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An Investigation of the Effect of Visceral Acupressure Technique Combined with Physical Training on Improving Physical Anxiety in Adolescents

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Abstract: *Purpose:* To investigate the clinical effects of improving adolescents' form anxiety after the intervention of visceral massage technique and form training. *Methods:* A total of 80 adolescent patients with scoliosis abnormalities were selected for this experiment, and they were intervened with form and body training and form and body training + visceral body acupressure techniques, and the anxiety and depression scores, spinal Cobb angle, vertebral body rotation of the parietal vertebrae, and the treatment efficiency were compared between the groups after the clinical interventions. *Results:* The anxiety and depression scores of patients in the form group were significantly higher than those of the combined group, $P < 0.05$; the improvement of the Cobb angle and vertebral rotation of the parietal vertebrae of patients in the combined group was better than that of the form group, $P < 0.05$; and the total effective rate of the treatment of patients in the form group was significantly lower than that of the combined group, $P < 0.05$. *Conclusion:* After intervening in adolescents' abnormalities of form, patients were treated with a combination of the internal organs and body acupressure techniques and form training methods, and the results were compared between groups. After the joint intervention of the visceral massage technique and physical training, the patients' scoliosis and other physical problems were positively improved, and the psychological status of the patients was relatively adjusted to ensure their physical and mental health.

Keywords: Visceral acupressure techniques; Combined; Form training; Improvement; Adolescents; Form anxiety

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1. Introduction

In the process of growth and development, adolescents are affected by a variety of factors, inducing physical problems, common diseases are scoliosis, shoulder asymmetry, pterygoid shoulder armor, etc., and adolescents are

in an extremely sensitive stage, which can cause anxiety, depression, low self-esteem, lack of self-confidence, etc., which need to be actively intervened in the physical abnormalities, to promote the normal growth and development of the body [1, 2]. In the clinic, physical problems can be intervened through surgery, conservative treatment, in which surgery is more traumatic, more postoperative complications, mostly for patients with severe physical abnormalities; for mild physical abnormalities, physical training and visceral massage techniques can be taken to intervene [3, 4]. This paper mainly focuses on the clinical intervention effect of the above joint intervention methods for in-depth investigation.

2. Materials and methods

2.1. General materials

The experiment was carried out between March 2022 and August 2024, the number of participants totaled 80 cases, the method of group division is parity grouping method, the group is expressed by using the form group (form training) and the joint group (form training + visceral body massage technique), each group has 40 cases, of which there are 47 cases of males and 33 cases of females; age distribution of the form group is 12–15 years old, with a median value of 13.65 ± 0.65 years; the joint group age range is 11–15 years old, with a median value of 13.52 0.49 years; comparing the above data statistics results, it shows a small difference between the groups. ; the age range of the combined group was 11–15 years old, with a median value (13.52 ± 0.49) years old; comparing the statistical results of the above data, the groups showed smaller data differences.

Inclusion criteria: (1) Adolescent patients did not combine problems such as congenital developmental anomalies class scoliosis; (2) Adolescents did not have a combination of diseases such as ankylosing spondylitis.

Exclusion criteria: (1) Adolescent patients with osteosarcoma disease; (2) The adolescent has poor compliance and does not cooperate with form-training instructions.

2.2. Methodology

2.2.1. Physical group

Physical training was implemented for patients in this group, with the following training contents:

(1) Lateral lying side body up. Instruct the patient to lie on the side of the bed, hold the head with both hands, and raise the upper body upward, and the clinician will assist the patient to hold down the feet, and this action training is 3–4 groups per day, 7 times per group.

(2) Weight transfer. The clinician instructs the patient to take the kneeling position posture, both arms bent at the elbow holding the weight-bearing apparatus, respectively, to the left and right sides of the rotation, daily training of 3 groups, each group of 10 times, during which the clinician needs to adjust the patient's breathing.

(3) Kneeling lateral pull-down. The patient takes a kneeling position, holds the pulling rope with both hands, pulls down with force, and needs to stay in the tolerated position for 10s, three groups per day, 10 times per group.

(4) Holding the wall and pressing the shoulder. Treatment of patients with legs together, leave 50 cm width between the two feet, arms straight upward, and keep the same width as the shoulder and then pressed hard to the wall, during this time the waist force back up, chest forward, this process lasts for 10s, 5–10 minutes of daily training can be.

