

STUDY ON THE IMPROVEMENT OF MAITLAND COMBINED WITH SELF-MANAGEMENT ON SEDENTARY PEOPLE WITH LOW BACK PAIN

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ABSTRACT

Objective: Study on the improvement of Maitland combined with self-management on sedentary people with low back pain.

Methods: Patients who received lumbago treatment in our hospital were selected. A total of 73 patients who received Maitland combined with self-management during the treatment were included as the research group (RG). Another 63 patients were only treated with self-management as control group (CG). The scores of disease knowledge, self-management, pain, lumbar dyskinesia, limited daily activities and therapeutic efficacy were compared between the two groups.

Results: The scores of common knowledge, concept knowledge and aceognosia of diseases in RG were higher than those in CG ($p<0.05$). The exercise time, cognitive symptom management practice score and communication status score of patients in RG were higher than those in CG ($p<0.05$). The VAS score of RG was significantly lower than that of CG ($p<0.05$). The score of lumbar dyskinesia in RG was lower than that in CG ($p<0.05$). The score of limited daily activities in RG was lower than that in CG ($p<0.05$). The effective treatment rate in RG was higher than that in CG ($p<0.05$).

Conclusion: Maitland combined with self-management has a better effect on sedentary people with low back pain, which is worthy of clinical application.

Keywords: Maitland, self-management, sedentary people with low back pain.

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Introduction

Low back pain is a very common clinical symptom, with pain on one or both sides of the waist as the main symptom⁽¹⁾. The pain can usually involve the legs, accompanied by exogenous or internal injury symptoms⁽²⁾. Clinically, motor system diseases, trauma, organ diseases and others may cause low back pain⁽³⁾. Among them, the proportion of low back pain among sedentary people is gradually increasing in clinical practice⁽⁴⁾. Sitting for a long time can cause blood stasis in the waist of human body and blood circulation disorder. In more serious cases, it may cause scoliosis, intervertebral disc protrusion and other conditions to compress nerves, thus causing recurrent low back pain⁽⁴⁾. At present, most office workers, drivers and other occupations usually need

to keep sitting for a long time in the society, which also causes low back pain to gradually become one of the main burdens of social workers⁽⁷⁾. According to statistics, more than 60% of sedentary people have different levels of low back pain⁽⁸⁾. Therefore, the management of low back pain for sedentary people is a necessary research focus in clinic.

Maitland joint mobilization is one of the commonly used methods to treat musculoskeletal system dysfunction in clinic, and its effect on improving low back pain has been unanimously recognized⁽⁹⁾. However, Maitland joint mobilization needs professional clinicians to carry out the operation⁽¹⁰⁾, which has certain limitations in the popularization and use of sedentary people. In this study, we have developed Maitland training which can be independently completed by patients through joint mobilization

and hypothesized that it can effectively improve low back pain in sedentary people by combining self-management of regular low back pain. At the same time, we also provide a reliable theoretical and practical basis for clinical practice in the future by confirming the application value of Maitland combined with self-management in sedentary people with low back pain.

Materials and methods

Baseline data

Patients receiving treatment for lumbago in our hospital from June 2017 to June 2019 were selected. A total of 136 cases were collected by inclusion and exclusion criteria.

Among them, 73 patients who received Maitland combined with self-management during the treatment were included as the RG. Another 63 patients were only treated with self-management as CG. This experiment has been approved by the Ethics Committee of our hospital, and all the patients who participated in this experiment have signed the consent form.

Inclusion and exclusion criteria

Inclusion criteria:

- All patients suffered from low back pain caused by long-term sitting;
- The course of disease was more than 3 months;
- All patients were older than 18 years old;
- The patients had complete case data and actively participated in the investigation in our hospital.

Exclusion criteria were as follows:

- Patients who received lumbar surgery;
- Patients with limited physical activity due to a disease;
- Patients with mental illness or language disorder.

Methods

CG

Patients managed their own goals, thoughts, psychology and behaviors, organized themselves, managed themselves, restrained themselves, motivated themselves, checked on time, kept on exercising, reduced pressure by themselves, got up and moved after sitting for one hour, adjusted their sitting and sleeping positions, and improved the unhealthy behaviors that easily caused low back pain through self-restraint.

