

# Practical Significance of Improving Patients' ADL through Environmental Modification in Occupational Therapy

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**Abstract:** Spinal cord injury is a common type of disease caused by trauma, motor capacity loss and multiple complications, most often in middle-aged people engaged in heavy manual labor. In most parts of China, therapists usually focus only on the physical therapy process, usually using universal auxiliary tools to assist patients' lives, and lack of personalized environmental modification and auxiliary tools design to better improve the safety and comfort of patients' lives. The following will describe the process of improving the quality of life in the real cases of spinal cord injury.

**Keywords:** Environmental modification; Occupational therapy; SCI

## 1. Introduction

Patients with traumatic SCI should preferably undergo interventional rehabilitation treatment 2 to 4 weeks after the spinal shock period, which can effectively improve their motor and sensory function, activities of daily life ability, and quality of life. With the intervention of physical rehabilitation therapy, patients can restore the body to a relatively balanced state in a relatively short time through the stimulation of various physical factors and the treatment of traditional rehabilitation techniques. Through physical rehabilitation training, the musculoskeletal system can be maintained at a good level and can minimize the degree of muscle atrophy and joint adhesion. However, due to neurological trauma, patients cannot subjectively operate the limb to complete the activities in ADL. Occupational therapists. Through personalized analysis of patients, it uses FIM scale and Barthel index rating scale to evaluate patients' self-care ability, finds that patients cannot successfully complete activities due to the function restriction, and can help patients complete specific actions through environmental remodeling.

## 2. Project Context

In the 1930s, some European countries proposed to build a number of facilities for functional people, aiming to help functional people better contact and integrate into society, advocating that functional people are no different from normal people, and their dignity and personality should be protected and respected. Later, the United States formulated the Uniform Federal Accessibility Standards (UFAS), which proposed the theory of "accessibility" and more fully explained what "accessibility" is. The concept of barrier-free started late in China and developed rapidly, but it is still slightly scarce in relatively developed countries, and it is mainly concentrated in public facilities. The environmental transformation of patients' families and communities is a manifestation of the in-depth and individualization of the barrier-free environment.

## 3. Primary Coverage of Environmental Modification

For environmental modification, There are six international standards: ① has ramps replacing steps at the entrances of all public buildings, The slope shall not be greater than 1 / 12; ② sets blind roads in the frequent access of the blind, Set up sound facilities for the blind at the intersection; ③The clearance corridor width of the door should be more than 0.8 m, Another entrance for the disabled shall

be provided for the revolving doors; ④ The clearance width of all building corridors shall be more than 1.3 m; ⑤The public toilets shall be provided with seat toilets with handrails, Door partition shall be open or sliding, To ensure the interior space for wheelchair access; ⑥The entrance net width of elevator should be more than 0.8 m .According to the different degree of injury, rehabilitation effects and personal system of SCI patients, specific problems should be analyzed.Specific environmental transformation projects should include most of the conditions of ADL for people with functional disorders, such as eating, bathing, using the toilet, displacement, personal hygiene management, work, etc.

Take a patient with high spinal cord injury as an example, the patient caused C2-C6 injury due to a car accident, postoperative rehabilitation, good effect, and still adhere to the training.Now there is no feeling below the chest, can not be autonomous exercise, urine and feces can not control.Hand and wrist spasms, both upper limbs recover better, able to complete 60% -70%ROM activities.The patient is male, now living in the center of a prefecture-level city in Shandong province, aged 29 years old, unmarried, 181cm height, weight 79kg, graduate degree, a foreign company employee before the accident, parents were state-owned enterprises, good family conditions.After the accident, the patient purchased an apartment near the company and lived with his parents in a living area of about 90 m<sup>2</sup>.He was discharged 28 days after surgery and after about 11 months, occupational therapists was required to perform environmental modification of his living environment.

The patient already has barrier-free access, width of 1.4m, height of 0.5m, length of 5m, which basically meets and slightly below the standard.On this basis, the therapist added a length of 5m and a height of 0.75m, with a gentle slope at the threshold.The width of the elevator door is 1.0m, and it is well connected with all floors. The wheelchair can pass smoothly. The therapist sets an emergency phone at the height of 0.75m to facilitate patients to deal with accidents.The patient's bed was 0.55m high, flush with the wheelchair, and easy to position transfer.The therapist designs a wide handle on both sides of the bed, and the patient can switch from supine position to long sitting position.Anti-slip pad under the toilet, handrails on both sides, a bathroom platform with a height of about 0.55m, and reduce the height of the shower head.The work table is changed with adjustable height and movable type for patients to work on the bed.

Through the above environmental modification, patients can independently complete some ADL such as getting up, bathing and displacement.The patient said that after the environmental transformation, life is much more convenient, some things completely need the help of parents, now can also reduce the participation of parents, safety is also improved, do not worry about falling down because of improper operation.

#### **4. Advantages and Disadvantages of the Project**

Environmental transformation is also an important part of rehabilitation treatment. Its advantages are that it can expand patients 'activity space, improve patients' self-care ability, help patients to build self-confidence and assist patients in ADL to carry out rehabilitation training, which is a manifestation of people-oriented concept.Environmental transformation can also reduce the burden of family members and improve the sense of security of patients and their families.

At present, the development of environmental transformation in Chinese mainland is not optimistic, mainly due to the following disadvantages.First of all, the immature technology of environmental transformation may lead to the occupation of social and public resources, which will bring unnecessary impact on the normal life of other citizens.Secondly, environmental transformation has high requirements for patients' family conditions, and ordinary families generally do not have the awareness or enough funds to support the completion of environmental transformation.Finally, the maintenance and repair of the environment after the transformation is also necessary, and if ignored, it will often bring potential safety risks.

#### **5. Project Significance and Enlightenment**

Through the adaptation of simple AIDS and environmental transformation, the disabled can improve their self-care ability, reduce the burden of caregivers, facilitate daily life, and enable the disabled to participate more in family and community life.This is the goal of the China Disabled Persons' Federation / Hong Kong Rehabilitation Association.The principles of auxiliary equipment

fitting and environmental transformation are based on taking local materials, adjusting measures to local conditions, being safe, convenient, easy to operate and promote. Environmental transformation is not only a requirement of the society, but also an important link of rehabilitation treatment, so it needs to attract wide attention and investment.

Professor Li Jian'an once said that rehabilitation projects can quickly and effectively transform negative management into a positive relationship through the role of environmental transformation and assistive devices, greatly improve the role of medical rehabilitation, has incomparable value, and deserves the high attention of all rehabilitation medical workers. At the same time, aging is the trend of our country. In order to inherit and carry forward the traditional virtues of respecting the old and caring for the young, and build a convenient environment for the elderly, we should work together to transform the living environment and optimize the social environment.

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