

Postpartum Physique Rehabilitation with Some Therapy Apparatus in a Chinese General Hospital

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ABSTRACT

Problem: Postnatal health care in women health care is relatively weak currently. Postpartum physique rehabilitation services aren't given enough attention by public health departments and health care workers. **Background:** Postpartum physique recovery has a great influence on modern women physical and mental health. And company with the improvement of life quality, physical beauty is receiving more and more attention.

Aim: To explore the therapeutic effect of some therapy apparatus on postpartum recovery.

Methods: A total of 456 postnatal women, who visited the postpartum rehabilitation center of a tertiary general hospital, from December 2014 to November 2017, were divided into case group and control group, according to whether or not to accept the therapy apparatus treatment. We collected and compared the age, height, pre-pregnancy weight, pre-pregnancy body mass index, newborn birth weight and feeding style, postpartum days between the two groups, as well as education level and occupation and other demographic information. Then we compared the difference of weight, body mass index, abdominal circumference, hip circumference, thigh circumference and calf circumference between the two groups.

Finding: There was no statistically significant difference in demographic data between the two groups, meanwhile the body weight and circumferences of the case group were all significantly lower than those of the control group.

Conclusion: Some therapy apparatus can promote postnatal women physique rehabilitation in postnatal women 30 ~ 90 days after birth, is worthy of application in women health care as a choice of postpartum recovery.

Keywords: Postpartum rehabilitation technique; Abdominal circumference; Hip circumference

Statement of significance

Problem: Postnatal health care in women' health care is relatively weak currently. Postpartum physique rehabilitation services aren't given enough attention by public health departments and health care workers.

What is already known: Some health care workers have also made an active exploration of postpartum physique recovery. There are some methods such as prenatal and postpartum nursing interventions, postpartum rehabilitation massage, acupoint catgut embedding on postpartum obesity, and exercise intervention, and so on. But the effects is unclear and the operation is not standardized and unified.

What this Paper Adds: The apparatus applied in the study had a important impact on the recovery of postpartum physique shape. This apparatus therapy technology is an effective supplement to the relatively weak postnatal health care in women' health care currently.

INTRODUCTION

Physical beauty shows the person's temperament, health and personality, and it is the core content of human aesthetic in interpersonal communication and marriage and

family. The women, who have physical beauty defects or unsatisfied with their own physiques, are not feel good in social activities, mental mood and daily life [1]. According to the detection of body composition such as Yan

Chunrong on postnatal women, body fat reached as high as 74.10%, serious excess fat accounted for 23.63% [2]. Excessive fat in the waist and abdomen seriously affect the physical beauty of postnatal women. It is not difficult to imagine that the recovery of the body lines and curves has great psychological impact on women. Good postpartum physique recovery can effectively reduce the occurrence of postpartum depression [3-4]. Physique recovery affects the subjective choice of pregnant women on the mode of delivery, it helped to reduce the rate of cesarean section, especially the non-medical cesarean section [5-6]. Postpartum physique recovery has a great influence on modern women' physical and mental health, with the improvement of life quality, demand of maternal physique recovery increased gradually [7-9]. Postpartum physique rehabilitation services should be paid more attention by public health departments and health care workers. The study on the special physiological period of postpartum, postpartum physique rehabilitation with the therapy apparatus, attempted to explore the effect of the apparatus treatment technology on postpartum physique recovery.

METHODS

The Participants

A total of 456 postnatal women of postpartum 30 ~ 90 days were selected as participants, who visited the postpartum rehabilitation center of a tertiary general hospital, from December 2014 to November 2017, aged 22- 47 years old, average (31.26±4.234)years old. Following informed consent, this study was approved by the Ethics Committee of Southeast University, we collected the information such as age, height, pre-pregnancy weight, pre-pregnancy body mass index, date of delivery, mode of delivery, newborn birth weight and feeding style, postpartum days, education level, occupation and other demographic information, and measured the circumference of abdomen, hip, thigh and calf. We excluded the women who had the disease which could cause postpartum edema, such as pregnancy malnutrition, anemia, hypertension, heart disease, endocrine disorders. These women were divided into the case group and the control group. The control group was the woman who was prepared to accept the instrument treatment, they only received health education, diet and exercise guidance during inpatient delivery period. The case group, matching the control group with age and postpartum age, received complete instrumental

rehabilitation on the basis of strengthening health education, diet and exercise guidance. A total of 188 cases were included in the case group and 268 cases were included in the control group for the same period.