RG

Maitland training was carried out on the basis of the CG.

- Abdominal stability (inflation): The patient lay on his back with knees bent and feet flat, gently supporting the abdomen downward.

- Step while keeping your abdomen stable (inflation): The patient raised both knees to the starting position, slowly lowered the right foot and gently pressed on the ground, then raised again, repeated with the left leg, and continued to slowly alternate until fatigue.

- Side plate: The patient stabilized the upper body so that the left forearm was directly under the shoulder, put the right foot on the upper left or crossed in front, and lifted the hips to make them in a straight line with the body. There should be a straight line from head to toe, and the patient repeated on the other side.

Outcome measures

According to the disease knowledge questionnaire for low back pain developed by Professor Maciel et al., Federal University of Sao Paulo⁽¹¹⁾, the disease knowledge of patients was scored in the two groups (note: the higher the score is, the more knowledge the patient has). CDSSM⁽¹²⁾ was used to evaluate the patient's exercise time, cognitive symptom management practice score and communication status score (note: the higher the score, the better the self-management behavior in this dimension). VAS⁽¹³⁾ scale was used to evaluate the pain intensity of patients in the two groups. Oswestry⁽¹⁴⁾ dysfunction index scale was used to evaluate lumbar dyskinesia in the two groups (note: the higher the score, the more serious the dysfunction). Quebec low back pain rating scale⁽¹⁵⁾ was used to evaluate patients' limited daily activities and difficulty in completing movements (note: the higher the score, the more serious the dysfunction). Patients were followed up for 3 months to observe the efficacy. Please refer to the reference⁽¹⁶⁾ for the efficacy criteria.

Statistical methods

SPSS22.0 was used to make statistical analysis on the data results. Graphpad7 was used to draw graphs on the data results. The counting data were expressed by (rate). Chi-square test was used for comparison between groups. The measurement data were expressed as (mean number \pm standard deviation), and T test was used for comparison between groups. The difference was statistically significant with $P < 0.05$.

Results

Comparison of baseline data

By comparing the age, BMI, gender, living environment, educational level, working or not, smoking history, drinking history, nation and so on, it was found that there was no difference between the two groups ($p>0.05$), as shown in Table 1.

	RG (n=73)	CG (n=63)	t or c2	P
Age (years old)			0.739	0.461
	36.3±6.7	37.2±7.5		
BMI (KG/cm ²)			1.397	0.165
	23.52±3.05	24.46±4.72		
Gender			0.293	0.588
Male	37 (50.68)	29 (46.03)		
Female	36 (49.32)	34 (53.97)		
Living environment			0.541	0.462
Town	54 (73.97)	43 (68.25)		
Rural	19 (26.03)	20 (31.75)		
Educational level			0.246	0.620
High school or above	56 (76.71)	46 (73.02)		
Below high school	17 (23.29)	17 (26.98)		
Working or not			0.381	0.537
Yes	62 (84.93)	51 (80.95)		
No	11 (15.07)	12 (19.05)		
Smoking history			0.076	0.783
Yes	33 (45.21)	27 (42.86)		
No	40 (54.79)	36 (57.14)		
Drinking history			0.127	0.721
Yes	37 (50.68)	30 (47.62)		
No	36 (49.32)	33 (52.38)		
Nation			0.735	0.391
Han	67 (91.78)	55 (87.30)		
Minority nationality	6 (8.22)	8 (12.70)		

Table 1: Baseline data.

Scores of disease knowledge in the two groups

By comparing the scores of disease knowledge in the two groups, the results showed that the scores of common knowledge, concept knowledge and aceognosia of diseases in RG were higher than those in CG ($p<0.05$). (Figure 1).