(5) Standing with the back against the wall. Instruct the patient to keep both legs together, keep the body upright, straighten the hands on both sides of the body, lean the back against the wall, and keep the head close to the wall, and maintain this process for 10 minutes.

2.2.2. Joint group

By incorporating the visceral massage technique alongside the physical training regimen, the massage procedures are as follows: Professional massage clinicians perform the techniques, instructing patients to lie in the prone position. The massage focuses on the solar bladder meridian near specific acupoints such as the pinch point and dorsal Yu point. The techniques include pressure and kneading, pushing, wrenching, and pressing at targeted points. Each massage session lasts between 15 to 30 minutes. During the process, the clinician should adjust the force applied based on the patient's skin tolerance, ensuring the massage is not painful to the extent that it may reduce the patient's compliance with the treatment.

2.3. Observation indicators

2.3.1. Anxiety and depression scores

In this experiment, patients' anxiety and depression were assessed using the SAS and SDS scales, and higher scores indicated poorer psychological status.

2.3.2. Cobb angle of the spine

The spinal images were obtained from the patients' X-ray films, with the vertebra exhibiting the greatest scoliosis curvature serving as the reference standard. The upper and lower edges of this vertebra were identified, and two perpendicular lines were drawn. The intersection of these lines determined the Cobb angle. Additionally, the vertebral body rotation of the parietal vertebrae was assessed using the Nash method. The statistical comparison of these measurements between groups was conducted by analyzing the mean differences.

2.3.3. Treatment effectiveness

In this experimental group, the treatment demonstrated clear effectiveness: the Cobb angle of the patients was reduced to 5 degrees or less. For those with a general positive response, the Cobb angle was reduced by 5 degrees or more, and the patients showed good recovery. In cases where the treatment was ineffective, the Cobb angle was reduced by less than 5 degrees, with no significant difference observed in the scoliosis compared to the patients' condition before treatment.

2.4. Statistical methods

SPSS 23.0 software was used to calculate the statistical data information of this experiment, $\chi^{(2)\ was}$ used to test the data information in the form of percentages, and t-test was used to indicate the measurement information using ($\bar{x} \pm s$), $P < 0.05$, which is statistically significant.

3. Results

3.1. Comparison of anxiety and depression scores between groups

There was no difference in the psychological state assessment scores of the two groups of patients before

treatment, $P > 0.05$; after comparing the anxiety and depression scores after treatment, it was found that the statistical indexes of the patients in the combined group were lower than those in the form group, $P < 0.05$, and the results of the comparison of the data between the groups are shown in **Table 1**.

Table 1. Anxiety and depression scores between comparison groups (`x ± s , points)

Groups	Number of cases (n)	Anxiety Score (SAS)		Depression Score (SDS)	
		Pretreatment	Post-treatment	Pre-treatment	Post-treatment
CGU	40	40.35 ± 2.35	32.52 ± 2.52	41.62 ± 2.55	32.52 ± 2.58
physiognomy	40	41.24 ± 3.68	35.26 ± 2.67	42.56 ± 3.65	34.26 ± 2.45
t		1.2891	4.7200	1.3352	3.0930
P		0.2012	0.0000	0.1857	0.0027

3.2. Statistical analysis of the distribution of spinal Cobb angle and vertebral body rotation of the parietal vertebrae in the two groups of patients

Comparing the data of spinal Cobb angle and parietal vertebral body rotation before treatment of the two groups of patients, the statistical results showed that there was no obvious difference in comparison, $P > 0.05$; after treatment: the improvement of spinal Cobb angle and parietal vertebral body rotation of the patients in the shape group was worse than that of the joint group, $P < 0.05$, and the calculated results are shown in **Table 2**.

Table 2. Statistical analysis of the distribution of spinal Cobb angle and vertebral rotation of the parietal vertebrae in the two groups (`x ± s, °)

Groups	Number of cases (n)	Cobb's angle of the spine		Vertebral body rotation in the parietal spine	
		Pre-treatment	Post-treatment	Pretreatment	Post-treatment
CGU	40	16.65 ± 2.35	7.26 ± 1.26	1.89 ± 0.54	1.25 ± 0.25
physiognomy	40	17.12 ± 1.35	10.36 ± 1.56	1.92 ± 0.49	1.75 ± 0.35
t		1.0968	9.7771	0.2602	7.3521
P		0.2761	0.0000	0.7954	0.0000

3.3. Intergroup statistics effective rate of treatment in two groups

Comparison of intergroup data on the treatment efficiency of the two groups of patients, the statistical results show that the joint data is better than the shape group, $P < 0.05$, the comparison results are shown in **Table 3**.