Methods

In the study postpartum rehabilitation apparatus was YZB/ Su 0072-2014 YS series apparatus system (production model YS-H100, from Jiangsu Furui Technology Co. Ltd.). Usage of the apparatus: the pole plate, diameter 10 cm, with a black surface coated with ultrasonic coupling agent, were placed and fixed tightly with elastic abdominal bandage in the abdomen, hip and legs (subumbilical 1 pairs, lateral umbilical 1 pairs, waist 1 pairs, buttock 2 pairs, 1 pairs on each of the legs (the largest part of the circumference)). Then we selected the program on boot menu according to the position of treatment and then put on the energy button, the energy increased gradually to the maximum intensity when women could be tolerant, with no tingling feeling, the apparatus would automatically stop when therapy was ended [10].The treatment was 2 times a week, the total course was 12 times, 15 minutes each time. Circumference was measured at the end of therapy in the case group and the corresponding circumference were measured when included in the control group.

Investigator who involved in the study were trained in a unified way. The contents include: (1) evaluation of the significance of the project and the standard of filling; (2) the standard position, method and attention of the circumference measurement. Umbilical abdominal circumference were measured uprightly during normal breathing around the navel level; sub-umbilical abdominal circumference were measured uprightly during normal breathing around the 3cm level under the navel circumference; hip circumference were measured uprightly during normal breathing in the pubic symphysis level. And thigh circumference were measured in the 3cm level under the thigh root; Calf circumference were measured at the most prominent part of the leg cycle. A uniform tape measure was provided, and training for investigator was carried out. During doing the project, a specific person was responsible for quality control and tracking inspection, so as to ensure the consistency between the evaluation form and the measurement standard. (3) body mass index (BMI) equals to weight (kg) / height (m)².

Statistical analysis

Quantitative data were compared with t-test, and the chi square test was used to compare the ratio. The SPSS19.0 statistical software package was used to carry out statistical analysis.

RESULTS

General Information Analysis

The average age of the case group and the control group was (31.27 + 4.136) and (31.25 + 4.309) years old respectively. The mean value of pre-pregnancy mass index in the case group was (21.11 + 2.394), and it was (22.97 + 2.310) in the control group. The body weight before pregnancy, the body mass index before pregnancy, and the birth weight of the newborn were shown in Table 1. The occupation of two groups were major in company staff and

professional technical service staff, the proportion were 49.5% and 17.8% in the case group, and 48% and 18.9% in the control group respectively. College degree or above accounted for 98.1% in the case group, college degree or above accounted for 99.2% in the control group. Cesarean section accounted for 34% in the case group, and that accounted for 36.6% in the control group; Primipara in the case group accounted for 63.8%, and that accounted for 66.8% in the control group; Breastfeeding in the case group accounted for 96.9%, and 97.4% in control group. The two groups had no statistically significant difference in age, education level, occupation, height, pre-pregnancy weight, pre-pregnancy height, body mass index and neonatal birth weight. Quantitative data analysis see Tab. 1.

Table1. The distribution difference of quantitative data in two groups by t-test

group	n	$\bar{x}\pm s$	t-value	p-Valve
age(years old)				
the case group	188	31.27±4.136	0.060	0.952
the control group	268	31.25±4.309		
days after postpartum				
the case group	188	46.05±22.160	1.330	0.249
the control group	268	51.83±12.888		
pre-pregnancy weight(kg)				
the case group	188	55.32±6.9147	0.336	0.737
the control group	268	55.62±7.215		
height(cm)				
the case group	188	162.21±4.978	0.126	0.899
the control group	268	162.12±8.648		
BMI before pregnancy				
the case group	188	21.11±2.394	0.838	0.403
the control group	268	22.97±2.310		
neonatal birth weight(g)				
the case group	188	3538.40±507.190	0.168	0.867
the control group	268	3530.00±520.849		

Comparison of Body Weight, Body Mass Index and Some Circumference Values in Two Groups

It was shown that the circumference values of abdomen, hip, thigh and calf in the case group were lower than those of the control group, and

the differences were statistically significant (p<0.05). The weight in the case group was also lower than that of the control group (p<0.05), the difference of body mass index (somatic mass index) in two groups was close to statistically significant value 0.05(p=0.083). See Tab. 2.