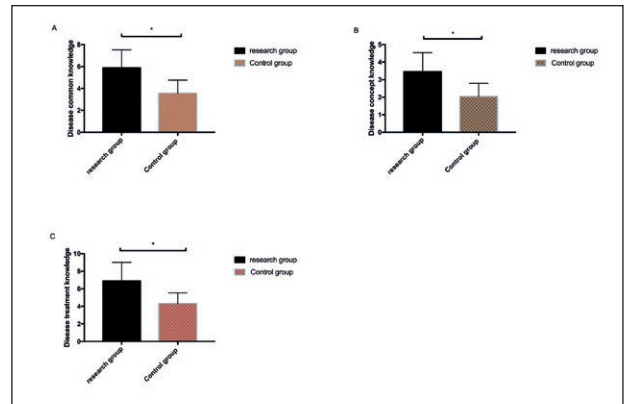


Figure 1: Scores of disease knowledge in the two groups. A) Scores of common knowledge of diseases in the two groups. B) Scores of concept knowledge of diseases in the two groups. C) Scores of aceognosia of diseases in the two groups.

Self-management scores of patients in the two groups

By comparing the self-management scores in the two groups, the results showed that the exercise time, cognitive symptom management practice score and communication status score of patients in RG were higher than those in CG ($p<0.05$). (Figure 2).

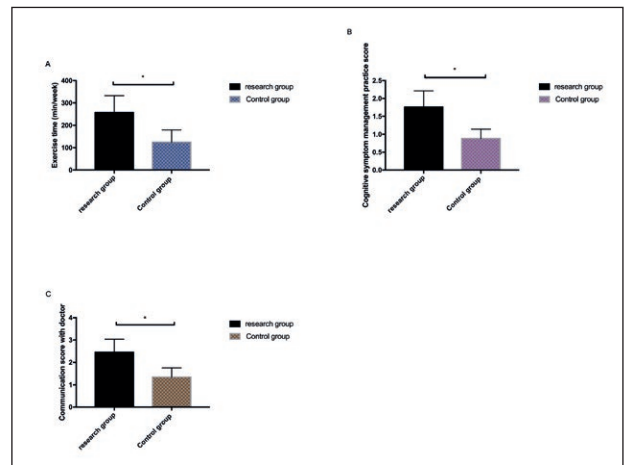


Figure 2: Self-management scores of patients in the two groups. A) Scores of exercise time in the two groups. B) Scores of cognitive symptom management practice in the two groups. C) Communication scores between the patients and doctors in the two groups.

Pain score of patients in the two groups

The VAS scale was used to evaluate the lumbar pain of patients in the two groups before and after treatment for one week. The results showed that the VAS scores of the two group were higher before treatment, with no significant difference ($p>0.05$). After treatment for one week, the pain improved in the two groups, and the VAS scores of RG were significantly lower than those of CG ($p<0.05$). (Figure 3).

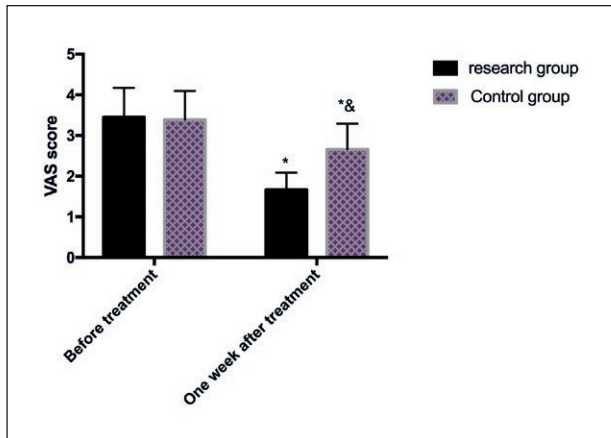


Figure 3: Pain score of patients in the two groups. Note: *means the comparison with before treatment, & means the comparison with the RG.

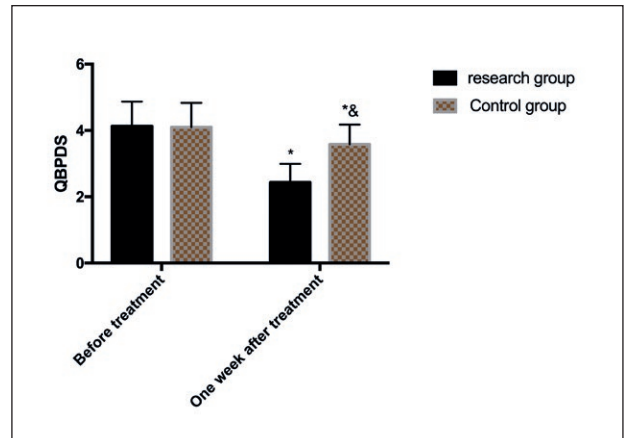


Figure 5: Limited daily activities of patients. Note: *means the comparison with before treatment, & means the comparison with the RG.