Table 3. Intergroup statistics effective rate of treatment in both groups (n%)

Groups	Number of cases (n)	Efficacy of treatment	General effect	Futile treatment	Treatment efficacy rate
CGU	40	24 (60.00%)	14 (35.00%)	2 (5.00%)	38 (95.00%)
physiognomy	40	20 (50.00%)	12 (30.00%)	8 (20.00%)	32 (80.00%)
χ^2					4.1143
P					0.0425

4. Conclusion

Adolescent bone development is not yet complete, when subjected to external factors or bad habits and other factors, it is very easy to induce its scoliosis and other conditions, which in turn cause physical changes, over time the spinal curvature parts will oppress the patient's spinal cord and other physiological structures, but also induces the formation of other diseases, the physical and mental health of the development of its extremely unfavorable [5, 6]. Based on the above situation, it is essential to actively intervene in patients' physical abnormalities. This paper selects physical training and visceral massage techniques for intervention. The physical training primarily aims to correct patients' poor posture, achieved through repetitive exercises designed to help them develop a proper body shape and alignment. The physical training regimen includes exercises such as side-lying lateral raises, weight-bearing rotations, kneeling lateral pull-downs, shoulder presses while holding the wall, and standing with the back against the wall, among others. Each training content has a strong relevance and can positively adjust the patient's bad body shape [7, 8]. Tui Na therapy stimulates the body's meridians and acupoints to enhance bodily functions. It involves techniques such as pushing, holding, lifting, pinching, kneading, and others to stimulate local blood circulation, clear blockages in the meridians, balance Yin and Yang, and promote the flow of Qi, all of which help alleviate pain. In this study, various Tui Na techniques, including kneading, pushing, wrenching, and pressing, were applied to treat adolescent scoliosis.

The kneading technique primarily uses the thumb to apply pressure and knead the muscle groups on either side of the patient's spine. This repeated kneading can reduce local pain and relax tense muscles. The pushing technique, a commonly used method, employs the palm of the hand to push upward along the muscles beside the spine, effectively promoting local blood circulation and clearing any blockages in the meridians. Wrenching involves one-handed manipulation of the muscles to adjust the spinal curves. The pressing technique focuses on pressing acupoints along the spine, providing beneficial stimulation that not only helps regulate scoliosis but also adjusts the spinal curve. Stimulating the acupoints promotes the circulation of Qi and blood, relieving clinical discomfort and contributing positively to the intervention's effectiveness. In addition, acupoint stimulation can also help to alleviate patients' anxiety by inducing their negative emotions [9, 10].

The data from this study indicate that the anxiety and depression scores of patients in the joint group are significantly lower than those in the form group, with $P < 0.05$. Additionally, there is a noticeable difference in the improvement effects on Cobb's angle and parietal vertebral rotation between the two groups, with $P < 0.05$. The total effective treatment rate for patients in the joint group is also higher than that of the form group, with $P < 0.05$.

Based on these statistical results, the following conclusions can be drawn: First, in the joint group, the combination of physical training and Tui Na therapy further stimulated the muscles on both sides of the spine. Additionally, Tui Na's meridian-dredging effects, including regulating the liver and Qi, played a crucial role. As negative emotions are often associated with liver stagnation, dredging the liver helped alleviate these emotions, reducing harm to the body and facilitating emotional release. Second, Tui Na therapy proved effective in treating spinal issues, contributing to the overall positive outcomes observed in the joint group. Furthermore, Tui Na technique can adjust the physiological curve of the spine by applying external force, so it has a significant effect on the Cobb angle and vertebral rotation of the parietal vertebrae, Thirdly, based on the significant improvement of scoliosis, it is fully proved that the combined treatment has a positive effect on the patients, and therefore the treatment efficiency is relatively improved.

To summarize, after the use of physical training and visceral massage techniques to intervene in adolescent physical problems, the patients' poor body image was positively intervened and adjusted, and the therapeutic

effect was remarkable, thus reducing the patients' psychological burden and effectively reducing the generation of negative emotions.

Disclosure statement

The author declares no conflict of interest.

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