and data management platform to realize the safe synchronization of key rehabilitation data (such as training frequency, completion degree, parents' observation notes, video records) generated by children in hospitals, community gyms and families, and open remote assessment and professional feedback functions, enabling therapists to understand the implementation of family rehabilitation in real time and provide accurate basis for follow-up guidance.

Fourth, improve the psychological resilience needed in the long-term rehabilitation process, coping methods for emotional fluctuations and daily mental health management, so as to improve the overall effect of children's rehabilitation. Build an online rehabilitation support community, set up functional sections such as rehabilitation diary sharing, training short video check-in and experience exchange forums, and embed modules such as online Q&A, peer encouragement, professional psychological counseling and regular health education.

5. Conclusion

In summary, as the most trusted living environment for children with cerebral palsy, the family is an irreplaceable key place in the rehabilitation process. Family rehabilitation under family support can significantly improve the treatment effect. This life-centered rehabilitation model, by integrating treatment into children's daily life and behavior habits, can more effectively improve children's life adaptability and self-care level. It is recommended that relevant departments actively promote the integration and optimization of "online + offline" rehabilitation skills training resources supported by Internet + technology. On the one hand, provide parents with scientific, professional and systematic theoretical courses and operational guidance through digital platforms; on the other hand, professional rehabilitation therapists conduct on-site or remote assessment and personalized program adjustment regularly, forming a closed-loop management of "knowledge imparting–skills training–effect feedback". It not only strengthens parents' professional rehabilitation ability but also ensures the scientificity and pertinence of training programs, promoting the continuous optimization of family rehabilitation effects.

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References

[1] Chen L, 2020, The Important Role of Family Rehabilitation Training in the Rehabilitation of Children with Cerebral Palsy. Capital Food and Medicine, 2020(4): 39–40.

[2] Fan T, Jiang Y, Dai J, et al., 2023, Construction and Effect Study of Remote Family Rehabilitation Model for Children with Cerebral Palsy Based on Internet Technology. Chinese Journal of Child Health Care, 31(11): 1202–1207.

[3] Feng Y, Pang W, Li X, et al., 2021, Meta-analysis of the Prevalence of Cerebral Palsy in Children Aged 0–6 Years in China. Chinese General Practice, 24(5): 603–607.

[4] Zhan T, Chen F, Wang Y, 2025, Clinical Study of the Trinity Rehabilitation Model of "Medical-Education-Family" for Children with Spastic Cerebral Palsy. Guizhou Medical Journal, 49(7): 1159–1162.

[5] Rehabilitation Group, Pediatrics Branch, Chinese Medical Association, 2019, Expert Consensus on Etiological Diagnosis Strategies of Cerebral Palsy. Chinese Journal of Pediatrics, 57(10): 746–751.

[6] Ren Y, Guo Q, Li Y, et al., 2014, Current Situation and Demand of Community Rehabilitation Medical Resources in China. Chinese Journal of Rehabilitation Medicine, 29(8): 757–759.

[7] Tang L, Wu Y, Li Y, et al., 2021, Discussion on Remote Family Rehabilitation Model for Children with Cerebral Palsy Based on Modern Information Technology. Chinese Journal of Rehabilitation, 36(12): 756–759.

[8] Li X, 2016, Current Situation, Challenges and Development Strategies of Cerebral Palsy Rehabilitation in China. Chinese Journal of Rehabilitation Medicine, 31(1): 6–8.

[9] Ding Y, Shi W, Jiang Z, et al., 2020, Multicenter Survey on Family Economic Burden of Children with Cerebral

Palsy in China. Chinese Journal of Rehabilitation Theory and Practice, 26(8): 879–884.

[10] Jiu J, 2008, Analysis of Reasons for Abandoning Treatment for Children with Cerebral Palsy. Chinese Journal of Practical Nervous Diseases, 2008(3): 81–82.

[11] Du Y, Li J, 2024, Application and Development Status of Tele-rehabilitation in Cerebral Palsy Rehabilitation. Chinese Journal of Rehabilitation, 39(9): 562–566.

[12] Huang Y, Sun X, 2018, Application Status of Family-centered Nursing Model in Cerebral Palsy Rehabilitation. Chinese Nursing Research, 32(21): 3348–3350.

[13] Song Y, Chen Y, Xu H, et al., 2025, Construction and Practice of Personalized Rehabilitation Nursing Model for Children with Cerebral Palsy Based on "Internet +" Platform. Heilongjiang Medicine and Pharmacy, 48(2): 91–93.