Lumbar dyskinesia of patients in the two groups

Oswestry dysfunction index scale was used to evaluate the lumbar dyskinesia in the two groups. The results showed that there was no significant difference in scores between the two groups before treatment ($p>0.05$), but the scores of the two groups decreased after treatment, and the RG was lower than the CG ($p<0.05$). (Figure 4).

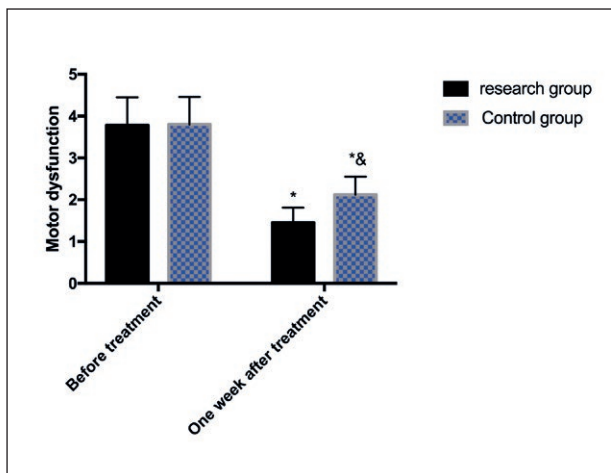


Figure 4: Lumbar dyskinesia of patients in the two groups. Note: *means the comparison with before treatment, & means the comparison with the RG.

Limited daily activities of patients

Quebec low back pain rating scale was used to assess the patients' limited daily activities and difficulty in completing movements.

The results showed that there was no significant difference in scores between the two groups before treatment ($p>0.05$), but the scores of the two groups decreased after treatment, and the RG was lower than the CG ($p<0.05$). (Figure 5).

Therapeutic effect of patients in the two groups

In RG, 29 cases were markedly effective, 41 cases were effective, and 3 cases were ineffective, with the effective treatment rate of 95.89%. In CG, 18 cases were markedly effective, 34 cases were effective, and 11 cases were ineffective, with the effective treatment rate of 82.54%. The effective treatment rate in RG was higher than that in CG, with statistical difference ($P = 0.011$). (Table 2).

	RG (n=73)	CG (n=63)	χ^2	P
Markedly effective				
	29 (39.73)	18 (28.57)		
Effective				
	41 (56.16)	34 (53.97)		
Ineffective				
	3 (4.11)	11 (17.46)		
Total effective rate			6.527	0.011
	70 (95.89)	52 (82.54)		

Table 2: Comparison of efficacy between the two groups [n(%)].

Discussion

Low back pain is a common and frequently-occurring disease in daily life. According to the data, most adults are accompanied by different degrees of low back pain⁽¹⁷⁾, and about 85% of them are nonspecific low back pain, which usually has no symptoms such as changes in lumbar spine structure and lumbar nerve damage during clinical examination⁽¹⁸⁾. With the continuous development of modern society, the level of daily physical activity of human beings has been significantly reduced, and some jobs have increased people's sitting time through-

out the day⁽¹⁹⁾. Earlier studies have pointed out that sedentary behavior is a risk factor of low back pain. Different living habits, poor sitting posture and others may be the factors affecting low back pain⁽²⁰⁾. No matter what the reason is, long-term low back pain will bring heavy economic burden to society and individuals, and even lead to functional disability, seriously affecting the quality of life of patients. Therefore, it is necessary to carry out better disease management. Therefore, this study was designed to explore the role of Maitland in combination with self-management in sedentary people with low back pain, so as to provide some reference for clinical treatment of low back pain in the future.