Table2. Comparison of body weight, body mass index and some circumference values in two groups

group	N	$\bar{x}\pm s$	t-Valve	p-Valve
circumference of hip(cm)				
the case group	188	95.34±5.362	5.730	0.000
the control group	268	98.62±5.764		
Umbilical abdominal circumference(cm)				
the case group	188	86.11±7.981	5.749	0.000
the control group	268	90.33±7.192		
Sub-umbilical abdominal circumference(cm)				
the case group	188	91.19±7.450	5.887	0.000
the control group	268	95.30±6.957		

Left thigh circumference(cm)				
the case group	188	53.63±3.982	5.639	0.000
the control group	268	56.20±4.711		
Right thigh circumference(cm)				
the case group	188	53.54±4.206	5.751	0.000
the control group	268	56.06±4.305		
Left calf circumference(cm)				
the case group	188	34.63±2.481	5.000	0.000
the control group	268	35.94±2.558		
Right calf circumference(cm)				
the case group	188	34.61±2.482	5.202	0.000
the control group	268	35.98±2.578		
Weight(kg)				
the case group	188	60.49±7.168	2.926	0.004
the control group	268	62.93±7.585		
BMI				
the case group	188	23.11±2.600	1.742	0.083
the control group	268	24.75±1.433		

DISCUSSION

Chinese have the traditional "confinement" custom that postnatal women should rest in bed with less activities and eating energy dense foods. After birth, postnatal women abdominal muscles become very relaxed, relaxed abdominal wall becomes the best place for the accumulation of fat, body is easy to get fat. Overweight and obesity makes women lose their original body lines and curves, and even causes sense of inferiority, which makes them bear huge mental and psychological pressure [11]. Obesity not only affects the beauty of physical beauty, but also brings some hazards to the body, even various complicating diseases such as hypertension, diabetes, coronary heart disease, cerebrovascular diseases and some gynecological diseases, which seriously endangers postnatal women maternal health and reduces the quality of life. Wan Chunhua used BiospaceInBody370 body composition analyzer with bioelectrical impedance method to evaluate the effect of early rehabilitation training on body composition in postnatal women. He thought that early rehabilitation training was conducive to the rehabilitation of postnatal women, it could improve women' quality of life and restore the maternal physique [12]. The reports on how to promote the postpartum physique recovery increased gradually in China. Liu Sulan and others used early physical training combined with massage and diet guidance and routine health education on postpartum physique recovery, they found that hip and abdominal circumference values in treatment group were significantly lower than those of the control group. The methods were useful for postnatal

women recovery, including prevention of obesity, physiological function improvement [13-15]. Tang Yufan and others used their own made yoga postpartum exercises in postpartum recovery, they thought that the postpartum exercise had a significant effect on the recovery of maternal physique [16]. Liu Xiaoqiong used postpartum aerobics to observe its effect on maternal physique recovery, he thought that the kind of exercise reduced the incidence of postpartum complications and it was beneficial to postpartum physique recovery through reducing body mass index, circumference of abdomen, hip, thigh and calf [17]. By observing the effect of nursing intervention with comprehensive care on the basis of routine nursing care, the BMI and the circumference of hip and thigh were significantly lower than those of the control group at 2 weeks, 3 months and 6 months after treatment, Lifa Ning thought that comprehensive nursing intervention helped postnatal women recover better and faster[18]. He Xing and others observed the effect of aromatherapy massage on postoperative recovery of women with cesarean section, they thought that aromatherapy massage could reduce the postoperative pain, alleviate anxiety, promote excretion, and conducive to uterine involution and postpartum physique recovery effectively [19]. There are similar methods to promote postpartum body lines and curves recovery such as prenatal and postpartum nursing interventions, postpartum rehabilitation massage [20-23], acupoint catgut embedding on postpartum obesity [24], and exercise intervention [25].