The results of this experiment showed that the scores of common knowledge, concept knowledge and aceognosia of diseases in RG were higher than those in CG, which suggested that the combination of Maitland and self-management could help patients better grasp the knowledge of the disease. Maitland therapy is a complete set of treatment means for joint diseases, which loosens joints through different movements, thus relieving pain and restoring joint mobility⁽²¹⁾. Looking up the previous data, it is found that Maitland treatment has a better therapeutic effect on patients with low back pain⁽²²⁾, which corroborates the results of this experiment. Another study suggests that Maitland manipulation combined with acupuncture and massage has a better therapeutic effect on patients with low back pain⁽²³⁾.

All of these have confirmed the effectiveness of Maitland treatment. By comparing the self-management scores in the two groups, the results showed that the exercise time, cognitive symptom management practice score and communication status score of patients in RG were higher than those in CG, suggesting that Maitland combined with self-management could effectively promote patients to exercise independently and achieve better therapeutic effects. By comparing the pain function score, lumbar dyskinesia and limited daily activities in the two groups, the results showed that the pain, lumbar dyskinesia and limited daily activities in Maitland combined with self-management treatment group were less than those in CG after treatment. It further confirmed the effectiveness of Maitland combined with self-management in improving patients' low back pain. Finally, the efficacy was observed in the two groups after treatment for 3 months. The effective treatment rate of patients was 95.89% in RG, while that in CG was 82.54%. The therapeutic effect in RG was significantly higher than that in CG. This

suggested that Maitland combined with self-management therapy could effectively alleviate the symptoms of low back pain, promote the recovery of lumbar function, reduce the impact of low back pain on patients' daily activities and work, and improve their quality of life. This time, we developed Maitland training which could be independently completed by patients through Maitland joint mobilization, which further increased the application time of Maitland and helped to improve the sudden low back pain of patients.

According to the results of this experiment, we speculated that its value was mainly reflected in the following aspects: 1. Abdominal stability training: By increasing the challenge to the muscles, the spine was continued to be stabilized and the arms and legs were simultaneously moved to challenge the muscles with a wider range of movements, thus achieving spinal stability and strengthening the muscles and ligaments in the lumbar spine and around the joints. 2. Step while keeping your abdomen stable: The patient took steps while the abdomen was stable, which could better enhance the respiratory and cardiovascular functions of patients and promote the better integration of waist and abdomen and other deep core muscles. 3. Side plate training: The patient further challenged the core strength, increased the demand for the core muscle, and improved the patient's own endurance, strength and function by continuously strengthening the core ability, so as to achieve the goal of reducing low back pain⁽²⁴⁾.

Secondly, self-management is also very important to improve patients' symptoms. Studies have shown that self-management behavior has a better intervention effect on many chronic diseases, such as diabetes, chronic hepatitis B, hypertension and other diseases⁽²⁵⁾. Self-management behavior refers to the behavior taken by patients to keep their physiological and psychological state in good condition and reduce the impact of diseases on daily life⁽²⁶⁾.

A thorough knowledge of the disease is also the basis of self-management behavior. Therefore, combining Maitland with self-management has an important improvement effect on patients with low back pain. Patients can strengthen their endurance and physical fitness through independent exercise, enhance their activity ability and improve the pressure on the waist, abdomen and back caused by long-term sitting. Secondly, patients take the initiative to adopt psychological strategies such as self-suggestion, role adaptation, attention transfer and emotional control to realize the self-management process of

various discomfort symptoms through the cognition of the disease. Finally, patients take the initiative to communicate with doctors, understand their own condition, get more disease knowledge or treatment skills, implement self-management more effectively, ensure the correct implementation of self-management behavior and improve gradually, so as to better control the disease and promote the recovery of patients. To sum up, Maitland combined with self-management has a better effect on sedentary people with low back pain, which is worthy of clinical application.

Of course, there are still some deficiencies in this study. For example, there are many clinical treatments for low back pain, but there is still great controversy about the choice of the best treatment mode for low back pain. In this article, only self-management is used as a control, so it is not excluded that the application of Maitland intervention may differ from the results of this experiment when compared with other therapeutic modes. This still needs further experimental analysis. We will expand the sample size of the study as soon as possible, prolong the experimental period, and conduct more detailed and comprehensive experimental analysis to obtain more perfect experimental results.

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