The methods mentioned above have been made a positive attempt in postpartum rehabilitation

by healthcare workers, however, there is no recognized standard and effective rehabilitation therapy. In this study, we choose a therapy apparatus easy to operate. It was used a lot in the postpartum galactostasis [26], prolactin, uterine involution [27], the study of the effect on the recovery of postpartum physique in recent years began to appear. The apparatus with electromagnetic energy transmission and regulation of human electrolyte, sorts human cells to the deepest of the subcutaneous 10cm, the electromagnetic energy changing according to human body coefficient of electrolysis. The magnetic field shaped worm-like, with continuous digital calculation and outputting gradually, is more lasting and deeper into the patient's body, and it accelerates the digestion and decomposition of the excess fat molecules. The apparatus produce unique movement which makes the body relaxed, makes the skin, muscles and fascia elastic tension restored and makes the circumference values reduced[10].

Postnatal women physique has a natural recovery processing, the maternal recovery in the circumference values of abdomen, hip, thigh in the case group were significantly lower than those of the control group in this study, postpartum body weight and body mass index in the case group was lower than that of the control group. It showed that the application of this apparatus played a significant role in promoting the recovery of postpartum physique. The similar research are as follows: Zhai Shanshan compared the maternal physique recovery in postnatal women who accepted postpartum rehabilitation apparatus treatment with natural recovery of the control group, hip circumference in the case group was significantly lower than that of the natural recovery group on 28d and 42d after birth[28]. Shi Ying and others observed the circumference values of abdomen, hip, thigh and calf in postnatal women 5~7 days and 28 days after birth, and all of the values were lower significantly in the women who accept the apparatus treatment than those of the control group. They thought the apparatus could promote puerperal body recovery[29]. Scholars such as Jia Min and Lv Liqing, had similar reports [30-31]. The above research reported were postnatal women within 42 days after birth, meanwhile in the study the postnatal women were selected within 30-90 days after birth. The age, education, occupation, height, pre-pregnancy weight, pre-pregnancy body mass index and birth weight and other demographic information were no significant difference

among the two groups, it was comparable. Scholars such as Wang Zhiqiong used this method to treat postnatal women 30~59 days and 60~90 days after birth in 2010, by comparing the circumference, the difference before and after treatment was statistically significant, while the differences between the two groups were not statistically significant, their study did not set the natural recovery of women as control, but the combination of the foregoing studies and our study, we considered the apparatus had therapy affects on postnatal women within 90 days after birth in abdomen deformation, reversed a trend in abdominal relaxation better[32].

Except for some therapy apparatus, health education was also the important part of the postpartum rehabilitation technology such as: diet guidance to achieve a balanced diet, proper nutrition, avoidance of excessive intakes; postpartum exercise guidance including ambulation, postpartum bed gymnastics, pelvic floor muscle training; breastfeeding guidance. As mentioned before, there are the massage techniques, such as manual massage, aromatherapy, and postnatal yoga exercises, which are made by the Chinese maternal and child health workers, as well as the application of traditional Chinese medicine, such as postpartum rehabilitation powder and acupoint catgut embedding in postpartum physique rehabilitation. Rehabilitation therapy combined with health education, including guidance for maternal and infant health care, breast feeding, balanced diet and postnatal exercise, will undoubtedly play a crucial role in the recovery of postnatal form.

CONCLUSION

This study is not a randomized controlled clinical trial, and sample selection limited the extrapolation of the study to a certain extent. However, this apparatus still has a very important impact on the recovery of postpartum body lines and curves, and it was worthy in being paid enough attention in China. The concept of maternal natural recovery without the need for active treatment should be changed by this postpartum rehabilitation technology. Many methods, such as diet control, exercise and bodybuilding, may also affect physical beauty, it can achieve the same effect, but in a word, the therapy apparatus can be used as a choice, and may be a suitable method for some women. It is a real and effective supplement to the relatively weak postnatal health care in women health care currently.

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